Parkes Pamphlet Collection: Volume 2

Publication/Creation

1822-1862

Persistent URL

https://wellcomecollection.org/works/qtcqgjrm

License and attribution

You have permission to make copies of this work under a Creative Commons, Attribution, Non-commercial license.

Non-commercial use includes private study, academic research, teaching, and other activities that are not primarily intended for, or directed towards, commercial advantage or private monetary compensation. See the Legal Code for further information.

Image source should be attributed as specified in the full catalogue record. If no source is given the image should be attributed to Wellcome Collection.

wellcome collection

Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
https://wellcomecollection.org

~~XX 4~~
~~Vol XIII~~
9 G

"When found, make a note of."—CAPTAIN CUTTLE.

(14)

Contents

(26)

Recruiting and Recruits.
Sanitary Condition of the British Army.
Development of Military Offences.
Military Surgery — Gordon.
Indignation Meeting at Aldershot.
New System of Cooking for the Army.
Brigade of Hospital Conveyances.
Cholera in the Island of Mauritius
Maladies of the Eastern Army — French —
The Infantry Soldier in the Tropics. —
How to Dress Him. —
Health of the Army.
Statistical, Sanitary, & Medical Reports for 1857
De Chaumont's Notes of Cases
Mortality of European Soldiers in India.
Notes on the Dispatch of Troops by Sea.
Endemic Fever of Ceylon
Epidemic Colic at Newera Ellia Ceylon
Acute Ophthalmia in 34th Regt.
On Endemic Dysentery of Colombo, Ceylon.
On the Health of the Royal Navy
Report of the Army Sanitary Commissioners
Army Medical Warrant
Medical History of the 15th Hussars
Medical Reports of 41st Foot.
Medical History of 45th Foot
Medical Reports of Madras European Regiment
On Acute Inflammatory Diseases & Hepatitis
Reports by Dr Mouatt.
Health of the Madras Troops in Burmah.
On the use of Salina Enemata in Cholera.

Continued

Contained
Dr Irving on warm Water in Dysentery
Dr Macfadyen on Lunatic Asylums
Report on the Mortality of Edinburgh & Leith.
Description of an Improved Press
The late Sir James McGrigor.
On Spiral Elastic Compression.

Rec'd 9th February 1852
26

CURSORY REMARKS

ON

RECRUITING & RECRUITS,

BY

FREDERIC ROBERTS,

Staff Surgeon of the Second Class.

LONDON:
PARKER, FURNIVAL, AND PARKER.
EXETER: H. J. WALLIS.
1852.

ERRATUM, page 13, line 9.

For "invaliding and deaths," *read* "free discharges."

PREFACE.

—

MANY of the principles contained in this Memoir were enunciated in articles published at different periods on Military Hygiene, which comprehends a tolerably wide range of subjects, in the *Medical Gazette*, and in articles on an uncompleted subject (Development of Military Offences) in the *United Service Magazine*. The plan of distribution of Recruiting Officers which existed in 1845 is retained, to save the expense of engraving a new plate for a map, but the *principle* is preserved — the distribution of Recruiting Officers being now nearly the same as in that year. To maintain a relative uniformity with the illustrations on the map, the census of 1841 is continued.

F. R.

December, 1852.

CONTENTS.

General Remarks on the Intellectual, Moral, and Physical Capacities in Recruits 5

Influence of Local Association in the Success of Recruiting, and Character of Recruits 17

Influence of a Standard Height on the Physical Capacities of Recruits, and Success of Recruiting 26

Recruits for Cavalry, Artillery, Sappers, Grenadiers, and Light Infantry 29

On the Influence of Age in Recruits 30

RECRUITING AND RECRUITS.

—

General Remarks on the Intellectual, Moral, and Physical Capacities in Recruits.

The probability of life depends upon the degree of physical energy and the sum of resistance made by the organism to the causes of diseases. Constitutional perfection of formation and proportional vitality resist disease, however, in proportion to the more or less favourable physical (external) conditions they are placed in. Further, the higher the degree of moral qualities, the more these powers of resistance increase.

The general advantages of moral and physical perfection being thus briefly considered, I shall premise by offering a few remarks that bear more especially upon the subject, and then advance what is expected to facilitate the acquisition of recruits possessing them. There are agencies to which the soldier and civilian are differently situated; such as clothing, diet, habitation, and occupation. The one is under arbitary injunctions to clothe himself, eat, to be lodged, and to work, by a certain rule, whatever his temperament, constitution, and power of endurance and accommodation to the same: the other acts more under the dictates of nature, by consulting his convenience and comfort. It is these adverse habits that work such destruction in the frame of the soldier, and not so much the topographical and atmospherical influences, to which persons in civil life are equally subject. When soldiers have to contend against nature in this manner, the highest qualifications should be selected, and should increase as the laws of nature are the more violated, as they are by gradations from the cavalry and artillery to the infantry, in which latter is the maximum of perversion; the probability of life being half per cent. higher in the cavalry and artillery than in the infantry at home.*

The history of armies at all times teaches that they are very susceptible of disease, and although modern armies are far differently situated with respect to physical and moral circumstances to those which existed in former times, yet

* The annual ratio of deaths per 1000 of mean strenth in the Dragoons and the Dragoon Guards is 15·3, by Lieut.-Col. Tulloch's Reports. For a period of seven years, in the Artillery at Home, the ratio is about 15·5, which is calculated from a Return called for by Mr. Hume in the House of Commons, dated 12th June, 1845. The ratio in the Foot Guards, according to Lieut.-Col. Tulloch, is 21·6 per 1000.

there remain, not loathsome, but active and palpable causes of impoverishing the vital resources. By a late account of sickness and mortality in the American army, the number of cases of indisposition, to the number of men in the service, was 281 per cent.; and the number of deaths a fraction less than 1¾ per cent. in the same number of men. In our own select Foot Guards the mortality is more than two per cent. In the Prussian army, which consists of men between 20 and 25 years of age, the mortality is 11·7 in 1000, when in the civil population it is only 10 in 1000, and the average ratio of admissions of sick annually is 111 per cent.

From 1820 to 1826 inclusive the average annual mortality in the French army *in France* was 19 in 1000. In the male civil population the mortality between the ages of 20 and 30—corresponding to those of soldiers—was from 10 to 12 per 1000.

Soldiers appear to be subjects among whom malignant diseases have arisen in different times. A virulent malady had its origin in the army of Charles VIII. at the siege of Naples, and was propagated by it over the greater part of Europe. The "sweating sickness" appeared for the first time in the army of the Earl of Richmond (Henry the VII.) upon his landing at Milford Haven in 1415, and spread to London, where it raged from the beginning of August to the end of October. So formidable and fatal were its effects, that the Coronation of Henry VII., the victor in the battle of Bosworth Field, was deferred till this strange pestilence had subsided. Armies have always been composed of the good and bad. Even at late dates soldiers have been collected from the refuse of the people and from prisons, from whom not so much could be expected, to avoid disease, as from a more respectable class of people. In the cases of devastating epidemics, which the army so often suffers from, (witness those of China and Scinde lately), the pernicious influence is not universal; that is, the causes of unhealthiness are not to be attributed exclusively to position and climate, but in great measure to the external condition of the soldiers, as must be when those who enjoy certain independence and physical comfort pass comparatively free from their ravages. Physical comfort can best be acquired by a strong mind and a strong body; the mind may not be polished, but it may be intelligent. Some amount of scholastic education is necessary to preserve a correct mind, and this more so in the army than in civil life, where it is more practicable to divert it. The outery about drunkeness in the army by its officers is constant, and its cause is attributed to the inferiority of the men in character and class. On obvious grounds education must improve the welfare of the men in the service, and its reaction on health is conspicuous.

Crime is a fruitful source of disease in the army, both directly and indirectly. Education cannot fail to be an important additional resource to the soldier, as it is seen that in proportion as troops are well situated with respect to physical

and moral position, so does crime less prevail. In the cavalry and artillery, where the soldier is held in greater esteem, on account of his relatively higher position, by possessing better education, by the more intellectual nature of his duty, and the greater sphere there is for the exercise of mental qualities, and the consequent dependence upon his judgment, in a state of greater exception from control, crime is less prevalent than in the infantry.

It should be our object to obtain as respectable recruits as possible, so as to avoid crime and delinquencies; for no particular system of punishment yet ever practised, whether harsh or lenient, has in the slightest degree contributed to reform military offenders, or prevent relapses of crimes and delinquencies. The frequency of offences is precisely the same under the institution of the lash, "shot drill," "solitary confinement," "low diet;" shewing that it should be less our object to correct criminals and venial offenders, than to place them in a position where they can do the least injury to themselves and others, and contribute to the general service of the army. According to the Report on Military Prisons, the re-committals for the several offences of desertion, absence, drunkenness, disgraceful conduct, and other crimes increased from 2452 in 1849, to 3174 in 1850. These Reports take cognizance of offences *punished* in Military Prisons in Great Britain only, and not those *committed*.

Out of the strength of the English army, the average daily number of men in confinement and under punishment for desertion, absence, drunkenness, may be estimated at 3000, and uncaptured deserters at 1000; and if we estimate each prisoner to cost £30 annually on account of food, raiment, expenses of prison establishments, salaries, (underrated, were the interest of money laid out in building prisons taken into consideration) 3000 prisoners would cost the government £90,000 per annum, and the army loses their services as well as those of the 1000 deserters constantly absent. This enormous list of military prisoners, not only affects the numerical force of the army, but also its health, in as much as the separation of defaulters from their proper duties, and their detention in prison, imposes additional and often irksome services on the remaining well behaved soldiers.

How much more interest a person takes about a matter when he knows something, than when he knows nothing about it! A tolerably well-instructed soldier will see, that when his duty is regulated by a free, orderly activity of mind, it provides rather a source of enjoyment than of annoyance. A relation of this sort between intellectual and physical activity cannot fail to make health better and life happier. In the infantry a man learns many little things; but they are isolated matters, without interesting connexion, and have no deep hold in the mind: the method of learning is so dry, that there are consequently many failures in instruction; good non-commissioned officers being proverbially very scarce, as it is likely to be the case when the men

cannot be attracted and interested by stiff exercise of mere memory, which neither awakens the feelings nor imagination. It is a paramount object to procure as well educated and respectable non-commissioned officers, whom I consider to be the fulcra of an army, as possible. They command the respect of the privates, who see that better men than themselves are associated with them in showing respect to their officers, in their duties in quarters, on parade, on guard, in the field, on the march, in their voyages to distant and unhealthy climates, and in all their privations and perils. The almost assimilation of the duties and position of the non-commissioned officer and private has a vast hold upon the conduct of the latter, satisfies him, and not unfrequently kindles in him no little pride that his duty should be so intimately associated with one whose respect is so greatly reciprocated by his officer.

Soldiers without intelligence are, says Marshal Marmont, in general inert and heavy, and vary much less in character than those who are smarter, and prone to reason and compare. Some allowance should be made for the restlessness of spirit, the wavering character, and often indolent habits of many recruits, over those who remain in more homely occupations. These characters naturally require more excitement than more steady and reserved people; so all reasonable attempts should be made to keep their excitement within bounds, by affording interesting occupation and amusement. The acquisitions of reading and writing are particularly desirable, but are not invariably included as essential in the requirements of a soldier, as there are, doubtless, many smart and good soldiers, who cannot read and write, with as much intelligence and resources as better educated men; but as education smartens stolid men, it should be encouraged.

In hospital, where many soldiers pass a great part of their time,* reading would lighten the tedium of long illnesses. Inability to read is distressing to a soldier in hospital, where, in addition to often long and frequent confinement, is added rigid discipline. Want of intelligence in a patient is, too, a painful obstacle to easy and rapid cure.

Physical strength is a paramount power to prosecute war, which is a necessary evil; but when moral and intelligent conduct is added, there cannot fail to be great mitigation of its horrors.

The more elevated the tone of physical and moral life in the army in times of peace, the less will be the failure of it in times of war; the more degraded the men are during peace, the more so they become in war. The heavy crimes of the French army in Algeria result chiefly from the fact that the men sent out to the regiments stationed there are of known bad character, are degraded in the eyes of the army, and being reckless in consequence, commit base crimes, and suffer dreadful punishments and further degradation.† Baron Bertrand, Chef

* In the Windward and Leeward Command each soldier is sick 27¼ days annually; in Canada 16; in Bermuda 19, and so on.—*Lieut.-Col. Tulloch; Statistical Reports.*

† Times, quoted from French Papers, July and August, 1845.

de Battaillon, examined before the Commissioners to report upon Military Punishments, when asked if his experience led him to believe that the punishment of sending criminals to "Companies of Discipline" was effective for reforming the soldiers, replied, that "it did not reform them, but it rid the regiment of them."* Confirmed bad characters are seldom reformed, especially if the means used for attracting them from their vicious course are limited. A chaplain of a county prison expresses himself in his report, that "to lessen crime, moral discipline should be used instead of mere corporal punishment, and declared that mere punishment alone, or the fear of it, will neither prevent the commission of crime, nor cure its effects on the character."

Crime is rife in the army. Captain Layard, on Tuesday, the 2nd of July, 1845, in the House of Commons, shewed, that by a "Return he held in his hand it appeared, that from 1839 to the year 1844, 3355 soldiers had received corporal punishment, and the number of imprisonments during the same period was 28,190, being nearly one-third of our whole army. Some of the latter were even of repeated imprisonments, as there were many soldiers who spent the greater part of their time in gaol."† Seeing that excessive crime prevails in the general mass of the army, but chiefly in the infantry, it is not too much to hope that, if the selection of recruits for the infantry were equal to that of the cavalry and artillery, it would assist to prevent this perpetual imprisonment and constant exposure of the health of the men. The evidence of the witnesses examined before the Commissioners for inquiring into the system of Military Punishment, goes much to say, that the recruits selected for the cavalry and artillery were of a stamp more conducive to their physical and moral preservation than those raised for the infantry of the line at least.

Numbers of eminent authors have always advocated the necessity of as much physical power in soldiers of the infantry as the cavalry and artillery; but something more than animal strength is required for each of these branches of the service; as military life, especially in the infantry, is so very artificial, men composing an army should have some intelligence to adapt themselves to it. It is not necessary that they should be learned logicians and mathematicians, but they should have intelligence enough to comprehend the common principles of personal hygiene; and I have no doubt that by means of the present improvements they will be easily attracted to their own welfare in this particular. Men without education at all, and without sources of amusement in barracks, are not in a situation to be noticed by their superiors for preferment; they are without opportunity of having their qualities drawn out. Men who have the knowledge of some craft are more likely to be able to read and write than ploughmen, and find more means of occupation in barracks. The mere ploughman has no resources in a garrison like Malta, Gibraltar, Corfù, and numerous others. The

* System of Military Punishment. † United Service Magazine, July 5th, 1845.

passiveness of a "guard" is only succeeded by *ennui* in barracks, and sought to be drowned by smoking and drinking.

The recruits in the infantry have been probably less accustomed to dissipation than those in the cavalry and artillery. The recruits in the foot guards are very respectable young men generally, but soon begin a course of dissipation. If there was not some peculiar cause for the development of various offences in the infantry, there would arise as much in the cavalry and artillery. It is the generally superior education, the duty, which is business-like occupation, as well as the greater relative responsibility placed in the men, and the more natural and congenial mode of life, that arrests crime in the cavalry and artillery. How important then is it, in the absence of interesting occupation in the infantry service, to procure men equal in mental qualifications to those in the artillery and cavalry, to afford some means of counteracting the listlessness of infantry service. Apprehensions respecting the admission of mechanics and natives of towns into the service are without foundation. Citizens and artisans are as capable of good behaviour as agricultural labourers. Out of 88 non-commissioned officers in the 59th regiment in 1845, 45 were labourers, colliers, and servants, the rest tradesmen and clerks.* The militia were acknowledged to be in the war time a very respectable body of men, collected by ballot uniformly throughout the country; each parish (town and country) furnishing men in proportion to the population. In the evidence taken by the Commissioners to inquire into the System of Military Punishments, are scattered opinions highly favourable to this body of men. Their conduct is mentioned to have been very excellent, and their physical capabilities were still better, in reference to those of the men raised for the regular army. Among the militia-men must have been many respectable individuals, capable of reading and writing; and universal testimony goes to show that, instead of being seditious and turbulent, they were the best *personnel* for the line. The constitution of armies is so peculiar that there are seldom or never developed in its members political parties. The British army, in particular, has always been indifferent to politics, to "strikes," or any lawless movements in the people; nor has it ever engendered any mutinous conduct within any branch of itself; at least any such that can be proved to result from education. An army not in *active operation, to maintain it in a relatively healthy state*, must be better educated than that in the field, where soldiers more nearly support the character of the Roman Exercitus, which derived its name from its habits.

Education, it is plain, can better be dispensed with in an army on active service than in quarters, where it requires some resources to while away the listless hour. To suppose that sufficient occupation can always be provided for

* Under the head of "Labourer," are often included men of more intellectual occupations, as apprentices, &c. In the above number of labourers there were errors to this effect, and in favour, consequently, of the argument advanced.

the soldier in the interim, and even during many, of his ordinary duties, is contrary to experience; especially in the various strange and remote stations an English soldier is doomed to serve in. The duty of an infantry soldier is so monotonous too, that he especially requires some relief from its tedium, which perpetual drill and exercise will not remove, but indeed rather aggravate. Marshal Marmont, in his "Spirit of Military Institutions," says, "that military exercises are undoubtedly the first elements of that system, [activity] which I am now advocating, but they are not the only ones. The soldier must first acquire a thorough knowledge of all his military duties, but when he has accomplished this, to continually occupy him with details he is perfectly acquainted with, and which can teach him nothing more, is the infallible means of disgusting him with his profession."*

Education makes an important difference in the social position of the soldier; when educated and intelligent, his civil friends are selected from among the better order of the community; but when ignorant, the only acquaintances he has a chance of forming are the dissolute and outcast, who only add to his obloquy. It has been asserted, but not proved, that artisans are inferior, both in physical and moral qualities, as soldiers generally, to agricultural labourers. As far as moral qualities are concerned, it may be mentioned, that, as half the non-commissioned officers in the 59th regiment were "mechanics" and "clerks," and if two-thirds of the army are labourers, the class of artisans would appear to supply double the number of non-commissioned officers the labouring class do, if every corps could shew the same result.

It has been observed for a long period past in military history, that there are fewer punishable offences among those troops who are the best fed and clothed, whose duties are least artificial, or more consonant to nature's laws, whose moral standing is highest—the cavalry, artillery, and sappers and miners; and that there are more in those whose services are worse paid, are the most intense, most artificial, whose clothing and diet† are relatively inferior, and whose social indulgences are the most stringent and arbitrary—the infantry. It is very generally maintained, that the exercise of this extra stringency towards the infantry soldier is the result, and required by reason, of his inferiority in class in society. Every due allowance and consideration being conceded on this score to the men composing these higher branches of the service, there is not, nevertheless, so much difference in the social character of cavalry and artillery recruits as to be the *sole* cause of their good behaviour; there is no positive proof to warrant such a conclusion, and the supposition is much shaken by the fact, that the system of recruiting in the English army makes no distinction of class in admitting recruits into any of its branches; and that volunteers

* United Service Magazine, June, 1845, p. 225.

† The rations issued to the infantry are the same as those to the cavalry and artillery, but the latter having better pay always contribute more towards their messing than the infantry in the British army.

rather select the infantry to serve in in foreign armies. There is a general lower standard of intellect probably in the infantry, from inferior physical developement, and consequent lower standard of morals, than in the cavalry and artillery. Many infantry recruits having been badly fed, their intellects have remained unexpanded, although it is possible that many can read; but as *intellectual* education is not always *moral*, it is to be feared that that accomplishment is but too frequently, a morbid one in ill-conditioned recruits. The leniency shewn towards the cavalry man, artillery man, and sapper, results from the greater bodily exertion required of him, and hence the vulgar idea of his greater *hardship*, but really only wholesome exercise, which would do the foot soldier much more good, than his stiff sentry-work, unbending parade, &c.

I have always been convinced that there are powers at work which produce desertion and other crimes and delinquencies besides a man's own choice, or free will; for if not, why should not these occur as much at one time and place as at others? which they do not; but at certain seasons, in certain regiments, in certain places. The science of Military Economy, as yet in its infancy as regards these things, should rank among the positive rather than among the empyrical sciences. Were Returns made out at regular periods, to illustrate the relative prevalence of desertion and other crimes in different arms of the service, in different seasons, and under other circumstances, to try and discover what favours and what counteracts the commission of various offences, some more positive information would be acquired. I admit that *individuals* are instigated to desert by *specific* motives, which are the reasons assigned to account for this and other offences in the army, and which the modes of correction, not *prevention*, in use, fully prove, are supposed to be the causes. But *all* desertions are more or less favoured by further *general* causes, which should be sought for, prior to private reasons—as various as those that *lead to enlistment*. It is, therefore, presumed that some instructive deductions could be drawn from such Returns, as those proposed respecting the developement of the crime of desertion, drunkenness, absence, and other offences, both general and local, in this class of recruit and in that. I believe that desertions, like other offences, fluctuate by seasons, and even in different years, and vary frequently in different branches of the service. Such Returns would offer opportunities for further remarks as to the indications of cure of this moral disease in our service. When facts are known the causes will be investigated, and a general law will be evolved. For example, we should see whether desertion seems proportionately more frequent among labourers or artizans, among indiscriminately-enlisted men, in those recruited within their own native places, or when absent from home, among those enlisted in manufacturing towns, or rural districts.

Many effects which appear to be accidental, cease to be so when the observations are extended over a large number of facts; and as Quetlet remarks, "the

liberty of choice (free will), whose results are so capricious when individuals only are observed, leaves no sensible traces of its action when applied to multitudes" Hence the important law is adduced, "that social facts, influenced by liberty of choice, proceed with even more regularity than facts submitted simply to the action of physical causes."

To shew the various shades and degrees of moral character of the men who pass through the ranks of the army annually, an enumeration of how many are required to fill up the vacancies caused by desertion, blank discharges, discharges with ignominy and transportations, invaliding and deaths, should be periodically made. If we cannot control all the causes that lead to these vacancies, it may be presumed that by increasing the chances of obtaining better recruits they might be diminished. Besides shewing at one glance the actual number of each class we have to deal with every year, we might, with close examination perhaps, be assisted by it in devising means to avoid some of the *criminal* discharges and to diminish the number of desertions, if it did not indicate that by the proposed system of *recruiting* alone a fewer number of men would pass through a regiment annually than under the present one, and consequently dispense with fewer recruits, nor have a better army.

The chief object to be sought for when an army is recruited by voluntary enlistment is, by fostering and husbanding its nursery, to check too great a draining of the youths from among the populace; so as to provide as much choice of men as possible. By looking over the rate of desertion in the several arms of the service, there would appear to present themselves obvious preventible powers.

Upon the authority of a correspondent of the United Service Magazine for December, 1843, it seems that "during the half year ending 31st August, 1843, no less than 1510 deserters appear in the War Office List (published in the London Police Gazette), giving an annual loss of upwards of 3000 men by desertion, upon a force of about 43,000 in the United Kingdom." The deserters from the cavalry during the six months over which the observations extended were 70, or, in round numbers, 8 per 1000 upon an average force of about 9000 men. Those from the artillery were 20, or 5 per 1000 out of an average force of 4500. The number from the foot guards were 33, or 8 per 1000, leaving 55 per 1000 among the infantry of the line of an average force of 25,000 men.

In general terms we may assume a force of 25,000 infantry

of the line to lose annually by desertion	2774	men
That of 9000 Cavalry	140	ditto
That of 4500 Artillery	40	ditto
That of 4500 Foot Guards	66	ditto
Total	3020	men

According to the rate of desertion in the artillery a force of 25,000 would lose annually but about 222 men, instead of 2774, as the like force of infantry of the line does; and an equal force of foot guards 365 in place of 2774; and the same force of cavalry 311 men.

By adding another source (mortality) of loss of men to the above figures we see another contrast:

25,000 Artillery (at home) will lose annually by desertion	222 men
By death	388 ditto
Total	610
25,000 Cavalry (ditto) will lose annually by desertion ...	311 ditto
By death	363 ditto
Total	674 ditto
25,000 Foot Guards (ditto) will lose annually by desertion	365
By deaths	525
Total	890
25,000 Infantry of the line (ditto) will lose annually by desertion	2774 ditto
By deaths	525 ditto
Total	3299 ditto†

If we extended the calculation to the discharges of all kinds, it is more than probable that they would be found to be far above what occurs in the artillery, cavalry, and foot guards, especially as it is a much more prevalent custom in the two latter in particular to purchase discharges, than in the infantry of the line. I think, at a rough estimate, it may be said that were a force of 25,000 infantry of the line to lose on account of death, desertion, and the various forms of discharges (exclusive of those by purchase and invaliding) 4000 men, a like force of foot guards would lose but 900 men. The cost thrown on 25,000 infantry of the line to recruit, in a given time, the addition of 3100 men over and above the 900 men only required by a force of 25,000 foot guards would be very great, including levy money, recruiting and drilling.

Although a great number of deserters re-enlist unknown into the service, yet desertion is a source of weakening its ranks. The *particular* impulses to desertion will be more or less active according to the amount of activity of the *general* causes, facilities and prospects of escape. In Canada, for instance, where desertions are on a *sweeping* scale, the men will desert from the infantry of the line gregariously, whilst the soldiers in the artillery and foot guards (when the latter

† I have put down the rate of mortality in the infantry of the line the same as that in the foot guards, and not at the rate it is in the West India *Depôts*, as it is highly probable that in these *regiments*, taking one with the other, it is equal to what prevails in the household troops.

were stationed there) under the same discipline, and with more doubt as to the ultimate good of deserting, would desist.

It is very certain that a soldier is more contented in the cavalry and artillery. An artillery man in Canada told me "that the men in his corps did not desert, because they were well off, and did not wish to be better off." Were all soldiers placed on the same pay as artillerymen and cavalry there would be less desertion and other crimes, although, when they desert under sudden impulse, they do not, nevertheless, do so because they are dissatisfied with their pay or position, but think they may better themselves, and shun a state of discontent.

Upon the question of pay of the soldier, it is not inopportune to introduce here a paragraph from Macaulay's History of England: he says, "It is evident that, in a country where no man can be compelled to become a soldier, the ranks of an army cannot be filled if the government offers much less than the wages of common rustic labour. At present, the pay and beer money of a private in a regiment [infantry] of the line, amount to seven shillings and seven pence a week. This stipend coupled with the hope of a pension, does not attract the English youth in sufficient numbers; and it is found necessary to supply the deficiency by enlisting largely from among the poor population of Munster and Connaught. The pay of a private foot soldier in 1685 was only four shillings and eight pence a week; yet it is certain that the government in that year found no difficulty in obtaining many thousands of recruits at a very short notice. The pay of the private foot soldier in the army of the Commonwealth had been seven shillings a week—that is to say, as much as a corporal received under Charles II. and seven shillings a week had been found sufficient to fill the ranks with men decidedly superior to the generality of the people. On the whole, therefore, it seems reasonable to conclude that, in the reign of Charles II. the ordinary wages of the peasant did not exceed four shillings a week; but that, in some parts of the kingdom, five shillings, six shillings, and during the summer months, even seven shillings, were paid. At present, a district where a labouring man earns only seven shillings a week, is thought to be in a state shocking to humanity. The average is much higher; and in prosperous counties the weekly wages of husbandmen amount to twelve, fourteen, and even sixteen shillings." As a set off against the suit of clothes also a soldier is annually provided with, it must not be forgotten that he has a great number of contingent expenses—small in their items, but large in the aggregate—to pay towards clothing and equipment chiefly, and that the labourer is at liberty to choose the most inexpensive articles of clothing, and to keep them in but rough repair. That good pay would be an allurement to a better class of men to enlist, and an antagonism to desertion, is most certain, and that they would make better use of it than a lesser pay, if comparison with the conduct of those troops already well paid can be permitted to be a fair one, is equally so.

Under the present system of recruiting many men enlist who never would have been permitted to do so had they not been required by the scarcity of *other* recruits. Many of these recruits, who enlist to escape the law, to avoid starvation, or to gratify some pique, are not intended by nature to be soldiers, for nature has marked her men for soldiers as for other occupations. Many men intended by nature for a soldier's life, do not enlist because enlistment is not in their way, and had they joined the ranks of the army, they would have been found to have more pride in avoiding crimes, and to have more courage in bearing punishments, than those never designed for the service.

The habit of emigration is now so general, that the spirit of local attachment, which was stronger in former days, has no weight with the modern British. With impatience to change their position from one place to another, the English quit the land where they were born, and march forth in a body to establish new settlements in other regions. Cannot this enterprising spirit of England's stalwart youth be diverted into a channel for the more immediate prosperity of the country by holding out honourable service in her army? Cavalry, artillery, and those select portions of infantry, to which in the kingdoms of Europe is applied the term of "guards," are more highly estimated than infantry of the line, and are a rank of soldiery possessing considerable precedence over others in every country. These considerations are not unworthy of notice; especially when it is hinted at that recruits often *suppose* themselves to have selected the cavalry or artillery, and, on discovery that they have been recruited for *general service*, desert from the infantry of the line, which to them has neither the attraction of a dashing service, nor that of association with their counties—the greatest balm to many a recruit, who is otherwise plunged into complete helplessness, where yesterday had no connexion with to-day's work, where there was nothing to remind him of his former self, only that his wish to wander forth to fairer scenes was now exchanged for a sick-heart longing after home, in which state many have pined away or deserted. These circumstances would suggest the plan of augmenting the more attractive corps, to include men to whose tastes they are more suitable than the general corps of the service.

After completing the cavalry and artillery to the highest strength required, the most feasible scheme for embracing men of good pretensions into the service would be to place some of the senior regiments, as far as the pay of the *men* goes, on the same footing as the guards, to dress them handsomely, and to designate them by a title equal to their claims. The trial of withholding the offer of "bounty," as being an unnecessary attraction to such men, might be made in raising a corps of *élites*.

Influence of Local Association on the success of Recruiting, and Character of Recruits.

The Establishment of associations between regiments and counties or localities appears to have fallen much into desuetude, if it ever existed more than at the present day. The order to asume local titles was issued to the infantry regiments in 1782, when they were desired to cultivate acquaintance with each county, so as to create a mutual attachment between the inhabitants and the regiments, which might be useful towards recruiting a corps. The best way to bring about a conexion between a county and a regiment would appear to be to station in a certain locality, a tolerable large party of men, with a few musical instruments, not omiting the drum, emblazoned with the arms of the county town, mottoes and devices of the regiment, who should attend at the different parish churhes and endeavour to mix with the inhabitants in a more sober manner than at the fair and tavern, and likewise to post placards on the doors of the parish churches, announcing "that a few young men of good character are wanting to fill up vacancies in the Royal Welch Fusileers." As enlistments are governed materially by associations, recruiting parties from the *same* certain set of regiments should be kept more or less constantly moving in the same locality, to maintain communications with those regiments, and to afford opportunities from time to time for recruits to enlist into corps where their former associates and country-men would be found. The men composing recruiting parties should be natives of the localities where they are to recruit. Such men have better chance of success; and have better opportunities of knowing and learning the qualities, physical and moral, of the recruits—at once securing a more sound recruit than a stranger, and diminishing the rate of rejections. The English army raised by voluntary enlistments indiscriminately from amongst the populace is less likely to be characterized by good morals than a conscript army, in which case, in addition to the good effect of a large mixture of the better class in its ranks, probably the youths from a certain district are placed in one and the same regiment, or at least part of them we may suppose, thereby affording officers some clue to a man's character from his comrades and immediate compatriots. Now in the English army *generally* it happens that no one knows who the other is, or where he comes from; every man comes from a different place, and he may be, and often is, a thief, or robber, or abandoned character without the knowledge of the other. Were regiments recruited from particular localities *perpetually* such admissions into them would be obviated, as every person would be known, and could be rejected or admitted optionally. Previous to the late augmentions of the artillery corps it was not the custom to admit into its ranks men of whose private history *nothing* was known, as I was recently informed by a field officer in that

regiment. These facts would appear to accord with some other considerations. Were it known where a man came from, and that he was respectable, officers would have confidence in more slightly punishing him, than another who was not known. A recruiting system should fully accommodate itself to the military enterprise of a nation, and avoid seeking its recruits from amongst the most ignoble, the most ready to offend the laws. I consider that our military service even now, although it might be improved, is so attractive as to induce the *very best* men, who deem it fame to be a soldier, and they are in all ranks of life, to enlist were the opportunities on a basis rather to favour *them*, than positively to repel the *less eligible class*.

Indiscriminate recruiting leads to the enlistment of men of bad character, as London and other thieves, who abound in many regiments, and men turned out of the service, who re-enlist in proportion to the diminished chances of detection —*in large towns*;—we should depend less upon stragglers entering at the impulse of the moment and for temporary gain, and without motives of permanently remaining in the service, to recruit our regiments on emergency.

To keep up the *esprit de corps* conjointly with the spirit of local association it is the more essential that corps should be raised in different counties. From the greater sentiment of honour and loyalty with which such corps would be animated, they would, by their moral weight alone, keep in check that crowd of discontented persons who always exist in our regiments.

The present system of permitting voluntary enlistment into the militia regiments adds a link to a chain that leads to a firmer association of civilians with the soldiery who may be stationed either in garrison, on furlough, or on the recruiting service, and who invariably have a fellow feeling with their kind. The recent raising of the militia has, I understand, instilled very generally a desire amongst the men to enter into the line, and may yet lead others, besides those who enter the militia, to enlist into the army. The ascendant power of local association in recruiting an army I think may be seen in the instances of the men in the present militia regiments joining together so readily in *counties*: had they been required to volunteer *singly* for a *distant and unknown* regiment would the regiments have been so promptly recruited? By recruiting the army from among the militia the value of the regular soldier's berth would be enhanced, objectionable persons would be kept out of the service, and a simplicity in the recruiting system established.

The influence of local association may be still further strengthened, and the good conduct of recruits preserved. From the recent system of raising and drilling the militia it is a fair inference that the same results, which has followed that plan, would occur in as similar a one as feasible in recruting for the army. From reports in the public journals it would appear that every militia regiment had obtained its complement of men, and the same journals report the conduct

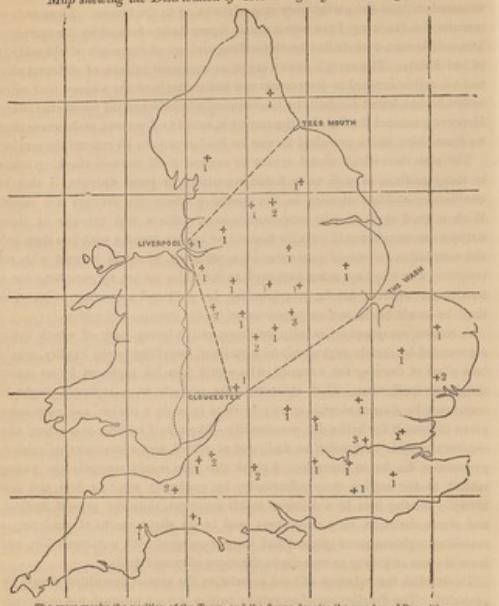
of the men to have been, on dismissal, most moral. The militia men have volunteered without the preliminary step of resorting to the tavern. Thousands of recruits for the army have never drank liquor before enticed by the recruiter. The militia men were drilled by themselves, and out of the reach of old soldiers of bad habits. The recruit joins a regiment composed of men of different characters, and is exposed to temptation and bad example of the vicious, that often before he has learnt his drill, he has acquired the habits of the worst characters. Hence is presented the fact that the recruit is, even in a few years, made worse than we found him, and is punished for sins he has learnt since he entered the service.

The plan then which would appear to suggest itself towards checking crime in many soldiers, as well as to foster recruiting in rural districts, is that of establishing drilling stations in the localities where the recruits are raised. With a good staff of drill non-commissioned officers and privates at these stations the recruit would pass his first six or twelve months with less than half the temptation he would encounter in a regiment, where he is beset with old tempters, who leave no stone unturned to lead him astray, by *permitting him to treat them*: whereas, did he join knowing his drill and appearing as smart as they, he would be far less easily *patronized* by the cunning old soldier.

A station composed of cavalry, artillery, and infantry, each of which being represented by certain regiments and battalions, recruiting in the locality, would be a place of *learning* for a recruit, who would join his regiment by no means simple or ineffective. That strictness that prevails in a regiment might in a measure be dispensed with among recruits in such a station, and permission given to ramble for half a day occasionally—like a half holiday to a school boy —after agreeable occupation at drill and at school, and amusement of cricket, gymnastics, &c. &c. in barracks. I think this plan would reconcile the young recruit to the service more effectually, by gradually weaning him and less abruptly forcing him to a distance to his regiment, than the present method, and check desertion very much too: and be no slight means of rendering a marching regiment more efficient and less encumbered with untutored files, and leave it more at liberty to exercise in the more advanced drills.

To establish the influence of local association the area of recruiting should be extended. The distribution of recruiting parties is very unequal, not only with respect to extent of territory, but to population as well. From examination of the distribution of recruiting officers for some years, it is seen that they have been generally confined to the larger towns, and especially to those in the manufacturing districts. A line drawn from the estuary of the Wash, as is illustrated by the accompanying map, on the east coast of England, to Gloucester, from thence to Liverpool, and in a north-easterly direction to the mouth of the Tees, on the eastern coast again, and down to the point started from, will include an area of about a fourth part of England and Wales, wherein were

Map shewing the Distribution of Recruiting Officers in England.



The cross marks the position of the Town, and the figure denotes the number of Recruiting Officers stationed there.

distributed twenty-two recruiting officers and their parties, exclusive of those employed by the Company's service. In glancing over the map of England and Wales it is apparent that these parties are situated in a very circumscribed space, and on each boundary have broad lines of demarkation.* On the

* The head quarters are, York, 1; Leeds, 2; Bradford, 1; Sheffield, 1; Manchester, 1; Liverpool, 1; Chester, 1; Newcastle-under-Lyne, 1; Shrewsbury, 2; Wolverhampton, 1; Birmingham, 2; Coventry, 1; Leicester, 3; Derby, 1; Nottingham, 1; Lincoln, 1; and Gloucester, 1. The numbers opposite the name of each town denote the number of recruiting officers at the station.

northernmost boundary of this area are situated two recruiting officers and their parties.* On the western boundary, Wales, there were no recruiting officers' stations; on the southern side there were at present twenty-four recruiting officers stationed at different points.† These lateral portions of the country form about three-forths of England and Wales. From this distribution, then, it is seen that a fourth part of the country was supplied by twenty-two recruiting stations (head quarters), and that three-fourths were supplied by twenty-six officers and their parties; a very unequal proportion both in respect of territory and population. This inequality is not confined to those divisions of the country, but again to sub-divisions, or head quarters of recruiting officers. It is very well known that in hundreds of towns and villages no recruiting parties ever appear; their haunts being much confined to the larger towns, where they congregate thickly, seeking recruits from among parts only of the population, and not from it generally. That there are opportunities for enlistment more equably throughout this portion of the United Kingdom, when the stations of troops are taken into account, is true; but the enlistments that take place at head quarters of regiments and depôts are so few that they scarcely deserve notice. Wales contains a population of 912,503; Yorkshire about 1,500,000. In this county there were four superintending officers of the line, and one of the Royal Marines, with, probably, the average number of five parties under each, making twenty-five parties. As, therefore, 1,500,000 is supplied by twenty-five parties, 912,503 ought to be supplied by about fourteen, whereas it is supplied by none, except occasionally. A few years ago the 23rd regiment sent a party into North Wales for some months, and now and then parties go into South Wales; but generally parties approach the borders of the Principality only. From the statistics of recruiting for the year ending 31st March, 1844, Wales produced only 167, and for the year ending March 1845, only 141 recruits; whereas Scotland produced 2061 out of a population only two-thirds greater than Wales.‡ It will easily be seen from this that Wales ought to produce, in proportion to Scotland, about 700 men annually for the service, and thus relieve in some degree the remainder of the United Kingdom from being drained of lads often weakly and, when on emergencies the standard is lowered, short. The same disparity in the raising of recruits may easily be inferred to take place in other localities in England, if taking the position of the recruiting officers is a criterion, which it is plausible to do after what has been shown with respect to Wales. Habit has considerable influence over everything—recruiting as well. Recruiting parties, from all the sources that I have been able to gather

* Newcastle-upon-Tyne and Kendal.

† The stations are these, Norwich, 1; Bury St. Edmunds, 1; Ipswich, 2; Hertford, 1; Chelmsford, 1; London, 3; Kingston, 1; Tunbridge, 1; Horsham, 1; Reading, 1; Aylesbury, 1; Oxford, 1; Salisbury, 1; Bath, 2; Bristol, 1; Yeovil, 1; Taunton, 2; Exeter. 1.

‡ The population of Scotland was according to the last census 2,620,610.

information, remain very much in the same place, and drain therefrom too much of the refuse population. The manufacturing towns in Yorkshire, Lancashire, Staffordshire, Notts, and Warwick, are crowded with parties, when it would appear from the map that large tracts of country in the north, east, south, and west, and particularly in Wales, are not nearly so thickly studded with them as the circumscribed manufacturing districts. To show how circumscribed parties are placed, it may be mentioned that out of four under Lieut. Reynolds at York, two were stationed at head quarters (York), and two were detached. At Leeds, there were under Lieut. Connor, four parties and only one detached. When Capt. Peebles, 59th Regiment, recruited in Birmingham he had ten parties under his charge; five stationed in Birmingham, and five detached. But the number of parties under his charge fluctuated. At one time he had thirteen; seven detached, and the remainder at head quarters. These intances can be multiplied if there were further occasion. The effect of this crowding of parties is unprofitable; time and money is expended in recruiting men who are ultimately rejected.

Out of 152 recruits examined by myself in Ireland during the first six months of 1838, 53 were rejected. Not being positive as to the fact, I have, nevertheless, strong reasons to suppose that generally a third of the recruits enlisted are rejected on account of physical incapacity. Dr. Armstrong mentions it as a fact, told him by Sir J. Mc'Gregor, "that out of 613 men enlisted, almost all of whom came from Birmingham, and five other neighbouring towns, only 238 were approved for service." Thus reversing the picture—*one* third approved and *two* thirds rejected.

It would appear that one third of the recruits enlisted annually are rejected as physically unfit. I have no data for further shewing this, however, except what is afforded by the statistics of recruiting for the year ending March 1845, when the following was the statement made out, *viz:*

Recruits furnished by England	7145
... Ireland	4009
... Scotland	2061
... Wales	141
Total	13370
Rejected	4146
Fit	9224
Of the above were furnished by Husbandmen, Labourers, and Servants	8277
Mechanical Trades	4083
Shopmen and Clerks	982
Professional Occupations	21

In addition to the evidence quoted above from Dr. Armstrong, it may be mentioned that in the Leeds district, which includes a vast manufacturing population, half the recruits examined in 1844 were rejected.

The distribution of recruiting parties is not only out of proportion to the population, as it has been said before, but likewise to the number of persons eligible for enlistment. On the average of the whole of England (proper), taking the manufacturing and agricultural districts together, there are nearly the same number of males between the ages of 15 and 20; but as there is more sickness in large towns than in suburban and rural districts, it is evident that there are more persons between the above ages, in proportion to the population, who would present themselves for enlistment in the latter than former. There is an excess of males between the ages of 15 and 20 in favour of Wales; there being for England (collectively) 688 in 10,000, and Wales (collectively) 1009 in 10,000.* The chances are more in favour of districts, scattered over with small towns and villages, in producing good recruits.

An excess of available young men often occurs at different seasons in the rural districts, but especially in winter, when employment is scarce. This is almost constant to a more or less extent; when, on the other hand, depression in trade and want of work in the manufacturing districts occurs at uncertain periods, and for a short time only. The advantages afforded to recruiting by critical periods in trade and agriculture have often shewn themselves. During the Chartist riots a great many men enlisted in the manufacturing towns from want of work.

The rate of wages in a county must influence the success or failure of recruiting: when wages are low and the labour market full, recruiting will be successful no doubt; when wages are high and the market thin, we should presume that recruits are more easily procured for the best paid services, such as the foot guards, cavalry, and artillery. The class of men in different localities, and the rate of wages in each county should be known to the recruiter, and their fluctuations watched.

By statistics of these and other things, rendered periodically from each military district and county, information would be afforded of when most recruits are obtained, and where are the places that do not furnish them—enabling advantages to be taken of the one, and measures to be adopted to encourage recruiting in the other.

The importance of recruiting parties spreading themselves out more equally, is evident, as it is by this only that they can bring themselves in contact with a greater and better portion of the population, who may be disposed to enlist. The plan could be carried out with very little increase in the number of parties. From the densely populated districts, where the standard of health is not so high

* Annual Report of Registar-General, 1841; pages 66 and 67.

as in the rural, and where the number of available recruits may *relatively* be more than in the latter, but is *absolutely* less, some parties may be withdrawn, and, with some few additional, may be distributed over the remaining more equally populated portions of the country. The advantages to be gained by the plan would compensate for the increased means for its adoption. Recruiting restrictedly in certain localities must lead to a greater number of rejections, than if it was done more equally. A larger sphere, then, cannot fail to produce a more eligible description of men. The proposition, further, will have for its object, not the less the improvement of the physical and moral power of the army, than the readiness and facility of its recruiting.

That recruits may be raised in remote places, where no soldiers or recruiting parties have been stationed for years, may be inferred from the experiment made by the 23rd regiment a few years ago in North Wales, where, upon a single trial, a tolerable number were procured. At first there would be a difficulty, probably, in raising men in those remote places; but upon a little perseverance many would be found to take advantage of the opportunity to enlist on occasions of slackness of labour. But the chief object is to lay a foundation for enlisting in places hitherto unprovided by recruiting parties. Until this is done, recruiting will not be successful throughout the country. Enlistments are governed as well by associations as by recklessness and choice. Young men generally wish to enlist into corps or services, where they would find acquaintances from the same part of the country as themselves. The circumstance of a young man having a friend in a particular regiment, often determines any hesitation in enlisting, and the service is readily supplied by a willing man. There would appear to be as much spirit of enterprise in the rural, (*i. e.* the inhabitant of small towns, villages, and the country, and not exclusively the agriculturist) population, as in that of large towns. Many good men come from country places into busy towns, and there enlist, merely because enlistment is in their way. Indeed, in many country places, there is as much, if not more, martial feeling among the population as in that of large towns, where young men enlist, often more from recklessness, than from any enterprising feeling. There is no doubt, that during the war men volunteered from the militia, as often from a spirit of enterprise, as from sordid love of bounty, however mercenary soldiers are said to be. In remote parts of the country known to myself, and where no soldiers are ever seen, I am aware of several instances of enlistment after leaving home for large towns, and these with provident foresight into the best branches of the service.

By extending the opportunities for enlistment, greater scope is afforded for selecting good recruits. The productiveness of recruits in the London District must greatly be attributed to this principle. In the metropolis and neighbourhood the population is less stationary than in the provinces; and here the wanderer resorts from the remotest districts. Recruits raised in and around the

metropolis are probably the best brought into service—the cavalry procuring their men in great abundance from there.† The less dense the population of a given territory, the more stationary its inhabitants. To come in contact with every inhabitant, recruiting parties should be more numerous, in proportion to the population, in the rural than in the town districts.

Recruiting more generally in the less populated districts would be attended with further good results. As education is becoming more disseminated through the country, more intelligent men can be procured. In remote places it is presumed that men have better conduct, from the greater facility afforded for observing their actions than in crowded towns, where men are not so careful of their behaviour. Although more eligible recruits, in physical points, can be raised in proportion to the number of inhabitants in rural, than in town districts, yet the inhabitant of the town, if of the required physical qualities, is always equal, and very often better than the countryman. The majority of the inhabitants of towns are handicraftsmen, and are always more intellectually occupied than the agricultural labourer. The influence of occupation a man has been subject to before enlistment, cannot be of such a nature as to make material alteration of the frame without being observed. He will have quitted his trade too early to have suffered in physical qualities from any peculiarity of it. The quantity of labour a soldier has to undergo in time of peace and in garrison, is not such as requires much exertion. But of two men of equal natural powers, the one,—the agricultural labourer,—accustomed to continual hard work, will bear more than the other—the artizan,—unaccustomed to such employment. An army of agricultural labourers going into the field will, no doubt, last longer than one formed of artisans, provided both entered immediately on their formation, and before they had suffered from the effects of a soldier's occupation. It has been long observed that the effect of a trade followed before enlistment is no more perceptible in the soldier, from the beginning to the end of his career, than that of agricultural labour. Artisans and agricultural labourers equally experience the depressing influence of soldiers' duties, but the latter experience, in addition, the want of *active* exercise, chiefly, however, in the infantry. Artisans, even in the very largest towns, when in full employment, are as healthy as field labourers. And although mortality is actually greater in manufacturing districts than in those where the population is chiefly employed in agriculture, it is at the same time discovered to be mainly due to inequality in the tide of occupation. The Registrar General has sufficiently shewn, that disease is generated in the country by poverty and ignorance more than by the nature of occupations. Artisans are, I am aware, condemned as generally stunted in growth, feeble in constitution, &c.; this may be very true as far as respects workmen in confined places in the large manufacturing towns, but as to its being applicable to all the artisans of large

† The only officer of cavalry recruiting is stationed in London.

towns, is a very wrong notion. There are many strong men employed in mechanical trades in Manchester and Liverpool; and as it is not the "weaver" only that is enlisted in those towns, it is not fair to denounce all the artisans as unfit to be soldiers. The argument respecting the ineligibility of artisans to become soldiers is not tenable even as regards those living in large towns; and as to those inhabiting the smaller towns is still less so. It is too often the fashion to generalize all artisans as a species of "weaver," or "penned-up-artificer," a habit detrimental to the interests of recruiting, and which arises from the system of recruiting being so much restricted to manufacturing districts, where so many are brought up for examination, in proportion to the population, that rejections are very numerous, and hence the hasty conclusion that *all artisans* are deformed, emaciated, and altogether unfit for the duties of a soldier. The rustic labourer makes an unskilful and unhappy soldier in garrison, in time of peace at least, and is not better than even the "*low squalid mechanic*," who should always be avoided. The animal strength of the former is as soon exhausted as that of the latter under the oppressive influence of a military life, and his boasted strength cannot prevent his being replaced as often as the manufacturer.* Recruits raised in agricultural districts are often listless and heavy, have not the sprightliness of men of more intellectual occupations, raised in and near towns, and are consequently unable to resist the *depressing* powers of the service, but give way to dissipation and negligent habits. The standard of education being lower in the rustic than town population,† the amusement of reading is more often debarred the former, and recourse to less mental amusement is the alternative. The aptitude of the common "rustic" for acquiring his drill is acknowledged not to be equal to that of a handicraftsman: nor can he so well comprehend the good intentions of his superiors for his welfare, nor anticipate them in accomplishing designs for their mutual and public benefit.

Influence of a Standard Height on the Physical Capacities of Recruits, and Success of Recruiting.

The more spread out our recruiting parties, the better the chances of keeping up the whole strength of the regiments at a good height; for it is at length discovered that the short and slight men are not so well adapted for the soldier's duties as the taller and heavier men. A few years ago (1849) it was discovered, in consequence of having lowered the standard, on augmentation of the army some

* From the Statistics for the last two years, it is seen that about two-thirds of the recruits were labourers' husbandmen, and servants, and I believe this proportion has continued for many years.

† Education is becoming now, however, more general in the country.

time before, that the marines had not the weight or muscular strength of men of about the standard of 1830. In fact, a detachment of a frigate of about that period had more weight in hauling on a rope than the whole detachment of a line-of-battle ship of later dates. Lowering the standard for artillery and cavalry recruits brought into the army a large mixture of puny and undeveloped men.

The lowering the standard height of cavalry, a few years ago, had for its object the acquisition of lighter men, it being found difficult to obtain horses strong enough to carry men of the former standard. Were the system of recruiting more extensively spread out over the land, there would be less occasion for lowering the standard on emergencies. By excluding tall recruits from the cavalry, the army loses a very large number of the most eligible men; and, considering that tall men and large horses cost but the same as others something smaller, there is further lost the heavier weight of the former, in a body of equal numbers with the latter, in a charge, whether against an opposing force of horse or squares of infantry.

In order to discover the relative strength of recruits, men of the *same height* should be classed together, and their girth and power tested. *Short* men should be of a certain weight. It would be impolitic to reject *all short* men: their selection and rejection should be determined by their *weight*.

There must be a great accumulation of facts contained in regimental and district registers of recruits, and which, by reduction into certain parts, would establish principles of important value in the recruiting department. From these documents, a statistical calculation of the sizes of recruits in different counties, and of the relative prevalence of a low standard of height in different localities, as a cause of rejection in recruits, might be made; thereby indicating to us where we should look for recruits affording the efficiency of height. One county, where the men run short, may contribute a smaller quota of recruits than another to the army or marines, in consequence of a fewer number coming up to the standard height. The sizes of the various regiments of militia now enrolled would be a criterion of the average height of men in different counties.

With respect to what should be the fixed height of soldiers, there is a little discrepancy of opinion. The exact meaning of authors on the subject, is, at least, difficult to be determined: some would say that tall men are most liable to disease, and that little men resist it longer; others, again, remark that a certain height is coincident with a generally healthy constitution, and *vice versa*. Professor Lévy, physician to the French forces, says, that "the corps of the French army, which comprise the picked men, are the artillery, engineers, sappers and miners, &c.; they are selected solely because of their higher stature, the regulation height six inches (French), or nearly one-tenth above that of the infantry of the line. These select corps not only present fewer cases of sickness, and have a less proportion of deaths than the infantry, but Professor Lévy says, it is impos-

sible to glance along the lines without being struck with the difference between the two classes of troops*." There is, no doubt, great truth in this; but, in opposition to M. Lévy's opinion, I think that the superiority of health in the artillery, engineers, &c. must greatly be attributed to the better physical condition generally of these troops, both in the French and English services, than of the infantry of the line, in which there are as many fine men as in the select corps; as, for instance, in the light and grenadier companies and regiments, and, indeed, throughout the battalion companies, especially in our service. In three regiments of infantry of the line, in Portsmouth, in May 1845, whose aggregate strength amounted to 2,546, 1,209 were 5 feet 8 inches and upwards; 704 were 5 feet 7 inches; and 633 were below this stature. The night duty of the infantry, with indifferent means of resisting disease, is much greater than in the artillery, whose occupation in the day is much more natural, and must create a difference between the branches of the service. The foot-guards certainly present bad specimens of the effect of a military life upon tall men. But it must not be said that they fall a sacrifice to their height, but to causes incident to the service; some of which have already been set forth in articles on Military Hygiene, published in 1844.†

The subjoined interesting Return, kindly provided me by Captain Orange, staff-officer of pensioners at Halifax, may throw some light upon the influence of height on longevity and health. It shows the average age, height &c. of the enrolled pensioners at the stations named in the Return. This Return

Station	Cavalry	Infantry	Artillery	Total	Average Age	Average Height	Year
Chester . .	5	40	3	48	$46\frac{1}{2}$	5ft. 8 in.	1844
Halifax . .	4	63	2	69	$47\frac{1}{12}$	5 8	1845
Bradford . .	7	43	3	53	$48\frac{7}{12}$	5 $8\frac{1}{4}$	1845
Burnley . .	3	15	6	23	$46\frac{8}{12}$	5 $7\frac{1}{2}$	
Huddersfield .	2	23	3	28	49	5 $7\frac{1}{2}$	
Total .	21	184	17	222	$47\frac{37}{53}$	5 $7\frac{7}{8}$	

was elicited by observing the tallness of the company of veterans at Bradford when collected together for a week's drill. It may be mentioned that the cavalry and artillery pensioners do not increase the average height—some of them being much shorter than those of the infantry. It will be seen that the total strength of these veterans is 222, the average age rather more than 47 years and six

† See *Medical Gazette*, July 18th, 1844, and August 16th, 1844; articles Military Hygiene and the Clothing of Soldiers, by myself.

* British and Foreign Medical Review, January 1845.

months, and the average height a little less than 5 feet 8 inches. Allowing for the shrinking of the frame with age, these veterans still present a very good size: and presuming (with some right) that the average height of the army during the war was not so much as since, it may be fairly concluded that tall men live longer than short ones; or, at least, that more tall than short soldiers have arrived at the average age of 47 years and six months. What would appear to strengthen this supposition, is the circumstance of the *enrolled* pensioners being selected to bear arms from their superior health and strength. Whether all classes of pensioners (the enrolled included) would present a higher or lower average height than the above, I have no data to show; but it would appear that those found most fit to serve are rather tall than short. The average height of the infantry of the line of the present day, would not appear to exceed that of the veterans, who were enlisted at a period when the standard height of the army was much lower than at present. Two regiments of infantry of the line in Portsmouth, in May, 1844, measured a fraction less than 5 feet 8 inches. One of these was unusually tall. Proper and extended comparisons of the relative physical powers and longevity of tall and short men would be interesting, and are yet to be made. Unusually tall and very short men are further removed from the normal type than men of medium height; and selection from among the latter would be attended, on the average, with more symmetry of frame. A good frame, besides, gives a man more confidence in his own powers. Stunted men are generally supposed not to have either the animal or moral courage and steadiness of the strong, and are characterized by impatience unfavourable to firm resistance. I think more short than tall men are rejected on account of physical disabilities. It is obvious that a small and lighter man, who carries the same sized musket, the same sized pack, the same quantity of ammunition, &c. as a taller and heavier one, must bear proportionally a greater weight than the taller, and suffer more.

Recruits for Cavalry, Artillery, Sappers, Grenadiers, and Light Infantry.

A race of men born to the exercise of arms should be sought for as recruits for cavalry, artillery, and sappers and miners in particular; and it is reasonably presumed, that the hardy occupations of smiths, carpenters, masons, grooms, and servants in general, would supply more vigour and resolution than the sedentary trades. Agricultural recruits are better suited for cavalry and artillery service, by reason of those services being less distantly removed from the previous simple life of the recruits than the more artificial service of a foot soldier, into which townsmen and those accustomed to in-door work should rather be sent. There being at present no plan of distribution of urban and rural recruits into the different branches of the service, I think benefit would accrue from partial adoption of it.

When there is a scarcity of recruits of the proper standard, small men would be more available in that arm of the service in which the soldier has least to carry —the rifles—their fire-arms being lighter than the musket. Men of uniform small size formed into regiments of *Tirailleurs*, possess the advantage of presenting a small surface of body to the enemy's sharpshooters. On the other extreme, to accommodate the army to the size of men, a few regiments of grenadiers could be easily raised.

On the Influence of Age in Recruits.

One of the most important physical qualifications to be obtained by a wider dispersion of recruiting parties, is a more mature age in recruits. The opinion of non-professional persons is well known on this subject. Napoelon condemned "boys, as serving only to encumber the hospitals and road-sides." The opinion of all thinking men is the same. Deputy Inspector-General H. Marshall says, that, "before a youth has acquired the physical and moral qualities suited to enable him to endure fatigue and to execute the duties incident to a military life, a certain age must be attained;" and that, "if a recruit do not possess the strength calculated to enable him to endure fatigue, and to surmount the mental disquietude incident to his initiation into the army, he loses that active fortitude which is required to fit him to bear up against difficulties, and falls into a gloomy state of mind, that is soon followed by deteriorated state of health; loses his appetite, becomes emaciated, a slight cough supervenes, and, after frequent admission into hospital, he at last dies of diseased lungs. This is the outline of many a young lad who enlists into the army." This is a fact which cannot have failed to make its impression upon every medical officer in the army.

Besides the advantages of more strength of body and mind acquired by age, recruits at 20 years of age will have passed over several diseases incident to youthful ages chiefly—such as measles, small-pox, &c. Although, in civil life, mortality between the ages of 15 and 20 is less than between 20 and 30, yet in the army it is increased considerably; the mortality per cent. in the foot-guards, between 18 and 25, being more than 2; whereas the mortality in civil life, in England, between the ages of 15 and 30 (a much greater latitude), is not 1 per cent.; being only ·834.* Early enlistment prevents young men from acquiring strength to resist disease in the army; and hence the excessive mortality in the service, even at home, in great measure arises. There are numbers of lads in the ranks of the army, who have to carry nearly half their own weight. Boys, weighing 9 stone, and often less, carry about 52lbs. weight—the knapsack complete, arms, accoutrements, ammunition, and personal equipment, without rations weighing little less than this. The necessity of a more mature age in recruits is

* Statistical Reports of sickness in the British Army in the United Kingdom, p. 18; and Sixth Annual Report of Registrar General, p. xxvi.

acknowledged, and so strenuously advocated by all authorities upon the subject that it requires no further comment. By recruiting an army from between the ages of 17 and 22, a much greater number could, of course, be collected than from between the ages of 19 and 22; and, provided a young army was more gradually inured to the service the objections to its formation would greatly diminish, if not altogether cease to exist. To avoid extreme youth in recruits, which is a frequent result of hurriedly completing a regiment on returning from foreign service, or on sudden augmentations of the army, regiments should be recruited *steadily*, and kept up *above* their complement *at all times*, as well as to meet casualties and any timidity that might be expected in young men joining when a regiment is in an undesirable station abroad.

By a wider distribution of recruiting parties there would occur, not only a greater scope for selecting good recruits, but fewer rejections would happen, and consequently less expense would be incurred. There would result, besides, among more carefully selected soldiers, less mortality, which would thus enable the army to dispense with fewer supplies of recruits. Reduction in the expenses of several departments might be looked for. The pension list, by diminishing the number of invalids (as well-selected soldiers would live and serve longer), would, in particular, undergo a reduction. What with the number of deaths, which are most between 20 and 30 years of age, and desertions—most prevalent at the same age —invaliding, purchasing of discharges, free discharges, discharges with ignominy, and transportations, which latter Sir H. Smith sets down at one to each regiment annually, among the men limited to ten years' service, the future drafts of recruits from the population is likely to be enormous.

A widely spread plan of recruiting would ensure a supply of good men in these kingdoms at all times, I think. Limiting the period of service, to facilitate recruiting and stop desertion, to 10 years, was proposed by Captain Layard, M.P. some years ago; but it does not appear to have succeeded in bringing more recruits or better ones, nor to have diminished the rate of desertion.

The details of recruiting have not extended to Scotland and Ireland, though I believe it is more or less irregular in those countries.

Printed by W. & H. POLLARD, North Street, Exeter.

ON THE

SANITARY CONDITION

OF THE

BRITISH ARMY;

AND

ESPECIALLY ON THE WANT OF SPACE IN BARRACKS.

By WILLIAM AUGUSTUS GUY, M.B. Cantab.

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS;
PROFESSOR OF FORENSIC MEDICINE, KING'S COLLEGE, LONDON;
PHYSICIAN TO KING'S COLLEGE HOSPITAL;
AND ONE OF THE HONORARY SECRETARIES OF THE STATISTICAL SOCIETY.

LONDON:
PUBLISHED BY HENRY RENSHAW, 356, STRAND.

1858.

WESTMINSTER:
PRINTED BY J. B. NICHOLS AND SONS,
25, PARLIAMENT STREET.

ON THE

SANITARY CONDITION

OF THE

BRITISH ARMY;

AND

ESPECIALLY ON THE WANT OF SPACE IN BARRACKS.

From the Journal of the United Service Institution, vol. ii., *pp.* 1–34.

I have sought this opportunity of addressing you, because I wish to acquit myself of some part of that great debt of gratitude which, in common with all who devote themselves to the cultivation of the arts of peace, and who are not wholly insensible to its blessings, I feel that I owe to the brave men who fight our battles by land and by sea. I would fain render some slight service to those gallant men. But my debt to the navy must remain unpaid, because, as I need scarcely tell you, for the last three quarters of a century, since the memorable voyages of Captain Cook, the condition of the sailor in all that relates to the preservation of his health, and the enlargement of his comforts, has been one of progressive improvement, so that it is now scarcely possible for a civilian, like myself, to suggest anything that will conduce to his advantage. Not so, however, with the soldier: for I will undertake to say that there is no man, however ignorant he may be of sanitary science, however little knowledge he may have of the causes which tend to preserve health, or to destroy it; there is no one, how narrow soever his notions

may be of the comforts which men in an humble sphere of life ought to enjoy, who could not, on the most cursory inspection of our barracks, and the most superficial knowledge of the routine of a soldier's duties, point out many things that would conduce greatly to his advantage, and which, if we would not altogether forfeit our old reputation for humanity, justice, sound sense, and true economy, ought, without one moment's delay, to be carried into effect. I do not therefore think that I lay myself open to the charge of presumption in coming before you, as a civilian, to talk to you, soldiers, upon this grave question, and to discuss the contents of the valuable Report which lies upon your table.

This Report, as most of you probably are aware, is entitled "The Report of the Commissioners appointed to inquire into the Regulations affecting the Sanitary Condition of the Army, the Organization of Military Hospitals, and the Treatment of the Sick and Wounded." It is a bulky volume, and contains, in addition to the usual summary and recommendations of the Commissioners, a great mass of evidence, and a very valuable Appendix. The Report is signed by the Right Honourable Gentleman now in the Chair, who has shown himself a true and tried soldier's friend, and who, I hope and believe, will maintain this character to the end of his days. This Report is also signed by several gentlemen, among whom are some of my personal friends. They are all of them men above suspicion, and quite incapable of intentionally misrepresenting or exaggerating the facts that were brought under their notice.

I may also speak in terms of similar commendation of the witnesses who have given their evidence before this Commission, among whom I may also mention that there are several of my personal friends; and I may undertake to say of them that, throughout the length and breadth of Europe, there are not to be found men, in their peculiar line, who could be brought into comparison with them. I speak of Sir Alexander Tulloch, Dr. William Farr, Mr. Neison, Dr. Balfour, and my old friend Dr. Sutherland, with whom I was associated fifteen years ago in sanitary movements and agitations. They are quite incapable of representing anything before this Commission which they did not believe to be true—

they are quite incapable of exaggerating the evils under which the soldier is represented to be labouring.

I may also add that there will be found in the Appendix to this Report a very valuable paper, consisting of answers to written questions addressed to her by the Commission, from the pen of that gentle lady whose presence at the bedside of the sick soldier in the hospitals of the East was felt to be as rays of sunshine in a dark place—I mean Miss Nightingale. And it must be a great satisfaction to the soldier to know that, though she no longer ministers in person to his wants, she is now as deeply interested as ever in his behalf, and is labouring, with all the energy, zeal, and talent of a man, and all the gentleness, tenderness, and constancy of a woman, to promote to the utmost possible extent the welfare of the brave men to whose cause she is so warmly attached.

Now, this Report, to which I have thus cursorily alluded, brings into bold relief one great fact—one distressing and disgraceful fact—that the mortality of our soldiers, especially of the infantry, and more especially of the Foot Guards, is very much greater than that of any class of the civil population, with whom it seemed to be reasonable, and natural, and fair, to compare them. And when you reflect that the army is recruited from a population some of whom are conscious of defects that prevent them from ever offering themselves as soldiers, and others are rejected in large numbers when they do offer; when you bear in mind, too, that great numbers of soldiers are sent back, as invalids or pensioners, to the population from which they were drawn, to be reckoned when they die not as soldiers but as civilians, so as to swell the proper rate of mortality of the civil population, and to diminish, in like proportion, that of the Army, you will be able to appreciate the gravity of this statement.

But this is no new fact; for at page 250 of the second volume of the Journal of the Statistical Society, published in 1839, there is a paper from the pen of Mr. I. W. C. Lever, in which he contrasts the facts contained in the then recent Report of Sir Alexander Tulloch, on the mortality prevailing among our troops during the seven years ending 1836, with similar facts relating to the civil population.

In that publication, the fact that British soldiers, and the infantry more especially, are subject to a very great mortality, as compared with civilians of the same ages, was clearly set forth. I have prepared a table embodying these facts, but, as I shall not have time to comment upon it at any length, I must be satisfied with directing your attention to it.

MORTALITY IN THE ARMY, 1830—1836.

(Annual Deaths in 10,000 living.)

—	All Causes.	Consumption.	Fever.
Household Cavalry	145	81	16
Dragoons and Dragoon Guards	153	77	14
West Indian Depôts	185	96	28
Foot Guards	216	141	17
French Army	195	—	—
Population of Towns, being Military Stations—Army Ages	160		
Population of London—Army Ages	150	Suicides = 1/20 of Deaths among Dragoon Guards.	
Labourers E. I. C. S.	125		
Metropolitan Police	90		

You will find that the facts embodied in this table, relating to an earlier period of the history of our army, are in harmony with the statements made in this Report of Mr. Sidney Herbert's Commission, though the rate of mortality is higher at the earlier date. But I must invite your attention to one melancholy fact stated in the Table, that, among our Dragoon Guards, no less than one-twentieth of all the deaths was attributed to suicide.

I say, then, that this fact of the great mortality of the British soldier is no new fact. To our disgrace be it spoken, it was known twenty years ago; and eleven years ago (in the spring of 1847) another fact was stated in the House of Commons in reference to our metropolitan barracks, which I think you will agree with me is not unlikely to bear to this high mortality of the soldier the relation of cause and effect. Sir De Lacy Evans told the House that, in the metropolitan barracks, a room 32 feet long and 20 broad, was all the convenience then afforded for the eating, sleeping,

and general living of twenty men and non-commissioned officers, some two or three of the men being in all probability married. Such a room would probably not afford to each inmate more than from 250 to 300 cubic feet of air, or from a fourth to a third of the prison allowance. On the same occasion Colonel Lindsay stated that in one case he had found an allowance of 357 cubic feet, and in another of 330 cubic feet.* Therefore, neither the fact that the life of the British soldier is shortened, nor one of the leading causes to which I shall have occasion to attribute that curtailment of his life, are new to us. We ought long since not only to have known these facts, but we ought to have paid more attention to them.

The precise facts relating to the present mortality of the soldier, as compared with the mortality of civilians, are embodied in an intelligible form in the table before you.

DEATHS PER 10,000 PER ANNUM AT THE SOLDIERS' AGES.

London Fire Brigade (ages 40—60)	70
Metropolitan Police	76
England (Healthy Districts)	77
Agricultural Labourers	80
Out-Door Trades in Towns	85
Navy (Home Stations)	88
City Police	89
England	92
24 Large Towns	119
Manchester	124
Infantry of the Line	**187**
Foot Guards	**204**
Household Cavalry	**110**
Dragoon Guards and Dragoons	**133**

The facts, with one exception, are taken from the Report of the Commissioners. The exceptional case stands at the head of the table, and relates to an important class of men, of whom I shall

* I take this opportunity of stating that some passages in this Lecture are but slightly altered from similar passages in my article on "The Mortality in the Army," published in Fraser's Magazine for April. Having stated this fact, I do not deem it necessary to distinguish the passages in question by marks of quotation.

presently give you some account—I mean the London Fire Brigade. The figures which exhibit the very favourable rate of mortality of this class are followed by those which display the mortality in several distinct bodies of civilians, namely, the Metropolitan Police, the inhabitants of the healthy districts of England, agricultural labourers, men following out-door trades in towns, the Navy on home stations, the City Police, the inhabitants of England and Wales, of twenty-four large towns, and of Manchester; and, by way of contrast, the mortality of the infantry of the Line, of the Foot Guards, of the Household Cavalry, and of the Dragoon Guards and Dragoons. The civilians thus compared with our soldiers are, in all cases, males of the same ages with the soldiers themselves, with the exception of the men of the Fire Brigade, whose ages range from 20 to 60. These men of the Fire Brigade, or London Fire Engine Establishment, occupy the most favourable position in the table. They are subject to an annual mortality of only 70 in 10,000, whereas the Foot Guards suffer a mortality of 204 in 10,000, or very nearly three times as many.

Now, this is the class of men of whom I said just now that I would give you some account. I am indebted for the particulars of their occupation and consequent mortality to Mr. Charles Frederick Browne, the surgeon to the force; and I am happy to see a gentleman here this afternoon (Mr. Braidwood, the superintendent), who can confirm the statements I am about to make.

The ages of the firemen range from twenty to sixty and upwards; and there is one man now in the service in his 70th year, quite able to take his turn of duty with the rest. The men are carefully selected, full three-fourths of them having been man-of-war's men. The duties they have to perform are by no means light; for each man, on the average, has been on duty at the stations, or on the watch on premises damaged by fire, three days and three nights, of twelve hours each, in every week of the past year. This is exclusive of attendance to clean the engines and tools, and keep the hose in order, and of a sort of engine-drill for the younger men twice a-week. The men have also to attend and work at fires, where they are in the midst of intense heat, steam, and smoke, saturated with water, and obliged to stand in elevated situations exposed to severe

and cutting winds, so that the men are often seen in winter literally encrusted with ice. They are sometimes called out by fires, or alarms of fire, as many as four times in a night. But, notwithstanding this hard duty and extreme of exposure, the rate of mortality among the men is highly favourable. For the first thirteen years of the establishment, the deaths were at the rate of 96 per 10,000; while for the last twelve years they have fallen to 70 per 10,000. Both these calculations include deaths by accident, which, in spite of the perilous nature of the employment, have not exceeded 44 in 10,000 in the whole period of twenty-five years. The higher mortality of the early period is attributed, and probably with justice, to less careful selection; but the moderate rate prevailing throughout the whole period of twenty-five years is evidently to be attributed to the unusual care and attention bestowed on the comforts and health of the men, who live either at the stations or in houses provided by the establishment, and subject to careful inspection. The management is in the hands of a Committee, appointed by the several Fire Assurance Offices, who pay the men liberally, give them plenty of warm and comfortable clothing, instruct the Medical Officer and Superintendent to look narrowly to the healthy state of the stations, and the other residences of the men, and act with promptitude and liberality on any suggestions which these efficient officers may please to make. This, I believe, is a fair and accurate account of this very healthy class of men.

Here, then, we have a case of night work and exposure to weather certainly far exceeding in severity the night duty which the foot soldier has to perform; for I understand that the soldier is on guard only every fourth or fifth night. Yet this night-work, and this exposure to weather, being accompanied, in the case of the Fire Brigade, by the most scrupulous care of the health and comforts of the men, is compatible with the very favourable rate of mortality shown in the Table. May not the unfavourable death-rate of 204 in 10,000, prevailing among the Foot Guards, be partly accounted for by the substitution of carelessness for care?

I infer, therefore, that night-work and exposure to the weather do not of themselves occasion the great mortality of the Foot Guards. I infer that a man may have severe night-duty and much exposure

to weather, and yet be long-lived; and this inference is confirmed and strengthened by the favourable rate of mortality prevailing among the Metropolitan and City Police, when compared with the Guards or with the Infantry of the Line. The police are much more exposed to the weather, and have much more night-work, and yet their rate of mortality is far below that of the foot soldier.

Let us next take the case of the sailor. He, too, has a good deal of exposure, and is subject at night to great over-crowding. His diet is also monotonous; and sometimes insufficient in quantity and defective in quality. But the sailor, as compared with the soldier, has a favourable rate of mortality, because, in common with the agricultural labourer, the unwholesome influences to which he is exposed are counteracted by strong and varied exercise in the pure open air.

I will next ask your attention to the class of men I have just mentioned—the agricultural labourers. Their rate of mortality also is given in the Table. Agricultural labourers are a very long-lived class of men. There is no large class of the community that lives so long. And yet these men attain to this longevity, in spite of great exposure to the weather, in spite of great overcrowding in their sleeping places at night, in spite of unwholesome dwellings, in spite of a monotonous and scanty diet, and very insufficient clothing: in defiance, as it were, of several of those evils which are supposed to attach to the condition of the soldier, and to account for his high mortality and short life. I conclude, therefore, that a man may be much exposed to the weather, that he may be greatly overcrowded at night, that he may be ill-clothed and badly fed, and yet, in spite of these unwholesome circumstances, if he have only hard daily labour in the pure open air, he may enjoy good health and attain to long life. The hard daily labour in the open air proves his salvation.

Let us now turn from long-lived men to short-lived men: from men having a favourable rate of mortality, though exposed to the action of certain unwholesome influences, to which, in common with the soldier, they are subject, to men having an unfavourable rate of mortality, due to causes which may also be presumed to contribute to shorten the soldier's life. The class to which I shall first invite your attention is the English aristocracy. I am able to compare their expectation of life with that of the agricultural labourer; and I find that, while the agricultural labourer at thirty years of age has an expectation of forty years and a half, the English aristocracy has an expectation of only thirty-one years. So that between the agricultural labourer, with all his privations and disadvantages, and the English aristocracy, having every comfort and luxury which wealth can purchase, there is a difference as against the aristocracy of nine years and a half. Now I want to draw your special attention to this favoured class, and the circumstances under which they are placed. At first sight, the position of the aristocracy would seem a very enviable one. They are able to guarantee themselves against all the causes which undermine the health and destroy the lives of the poor; but hereditary wealth, whether in the hands of men born in the ranks of the aristocracy or out of them, has this serious drawback, that it creates a great difficulty in finding a suitable, active, vigorous, exciting, interesting employment. Its possessor, therefore, naturally falls into idleness and dissipation, and this, with luxurious living, inevitably shortens his days. This is a very important fact, because it bears upon the mortality of the soldier, and illustrates some of the evils of his condition.

My object in bringing this fact thus prominently forward will at once appear, if I read to you a statement made by Colonel Lindsay in reference to the want of interest which the soldier has in his occupation, and the consequent temptations into which he falls—temptations allied to those that beset the path of the aristocracy, though, as I need scarcely tell you, divested of the element of luxury, of which the soldier has little enough. Colonel Lindsay tells us that the Foot Guards get up at six o'clock, make their beds, clean their things, and get their breakfasts at seven; that they turn out at half-past seven or eight for a drill; but that if it be guard day, there is no drill, except for defaulters. The men for duty are paraded at ten o'clock, and that finishes the day's drill altogether. There is evening parade, which takes half an hour; and then the soldier's time is his own till tattoo,

which is at nine in winter and at ten in summer. This is the day of a soldier not on guard, or not belonging to a company out for Minié practice. Now as to the consequences of this idle and lounging life: "Perhaps," says Colonel Lindsay, "no living individual suffers more than he from *ennui*. He has no employment save his drill and his duties. These are of a most monotonous and uninteresting description, so much so that you cannot increase their amount without wearying and disgusting him. All he has to do is under restraint; he is not like a working man or an artisan. A working man digs, and his mind is his own; an artisan is interested in the work on which he is engaged; but a soldier has to give you all his attention, and he has nothing to show for the work done."

Here, then, we have a graphic description of a man handed over by our military authorities for a prey to listlessness, idleness, and dissipation.

I think, therefore, that, setting luxury aside, in which certainly the foot soldier has no means of indulging, he is subject to the same evils which beset the aristocracy of this and all other countries. If our own aristocracy suffer less from these causes than the aristocracy of other countries, that happy result is due to that love of enterprise, that fondness for work for work's sake, which seems born and bred in Englishmen of all classes from the highest to the lowest. This it is that saves the aristocracy of England from that extreme of degeneracy into which so many other privileged classes in all ages of the world have fallen.

There are still one or two other classes to which I must ask your attention, in order that I may explain my own views of the causes of the excessive mortality to which the soldier is subject. One of the classes to which I allude consists of men who work in-doors with a great deficiency of exercise, at the same time that they inhale a close, heated, and impure atmosphere. This is the case of tailors, and of compositors in printing offices, whose health is destroyed, and their lives greatly curtailed, by these causes. It is the case also of clerks, though they suffer more from want of exercise than from want of air. I might prove my position by figures; but I prefer stating in general terms, that there is no doubt whatever that

the lives of men who are thus employed are shortened by confinement and insufficient exercise. Another class of men subject to a high rate of mortality from causes that affect the soldier consists of those who indulge in intemperance. The brewers' draymen and licensed victuallers are well known to be exposed to this temptation, and are equally well known as very short-lived men. Thus, if we compare the brewers' draymen with the whole body of labourers working out of doors, among whom, of course, there are many intemperate men, we find the draymen's lives so curtailed by this baneful habit that at thirty-five years of age their mortality is double that of the labourers. Similar comparisons between licensed victuallers and the whole body of tradesmen, and between potboys and footmen, give the same general result.

I think that I have now sufficiently prepared you for the study of a tabular comparison, in which I have arranged in one column some of those causes that are usually alleged as shortening human life, and which are also believed to injuriously affect the life of the soldier. The rest of the Table consists of eight columns, four of which have black and four red headings. The first four (those with black headings) are instances of favourable durations of life; and the last four (those with red headings) are instances of unfavourable durations of life.* The stars indicate the presence of the several causes of disease in the classes at the head of the columns.

Cause of Disease.	Agricultural Labourers.	Sailors.	Police.	Fire Brigade.	Aristocracy.	Tailors, Compositors, Clerks, &c.	Draymen, Licensed Victuallers, &c.	Soldiers (Infantry).
Over-crowding, or Want of Air	*	*	. .	. .	. .	†	. .	†
Deficient Exercise	. .	. .	. .	. .	. .	†	. .	†
Defective or Monotonous diet	*	*	. .	. .	. .	. .	. .	†
Inadequate Clothing	*	. .	. .	. .	. .	. .	. .	†
Night-work or Night-duty	. .	*	*	*	. .	. .	. .	†
Exposure to Weather	*	*	*	*	. .	. .	. .	†
Intemperance	. .	. .	. .	. .	. .	. .	†	. .
Luxury	. .	. .	. .	. .	†	. .	. .	. .
Dissipation	. .	. .	. .	. .	†	. .	. .	†
Insufficient Occupation	. .	. .	. .	. .	†	. .	. .	†

* In the annexed Table the two sets of columns are distinguished by a difference of type.

Let us take the several classes one by one, and see what lessons we can learn from them. First comes that long-lived class the agricultural labourers. The agricultural labourer, as I have said, is subject to over-crowding; he has a defective, scanty, and monotonous diet; his clothing is not of the best; and he suffers much from exposure to the weather. Take next the sailor. He is over-crowded in his berth at night; his diet is not varied, and in long voyages is apt to be defective; he has a good deal of night duty, and is much exposed to the weather: still, he does not die off as the soldier does. The police come next in order. They have night-duty, with great exposure to weather; and so have the Fire Brigade, whose case I have brought specially under your notice,—and yet they, too, are not short-lived. The men of the Fire Brigade are very much the reverse.

We now come to the four short-lived classes. We will begin with the aristocracy, whom I have taken the liberty of representing as liable to fall into the twin vices of idleness and dissipation. I speak of them as a class, and of their habits of life, as a rule to which I know that there are many exceptions. But as a class they have not sufficient employment to maintain them in health and vigour, and they are short-lived. My next unhealthy class consists of such men as clerks, compositors, and tailors. They work in close and crowded rooms, and have little or no exercise —and they, too, are short-lived. Then comes the class consisting of such men as are tempted by the very nature of their occupation to indulge in spirituous liquors to excess—the class to which belong brewers' draymen and licensed victuallers. They are intemperate; and they, too, are short-lived. The unfortunate soldier comes last of all, with a star against every cause of disease but one—luxury. It is alleged by those who are now engaged in finding out the causes of his excessive mortality, that he is over-crowded; that he sleeps in a close, confined, and fœtid atmosphere; that he has not such exercise as is calculated fully and freely to develop his frame; that he has a defective and monotonous diet; that his clothing does not afford adequate protection from the weather, especially when he is on night-duty; that he has this night-duty to perform under very unfavourable circumstances; that he is given to intemperance; that he is extremely dissipated; and that his occupation is insufficient. Here, then, you have the shortest-lived class of all; and you have all these causes alleged, in explanation, some by one person and some by another, but all of them by persons who have thought upon the subject, and whose opinions are entitled to respect.

From this comparison of soldier with civilian, I now pass to a comparison of soldier with soldier. At the foot of the Table (at p. 5) you have the mortality of the Infantry of the Line and Foot Guards compared with that of the Household Cavalry and of the Dragoons and Dragoon Guards. You see that the mortality of the Infantry of the Line and Foot Guards is much more considerable than that of the Household Cavalry, or than that of the Dragoons and Dragoon Guards. Without entering into the more minute differences existing between the Cavalry and Infantry, in regard to the amount of pay, the class from which the men are taken, the degree of care with which they are enlisted, and minor matters of that sort, I will go at once to the broad differences between them. I know of two such differences. The one is that the cavalry soldier is a soldier and something more. He is a soldier and a groom; and every one who knows what the work of a groom is, knows that it requires a good deal of exertion of the whole body —not simply the contracted and constrained movements of the arms and legs, which make the foot soldier on drill look so much like an automaton, but vigorous movements of the whole frame—good strong developing exercise of the chest and body. The other difference is that the Cavalry have more space by one-fourth or one-fifth than the Foot Guards.* These two advantages, then—vigorous, varied, and wholesome exercise, and greater space in barracks—will go far to explain the very different rates of mortality prevailing among the Cavalry and Infantry.

So much, then, for the mortality of soldiers as compared with the mortality of civilians of the same ages; and so much for the mortality of the Infantry as compared with that of the Cavalry. I have now to speak of the diseases which destroy the soldier's life. There are two classes of disease which are the special foes of the

* See Tables ii. iii. and v. in the Appendix.

soldier, and particularly of the Infantry soldier: namely, epidemic maladies, of which fever is the chief; and diseases of the chest, of which consumption is the most fatal.

One of the great characteristics of fever is that it is a disease of crowds and of crowded places;—of crowded prisons, crowded workhouses, crowded ships, crowded hospitals, crowded camps, crowded barracks. If you confine men in a narrow space, fever will certainly break out among them sooner or later; and it is in such places that it spreads most rapidly from person to person, when it happens to be introduced from without.

Cholera, again, is one of those diseases which finds out over-crowded and otherwise unwholesome places. Accordingly, it found out our barracks in 1849; and we learn from the Report that in some of our barracks it destroyed from twice to more than five times as many soldiers as it did civilians in the surrounding districts. We are told that, while the civil population of East London and Whitechapel lost 54, the soldiers in the Tower lost 100 in 10,000; that, while the civil population of St. Pancras lost 22 in 10,000, the soldiers in Regent's Park perished at the rate of 104 in 10,000; and that, while the civil population of Kensington lost 33 in 10,000, the mortality among the soldiers at Knightsbridge was no less than 175 in 10,000.

The Table, compiled from the paper in the Journal of the Statistical Society to which I have already referred, shows that the mortality from consumption in the army twenty years ago was very considerable. In the Household Cavalry it was 81, in the Dragoons and Dragoon Guards 77, in the West India depôts 96, but in the Foot Guards it was 141 in 10,000. That this sad state of things, though somewhat improved since that date, is not yet remedied, the following extract from the Report of the Commissioners will show. Diseases of the lungs, which in the civil population of large towns cause 58 deaths every year in 10,000, destroy 64 in 10,000 of the Household Cavalry, 66 in 10,000 of the Dragoon Guards and Dragoons, 89 in 10,000 of the Infantry of the Line, and 125 in 10,000 of the Foot Guards; and, when compared with other causes of death, these diseases are found to prove fatal in the proportion of about 54 per cent. in the Cavalry,

of about 57 per cent. in the Infantry of the Line, and of about 68 per cent. in the Foot Guards.

I may state in passing (I shall speak more at length on this point presently) that there is no doubt whatever that over-crowding is one of the most efficient causes of consumption; so that, if fever may be looked upon as the acute disease of crowds, consumption may be considered as their chronic malady. But the dependence of pulmonary consumption on over-crowding will be best discussed when I have asked and answered this question,—Are our barracks and military hospitals over-crowded? I will give you the means of judging for yourselves by stating a few facts relating to different periods of time. You have the Tables before you *—Tables which I have been at some pains to compile from the returns published in the Appendix to the Report of the Commission—but I will read to you the general results.

Let me first remind you again of the statements made in the House of Commons in 1847, by Sir de Lacy Evans and Colonel Lindsay, respecting the disgraceful want of space in some of our London barracks. These statements produced just enough effect upon the House to cause some Member or other to move for a Return of the cubic space in barracks throughout the country, which Return was printed in 1848, and supplied us with some facts worthy of a place at the side of those I have just referred to. This Return gives us examples of barrack-rooms in London used as dormitories and day-rooms by grown-up men (tall, strapping fellows, as many of our soldiers are), affording to each man only 397 cubic feet of air to breathe, and worse cases still of 390, 376, 370, 363, 331, and in the case of a temporary barrack at Kensington, 285 cubic feet. In other parts of the United Kingdom the figures are still more unsatisfactory—still more disreputable. At Chatham and Upnor (I am still speaking of 1847) the Infantry were put upon the miserably short allowance of 220 cubic feet of air per man (the maximum at Chatham was only 350); the Cavalry at Maidstone were doomed to 174 cubic feet; and the soldiers in Dover Castle must have been rotting, like sheep in the marshes, in a filthy atmosphere, measured out at the starvation rate of 147 cubic feet

* See the Appendix.

per man. Scotland was favoured with a minimum supply of 240; but Ireland presented a series of low averages, falling from 228 at Portumna and Mallow to 158 at Rutland.

The average space in the 11 Returns from London was 400 cubic feet; 143 Returns from Ireland yielded the same average; 34 from Scotland gave an average of 432; and 155 from England, 447 cubic feet. This was in the year 1847; and who, with these facts before him, can be surprised at the outbreak of cholera in our London barracks in 1849? Who can be surprised at the prevalence of fever and consumption among our soldiers?

Since 1847, as many as 142 new barracks have been erected, of which 132 are in England; and we have another Return showing the cubic space in the barrack-rooms of these new buildings. Of the whole number, two afforded a space of less than 300 cubic feet, four others a space of between 300 and 350, seventeen others a space of from 350 to 400, and fifty-nine barracks a space of from 400 to 500 cubic feet; in sixty barracks only was the space of 500 cubic feet per man exceeded. The barrack-rooms, properly so called, do not yield an average space of more than 550 cubic feet; and instances are given of such contracted spaces as 308, 306, 303, and even 280 and 270 cubic feet.

Let us now come to the present time, and see what this Report has to say upon the subject. We are first told that the new barracks erected since 1855, when the Barrack Committee held its sittings, afford very superior accommodation to those previously built, but that no important steps have been taken towards supplying the deficiencies of the older buildings; that some of the most serious evils remain still unremedied; that the dormitories or barrack-rooms are very confined, and that in a majority of cases, even the minimum cubic space allowed to each soldier by regulation is not attained, the deficiency in a number of barracks amounting to one-third and in some instances to more than one-half of the space allotted by regulation.

And now mark the contrast afforded by the Scotch pauper and the British soldier. We have it on the authority of Sir John McNeill, that the pauper in the Scotch workhouses is allowed 480 cubic feet per bed, and that this minimum is not only rigidly

insisted upon, but that, the houses being scarcely ever full, it is practically much exceeded; and, moreover, that the pauper is never in his dormitory during the day. In the soldier's barrack, on the other hand, it often happens that even the regulated space of one foot between the beds (I am quoting the very words of the Report —*one foot between the beds!*) is practically unattained. The Report goes on to say that the barrack-rooms very seldom have windows at the opposite sides or ends of the rooms; that where ventilators exist they are frequently stopped by the men themselves (of course they are, for you cannot safely practise ventilation in these narrow spaces); that barrack-rooms are occasionally found in the basement of the building, approached by descending steps from the natural surface level—the tops of the windows, which open on one side only of the rooms, being little, if at all, above such surface level—and that in low rooms thus situated a number of men may be found lodged in beds so closely ranged that the side of one touches the side of the other. The result is, that the soldier sleeps in a fœtid and unwholesome atmosphere. This, let me remind you, is just such a state of things as John Howard, to his surprise and sorrow, found prevailing in our prisons in the year 1774: just such a state of things as the Legislature of that day thought too bad even for the worst of their inmates. But perhaps you will attribute this narrowness of space in our barracks, old and new, to the ignorance of the architects or the perverseness of commanding officers in putting more men into the rooms than they were intended to hold. No such thing. The persons immediately concerned, if they were not obeying the letter, were acting in the spirit, of the instructions they received, as you will see when I tell you that the "Orders and Regulations for the Guidance of the Corps of Royal Engineers and Royal Sappers and Miners at Home and Abroad, revised, by Order of the Master General and Board of Ordnance, to 1st January, 1851," prescribed only from 400 to 500 cubic feet per man in temperate climates, and from 480 (the Scotch pauper's allowance at home) to 600 in tropical climates, with a proviso that in general the maximum space was to be allowed, and for single bedsteads. The Report of the Commissioners recommends 600 cubic

feet to each man. This, you will say, is an extremely moderate allowance; and I hope that the nation which does not think 480 cubic feet too much for a Scotch pauper, and does not grudge 900 cubic feet, with ventilation superadded, to the prisoner at Pentonville, will be able to afford this moderate supply of 600 cubic feet to the English soldier.

Now, by way of contrast, let us see how benevolent persons, moved by motives of economy, and anxious to make a profit by providing decent accommodation for the poorest classes, behave towards their clients. In the year 1848, the model lodging-house in George Street, St. Giles's, was opened with great state and ceremony by His Royal Highness the Prince Consort, who presided at a public meeting held at Freemasons' Tavern. I do not know whether our Chairman was present, but many distinguished persons were there, and all the world heard of it, and seemed to take an interest in it. This model lodging-house was intended to supply the conveniences and comforts of life to the poorest class of the people for the very low charge of four pence a night. For this small sum of money the Society for Improving the Condition of the Working Classes contrived to furnish their lodgers with many comforts and luxuries. There was a separate coffee-room, with a good fire and constant supply of hot water; each lodger had his own sleeping room separated from his neighbours; water and gas were laid on; there was a good kitchen, with facilities for boiling, roasting, baking, and frying; a pantry with a separate cupboard for his provisions; lavatories, a cleaning room, hot and cold baths, and other conveniences which I cannot stop to specify. Now, what cubic space did these gentlemen think it necessary that an honest working man should have to breathe? Why, 542 cubic feet. That is what they gave him. I have worked out the calculation, and it comes to that. So that these excellent people, catering for the very poorest class of labouring men, having an anxious regard to economy, and wishing to establish an example of profitable investment, provide dormitories, to be used only as such, with 542 cubic feet of air to each inmate, while three years later the Board of Ordnance were not ashamed of prescribing from 400 to 500 cubic

feet of air as a fit and proper allowance for the British soldier in barrack-rooms destined to the two-fold use of dormitories and day-rooms.

One word as to the accommodation for married soldiers. It appears from a Return presented to the House of Commons in 1857, that out of 251 stations there were only 20 in which any separate accommodation was provided for married soldiers. When such separate accommodation is provided, it seems to be on a par with the provision made for the single soldier in barrack-rooms. At Dover, we are told that it consists of rooms 12 feet 7 inches long by 7 feet broad and 7 feet high, affording for a whole family a cubical space of little more than 600 feet. At Woolwich, a staff-sergeant with his wife and five children sleep and live in one room, in which all the household labours are performed. In the casemates at Chatham the overcrowding is greater, and the decencies of life are still less regarded.

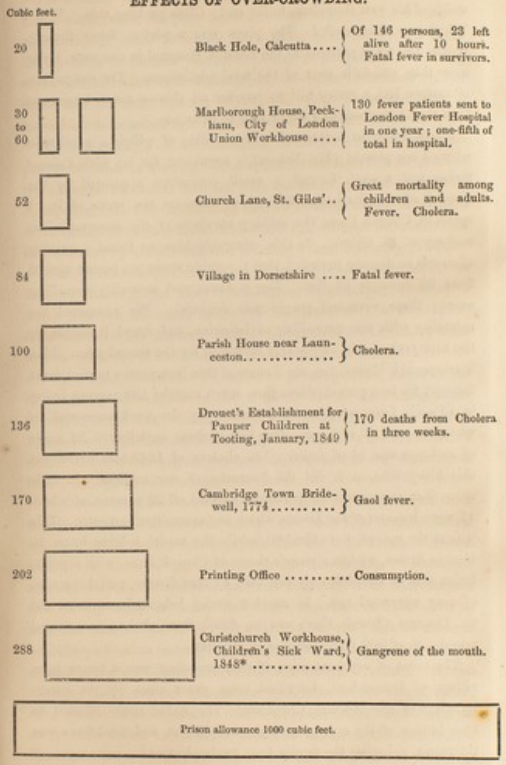
From barracks let us turn to hospitals, and see what the theory and practice of the Board of Ordnance was in respect of these important buildings. I will begin, as before, with the year 1847. At that time no less than fifteen wards of Military hospitals, in different parts of the country, gave an average supply to their sick inmates of less than 400 cubic feet of air; and the Return contains figures falling by easy gradations from 392 to 385, 365, 357, 348, 346, 344, 325, 324, 286, 264, 256, 243, 236, and 213. The mean of 265 averages, taken in every part of the United Kingdom, is only 643 cubic feet per patient. Now the least average space per patient in London hospitals, as appears from a recent Return obtained by Dr. Balfour, the Secretary to the Commission, is 800 cubic feet; the least from any County hospital, 653 cubic feet; the least from any Naval hospital, 752 feet; but the least cubic space allotted to a patient in any Military hospital is 400 feet, or precisely half the minimum space in any metropolitan hospital. This small figure of 400 cubic feet occurs twice in the 46 Military Returns, and in no less than 19 other instances the cubical space per patient falls short of the minimum prescribed by the Board of Ordnance in 1851. The mean results of all the average measurements are equally unsatisfactory; for while the London hospitals

give a numerical average of 1,472 cubic feet, the Provincial hospitals of 1,075 cubic feet, and the Naval and Marine hospitals of 1,014 cubic feet, the Military hospitals afford to their patients only 658 cubic feet.

I think I have now proved to you conclusively that there is over-crowding in our barracks, that there is over-crowding in the rooms of married soldiers, and that there is over-crowding in our Military hospitals.

Now as to the effects of this over-crowding; as to the consequences of having so little air to breathe. I will begin with some extreme cases, the particulars of which are given in a few words in the table before you. You will please to understand that the height of the parallelograms, on the lefthand side of the table, is in every case supposed to be 10 feet, and the depth 1 foot, so that the areas correspond very closely with the cubic spaces themselves, and present them very clearly to the eye. A second column of the table specifies the scenes of the over-crowding, and a third column the result of it. I begin with the tragedy in the Black Hole at Calcutta—a place that has a special interest at this moment, when our minds are so much engrossed with painful events in India. Of 146 persons shut up in that narrow space, with only about 20 cubic feet of air per head, one-third died in less than three hours, and only 23 were left alive at the end of ten hours. The greater number of this small band of survivors were seized with a putrid fever and died. The next case of over-crowding comprised in the Table is that of Marlborough House, Peckham, the Union Workhouse of the City of London, in which the male paupers of the city were farmed out, from the formation of the union in 1837 till a comparatively recent period. This municipal Black Hole was a sort of shed, 7 feet pitch in the centre, and 2 feet at the sides where the men's heads rested at night; and its dimensions were such as to give to each wretched inmate from 30 to 60 cubic feet of air to breathe. At its fullest, it is said to have held from 90 to 100 men. As the room was 33 feet 9 inches long, and 20 feet wide, it will be easy to calculate the space on the floor allotted to each man. As the number of inmates ranged from 50 to 100, let us take it at 68, and call the length of the place 34 feet. If the men were arranged

EFFECTS OF OVER-CROWDING.



* In one ward 132 cubic feet. 288 cubic feet is the average of a number of wards.

in two rows, each man must have had exactly 2 feet, or about the width of his own shoulders, to lie on! Close packing this. Well! What was the result? The place was a perfect fever factory. It sent 130 fever patients to the London Hospital in one year, being more than one-fifth part of the total admissions. The ratepayers, of course, had a pretty bill to pay for all this—a much larger one than they imagined, or I know how to calculate.

I now come to a case of over-crowding of which a gentleman whom I see present (Mr. Neison) is cognisant, for he, with Colonel Sykes and myself, formed a small committee appointed by the Council of the Statistical Society, to examine the scene of it. I speak of Church Lane, the solitary survivor of the once notorious rookery of St. Giles's. In this miserable lane we found a number of rooms so densely crowded, that the cubic space per person ranged from 93 down to 52 feet. The sickness and mortality prevailing among these wretched people was frightful. We compared the mortality with that prevailing at Islington, and found it double for the first year of life, and nearly sevenfold for the second year. Like Marlborough House, too, the houses of this lane were a perfect fever factory; for in a period of less than seven months 139 persons living in Church Lane were under treatment by the workhouse staff, of whom 88 were ill of fever. One house alone contributed 22 cases of sickness and 14 of fever. The cholera of 1849 also found out this filthy lane, as it did the barracks of our soldiers. In little more than one month the pestilence carried off 29 persons, of whom 17 were inmates of the houses which our committee inspected. This was at the rate of 6 in the 100, while the model lodging-house in George Street, within a stone's throw of Church Lane, with a population also of 100, lost only one man by that disease, and he a man of very advanced age. In another model lodging-house near old St. Pancras Church, there was no death from cholera in a mixed population of 500 men women and children.

The scene of my next case of over-crowding was a house in a village of Dorsetshire, described some years since by the correspondent of the Morning Chronicle. The cubic space allotted to each inmate of the cottage at night was 84 feet, and fatal fever was the result, reducing the family from twelve to eight.

I now come to speak of larger spaces. Before the erection of the Union workhouses, the poor were accommodated in poor-houses or parish-houses, some of which have since been let out for small weekly sums to persons just on the verge of pauperism. In one of these parish-houses near Launceston, the space amounted to 100 cubic feet for each inmate, and in one such house the cholera carried off five victims and dispersed the remainder.

My next example of over-crowding is Drouet's establishment for pauper children at Tooting. The space in the dormitories afforded to each child 136 cubic feet, and that one establishment contributed to the death-roll 170 deaths from cholera in three weeks, in addition to 15 deaths in the workhouses to which the children were removed, and 8 deaths by similar diseases, making a total mortality of 170.

I have been able to extract from Howard's work on prisons one instance (namely, the town bridewell at Cambridge) in which I could calculate the cubic space; it amounted to 170 feet: gaol-fever attacked the inmates, closed the establishment, and proved fatal to three out of the seventeen women confined there.

I have myself examined a number of printing offices in which the space is very limited, and in one of them I found the average space to be 202 cubic feet. Consumption was unusually prevalent there. I have a very distinct recollection of a still worse office than this, in which consumption was so prevalent that it created the same alarm that a contagious fever would have done.

My last case of over-crowding forms one of the worst instances of totally inadequate space recorded by the Poor Law Commissioners in 1848. The cholera was expected, and the Poor Law authorities wanted to know what accommodation the London workhouses afforded for the reception of patients suffering from that disease. One of the worst of many bad cases recorded on that occasion was the case of the Christ Church Workhouse. Its sick wards actually yielded an average of 288 cubic feet per patient; and one of the wards gave only 132 cubic feet for each inmate. In this instance the prevalent disease was gangrene of the mouth, a very fatal and intractable malady. Some external nuisances contributed to this result, but the disease prevailed whatever the direction of the wind. Now, by way of contrast to these cases of over-crowding,

I place, at the foot of the Table, the prison allowance of 1,000 cubic feet. It is usually set down at this figure, but we have it distinctly given in evidence before Mr. Sidney Herbert's Commission by Colonel Jebb, that in Pentonville prison the allowance is 900 cubic feet per prisoner, *plus* ventilation. In the cases I have just commented on, and in the barracks of the soldier, the narrow spaces are either *minus* ventilation, or they are accompanied by attempts at ventilation which the narrowness of the space renders either abortive, or, from the severity of the drafts, highly dangerous.

The cases which I have just been describing are intended to show the baneful consequences of over-crowding carried to an extreme. But I think it fair to infer that very disastrous consequences may, and do, result from much less degrees of over-crowding than these—from such over-crowding as exists in all our barracks at the present moment. But perhaps you will call for some clear case of over-crowding among soldiers, followed by some such consequences as I have been describing. Fortunately I am prepared with such a case, on the high authority of M. Boudin, a French sanitary reformer well known in this country.

"During the period from 1843 to 1847 inclusive, I ascertained," he says, "the existence every year, at the Military Hospital of Versailles, of a fatal epidemic of typhoid fever, raging about the month of October among the sick who came to me from the garrison of St. Cloud. The epidemic had this remarkable feature, that it broke out every year eight days after the arrival of the ex-King, and that it disappeared immediately after his departure from St. Cloud, without ever attacking either the civil population or the officers, or even the *sous-officiers*, though these latter inhabited the same barracks as the corporals and soldiers. The following facts give the key to this pathological enigma. The garrison of St. Cloud in ordinary times consisted of from 400 to 500 men, and had scarcely any sick, but on the arrival of the King the garrison was increased to 1200. The men were then crowded into a narrow and ill-ventilated room, whilst the *sous-officiers*, better fed and less harassed with duty, had always at least one room for two men." This is a striking and an interesting illustration of the efficacy of over-crowding in producing fever.

Now, let me ask your attention to a fact or two with regard to consumption. I want to show you that this disease, too, may be brought on by over-crowding. A gentleman now present, (Dr. Neill Arnott,) in his evidence before the Health of Towns Commission, tells the following instructive story about certain monkeys in the Zoological Gardens. "A new house," he says, "was built to receive the monkeys, and no expense was spared which, in the opinion of those entrusted with the management, could ensure to those natives of a warmer climate all attainable comfort and safety. Unhappily, however, it was believed that the object would be best secured by making the new room nearly what an English gentleman's drawing-room is. For warming it, two ordinary drawing-room grates were put in as close to the floor as possible, and with low chimney openings, that the heated air in the room should not escape by the chimney, while the windows and other openings in the walls above were made as close as possible. Some additional warm air was admitted through openings in the floor from around hot-water pipes placed beneath it. For ventilation in cold weather, openings were made in the skirting of the room close to the floor, with the erroneous idea that the carbonic acid produced in the respiration of the animals, become heavier than the other air in the room, would separate from this and escape below. When all this was done, about sixty healthy monkeys, many of which had already borne several winters in England, were put into the room. A month afterwards more than fifty of them were dead, and the few remaining ones were dying. This room, open only below, was as truly an extinguisher to the living monkeys, as an inverted coffee-cup held over and around the flame of a candle, is an extinguisher of the candle. Not only the warmth from the fires, and the warm air that was allowed to enter by the openings in the floor, but the hot breath and all the impure exhalations from the bodies of the monkeys, ascended first to the upper part of the room to be completely incorporated with the atmosphere there, and by no possibility could escape, except as a part of that impure atmosphere, gradually passing away by the chimneys and the openings in the skirting. Therefore, from the time the monkeys went into the room till they died, they could not have had a single breath of fresh air.

It was only necessary to open, in the winter, part of the ventilating apertures near the ceiling, which had been prepared for the summer, and the room became at once salubrious." I have only to add to this story the fact, that the disease of which these animals died was consumption, to convince you of the fatal efficacy of foul air in producing that disease. The general accuracy of this story was confirmed by a colleague of my own at King's College, (Professor Rymer Jones,) who informed me that similar results followed similar treatment in other animals, with this addition, that when a more liberal supply of air was afforded them, they manifested a somewhat inconvenient increase of appetite. I have no doubt that the same result will happen when our soldiers have a larger supply of air; but I trust we shall be able to afford the increased outlay for food, and shall not grudge it.

You will perhaps object to this monkey-case, and to other analogous facts relating to animals, that they are not quite applicable to the human subject. If so, I am happy to say that I can satisfy your minds. I am able to prove to demonstration, that if you do put men into such narrow spaces as our soldiers are condemned to live and sleep in, they will certainly die of consumption. Several years ago, being struck with the high rate of mortality prevailing among letter-press printers, I went carefully through a great number of printing offices and made the inquiries I am about to describe. I may premise that the compositors, who set up the types, use very little exertion in their employment, and are often pent up in very narrow spaces, breathing a heated and impure atmosphere. The great majority of the men to whom my inquiries were addressed were compositors—a few only were pressmen. I measured the area of the several rooms with the utmost care, and calculated the cubic space to each inmate; and I put a few plain questions to each man—the same questions in each case. I inquired of each man particularly whether he had ever spit blood, and to what other diseases he was subject. The object of this first question will be very apparent to a medical man. Spitting of blood is one of those symptoms which is so common in consumption, and so rare in other diseases, that if we are dealing with a considerable number of persons, and comparing one large group with another, this symptom

of spitting of blood may stand for consumption without leading to any serious error. Now, the results of these careful inquiries are

TABLE X.

TABLE SHOWING THE CONNECTION OF PULMONARY CONSUMPTION AND OVER-CROWDING.

—	Spitting of Blood.	Catarrh.	Other Diseases.	Total.	Per-Centage Proportion. Spitting of Blood.	Catarrh.	Other Diseases.	Total.
104 men having less than 500 cubic feet of air to breathe .	13	13	18	44	12·50	12·50	17·31	42·31
115 men having from 500 to 600 cubic feet of air to breathe .	5	4	23	32	4·35	3·48	20·00	27·82
101 men having more than 600 cubic feet of air to breathe .	4	2	18	24	3·96	1·98	17·82	23·76

embodied in the table before you; and I look upon them as peculiarly important at this moment, as they seem to form the very key-stone to the arch built up by Mr. Sidney Herbert's Commission. I encountered 104 men unfortunate enough to have less than 500 cubic feet of air to breathe, the average, of course, being much less than that. Now, these men had spit blood at the rate of 12½ in every hundred; and the same number, 12½, said that they were constantly suffering from what they called colds. I found another body of 115 men who had from 500 to 600 cubic feet of air to breathe, and, therefore, very much more than the first group, of whom some had, as you have seen, as little as 202 cubic feet of air to breathe; and these 115 men, instead of suffering to the extent of 12½ in the 100 from spitting of blood, suffered at the rate of little more than 4 per cent., while the liability to colds fell in nearly the same proportion. Lastly, I found a third group of 101 men who had more than 600 cubic feet of air to breathe, and their liability to consumption was still further reduced to a little less than 4 per cent., and their liability to colds to a little less than 2 per cent. If I had more time, I could give you two or three other comparisons of the same kind, leading to the same result.

I do not think that there is any fallacy about these facts. I can

answer for it that I did not make these observations and calculations with the most remote desire to arrive at any particular result, but only to ascertain the truth. I speak therefore with the utmost confidence when I say, that if you will limit men in the quantity of air that they have to breathe, and bring it down to such low averages as you have in your barracks, and, especially, if you do not provide sufficient exercise for them, you will inevitably have a great deal of consumption. I may mention, by the bye, that the fine dust from the sanded floors of the barrack-rooms, and the dust of the pipe-clay from the belts, gloves, and white jackets of the Guards, are not very favourable to men with weak lungs.

I have thus demonstrated to my own satisfaction, and I trust to yours also, three leading facts: First, that a very high rate of mortality prevails among our soldiers generally, but especially our foot soldiers; Secondly, that our barracks and hospitals are greatly over-crowded; and, Thirdly, that this over-crowding issues in fever, cholera, and such like diseases on the one hand, and diseases of the chest, but especially consumption, on the other.

It is now time that I should think of bringing this Lecture to a close. I have given you a mere outline of a very great and very grave subject. I have displayed the facts of the case as clearly as I could, and I have to the best of my belief explained the causes. I would again and again insist on the two great evils of over-crowding of barracks and hospitals, and the want, considering the class of persons with whom we have to deal, of sufficient exercise. I do not expect—I have no right to expect—that all those whom I have now the pleasure of addressing should agree with me as to the causes which give rise to this high mortality of our soldiers. The only agreement that I seek for is a hearty determination to co-operate, according to our respective opportunities, to bring it about that the state of things described in this Report shall exist no longer.

But if there is any one now present who attaches special importance to one of the alleged causes of the soldier's mortality rather than another, let that man exert himself to get that evil remedied. If any one thinks that the figures which represent that mortality are not strictly accurate, let him do all he can to obtain weekly

returns of the deaths and attacks of sickness occurring among all our troops in the United Kingdom; and let those weekly returns be compared minutely and carefully with the deaths among the civil population of the soldiers' ages, that we may know the truth, and know it in such good time as to be able to act upon it; so that whenever any military station is found to be subject to an unusual mortality, some skilful person may be despatched to investigate the cause of it, and, within certain necessary limits of expense, to rectify it. Let us also have similar returns from foreign stations at as short intervals of time as possible.

If there is any one here who objects to the soldier's clothing as a cause of disease, let him exert himself to bring about a reform in that respect. If any man thinks that the food of the soldier is monotonous, and the means of cooking it insufficient, let him do all he can to promote a more rational state of things. Do not let it be said that, whereas the poor in our lodging-houses can cook their food as they please, the British soldier is condemned (as far as the barrack-kitchens are concerned) to a nauseous monotony of diet. But to come to more important matters. If any one thinks that night-duty is the cause of the mortality of the soldier (and with the facts I have brought forward respecting the Fire Brigade and the Police staring him in the face it is impossible to allege that night-duty as such is fatal to life), let him find out what unnecessary accompaniments there are which make that duty as performed by the soldier injurious, and then let him exert himself to set that matter to rights.

If any one thinks with me, that the mortality among the Infantry is due in no inconsiderable degree to want of proper exercise, let him agitate for improved drills. Let every soldier be taught the sword exercise; or, if it seem inexpedient to increase his drills, let him be encouraged to take every kind of manly exercise: let every barrack have a covered space, to which the soldier may retreat in bad weather, and find the means of indulging in athletic sports.

In country barracks a cricket-ground ought to be a *sine qud non*, and I do not see why some modified system of allotments should not be carried out, so that the soldier might have the whole-

some labour of the farm or garden, with the stimulus of profit to induce him to work. If we were wise, and dared to raise ourselves above routine and prejudice in this matter, we should keep the soldier as much as possible in the condition of the agricultural labourer, whose duration of life I have shown to be so favourable.

Then, with regard to dissipation and intemperance—if it be true that the soldier is a dissipated and intemperate man, there can be no doubt that his health will suffer most seriously from those causes. Let him therefore who thinks so, do his very utmost to create and bring into play the largest possible amount of counter-attractions to the temptations to dissipation and intemperance which are known to assail the soldier.

But if any one thinks, as I do, that the first and greatest cause of the high mortality of the soldier is the wholly insufficient space allotted to him in barracks and in hospitals, then let him give his whole heart and soul to this vital matter. Let us hear no more about the ventilation of the present buildings; let us have no pottering experiments to bring fresh air into these narrow spaces. You cannot safely and efficiently ventilate them. But let us do all we can, individually and collectively, to cause the Legislature of this country to make a large and liberal vote of money. It is a mockery to attempt to do anything without it. We want the money from the House of Commons; and if any man thinks that the money is not to be had, it is for him and for us to take those steps by which the House of Commons may be brought to a sense of its duty.

Lastly. If there is any man here so entangled in the meshes of red tape that he cannot stir himself—so tightly bound in the fetters of routine that he cannot move till released by precedents, I will give him precedents. I tell him to look at the case of the sailor. For three quarters of a century, as I have already reminded you, the condition of the sailor has been in constant course of improvement. His case ought to be precedent enough; but if you want a case of such convincing cogency that no man of common humanity and common sense will dare to gainsay it, I will give you the case of the prisoner.

Three quarters of a century ago, also, John Howard brought

before a Committee of the whole House of Commons (not a small Committee like that whose Report we have been considering, but a Committee of the whole House) facts relating to the condition of the prisoner, bearing, many of them, a much closer resemblance than it is pleasant to think of to the barrack revelations of this Report; and the House not only gave him a vote of thanks, but that very year passed two Acts which liberated the poor prisoner (for he was often a debtor merely and not a culprit) from the evils under which he was suffering—from illegal fees on the one hand, and from the perils of the gaol-fever on the other.

But if any man is sceptical as to the reality of sanitary science, and the power given to us of preserving health by simple means, I would ask him to go back to that same period (three quarters of a century ago) when Captain Cook demonstrated, by the example of his voyages round the world, that the sailor's life might be preserved from scurvy, and the other fatal diseases which afflicted him. I would remind him how triumphantly John Howard proved that gaol-fever might be rooted out by the same means which we are now invited to apply to our barracks; and how Jenner proved to demonstration that, if men would but consent to use the boon which Providence had enabled him to place at their disposal, the small-pox might be driven from the face of the earth. Such cases as these ought to satisfy the most sturdy stickler for precedents. Three such cases, occurring as they did in the same quarter of a century of our eventful history, would be enough in themselves to constitute the glory of any nation but this. I say that you have precedents enough. The sanitary history of the army itself abounds in them. But if we must have another precedent, we shall find it ready to our hands in the contrast afforded in the Crimea between the frightful effects of negligence, carelessness, and incompetency in the management of affairs, and the happy state of things brought about by their opposites.

And now I shall take the liberty of addressing you in the language of entreaty. I do beseech you, by the glorious military history of England; by all that our soldiers have done and suffered for us in times past; by the triumphs and trials of the Crimea and of India;—I entreat you by your recollections of the heights of

Alma and Inkermann, of the plain of Balaklava, of the trenches of Sebastopol; by the siege of Delhi; by the defence and relief of Lucknow—but, above all, by the recollection of that scene on the deck of the burning "Sarah Sands"—and, above and beyond all, by that sublime scene on the deck of the sinking "Birkenhead," before which the noblest deeds of ancient heroism sink into insignificance, and to which the glorious annals of Greece and Rome afford no parallel,—I entreat you not to leave this place with hearts untouched, and resolutions half formed;—I beseech you to join hand and heart in one great effort to obtain justice for the British soldier!

For myself I must say that I did not come here simply to state facts and figures, and offer explanations of them. I did not come here merely to solve a difficult problem in sanitary science. I cannot consent to view those figures as mere lifeless sums in arithmetic. I know that every unit represents a scene of individual suffering—a death by fever, cholera, or consumption—which it was our duty to have rendered unnecessary. I came here for a very different purpose. Just as men with their hearts full of private sorrow seek a solitude wherein to weep, so I, with a great public grief pressing heavily upon me, have chosen this time and place to give vent to my feelings of surprise, sorrow, and indignation, that in the middle of this nineteenth century, in this year 1858, such a Report as the one which now lies upon your table should have been possible. In this matter, if in no other, I have obeyed the dictates of my conscience—Liberavi animam meam. I have paid the first instalment of my debt of gratitude to the noblest and bravest army that ever rallied round the standards of a careless, indifferent, and too often ungrateful, nation.

APPENDIX.

TABLE I.—BARRACKS COMPARED WITH WORKHOUSES, MODEL LODGING-HOUSES, AND PRISONS.

Least space,	England,	before 1847	147
Ditto	Ireland	ditto	158
Ditto	Scotland	ditto	240
Ditto	London	ditto	331
Average	London	ditto	400
Ditto	Ireland	ditto	400
Ditto	Scotland	ditto	432
Ditto	England	ditto	447
Least space,	England,	since 1847	270
Ditto	Ordnance Rules,	1851	400*
			450
Greatest space	ditto	ditto	500
Least space recommended (Mr. Sidney Herbert's Commission)			600
Scotch Workhouses			480
Dormitories, Model Lodging-houses,		1848	542
Prisons at Pentonville, with Ventilation			900

* 400 cubic feet is stated as the minimum in the Appendix to the Report, but 450 cubic feet is often mentioned as the Ordnance minimum, and for that reason is here inserted.

TABLE II.—BARRACKS, 1847.

Number of Returns.	Barracks.	Cubic Space. Maximum.	Minimum.	Mean.
30	Cavalry	1052	174	470
30	Infantry	536	219	382
	Difference			88

Cavalry Barracks more spacious by nearly one-fourth (23 per cent.)

TABLE III.—NEW BARRACKS SINCE 1847.

Number of Returns.	Barracks.	Cubic Space. Maximum.	Minimum.	Mean.
9	Cavalry	729	486	613
35	Infantry	682	425	512
	Difference			101

Cavalry Barracks more spacious by nearly one-fifth.

TABLE IV.—INFANTRY BARRACKS (LONDON).

—	Cubic Space.		
	Maximum.	Minimum.	Mean.
1847	429	285*	371
Built since 1847	607	426	489
Difference			118

* Temporary Barracks.

TABLE V.—CUBIC SPACE IN NEW BARRACKS SINCE 1847.

—	Cavalry.	Infantry.	Difference.
Preston	683	544	139 = $\frac{1}{4}$
Sheffield	654	605	49 = $\frac{1}{12}$

TABLE VI.—MILITARY AND OTHER HOSPITALS, 1857.

—	Cubic Space.		
	Maximum.	Minimum.	Mean.
10 London Hospitals	2426	800	1472
20 Provincial Hospitals	1625	653	1075
5 Naval and Marine Hospitals	1310	752	1014
46 Military Hospitals	1143	400	655

ON THE

DEVELOPMENT

OF

MILITARY OFFENCES

IN

CAMP AND QUARTERS.

BY

FREDERIC ROBERTS, STAFF SURGEON, S. C.

CHATHAM:
ROBERT BECK, 58, HIGH STREET.

LONDON:
PARKER, FURNIVALL AND PARKER,
MILITARY LIBRARY, WHITEHALL.

MDCCCLIII.

CHATHAM:
Printed by Robert Beck,
56, High Street.

PREFACE.

"A Physician whose horizon is bounded by an historical knowledge of the human machine, and who can only distinguish terminologically and locally, the coarser wheels of this piece of intellectual clockwork, may perhaps be idolised by the mob; but he will never raise the Hippocratic art above the narrow sphere of a mere bread-earning craft."

Schiller.

impairs their own health, and imposes additional, and often irksome and unhealthy duties upon the remaining well-behaved soldiers. The strength of an army must, in great measure, consist in its number; therefore its health should be preserved, as well as its desertions and general offences limited, by every means in our power.

ERRATA.

PAGE
16, 9th line from bottom, *for* "of the cavalry," *read*, than the cavalry
18, 8th line from top, *for* "consequently" *read*, consequent.
19, 4th line of second paragraph, "desertion" to be followed by a colon instead of a comma.
27, 5th line from top, *for* "they are *imitative;* and the desertion may" &c., *read*, desertions are *imitative;* and they may &c.
30, 10th line from top, *for* "with a few" *read*, with few
31, 7th, 8th, and 9th lines of second paragraph, *for* "that the men have become suddenly vicious *independently* of *general* causes, but that their *individual* natures, have" &c., *read*, that the men had become suddenly vicious in London *independently* of *general* causes, and that their *individual* natures had &c.
32, 1st line of second paragraph, *for* "as the" *read*, than the
2nd line, *for* "exists" *read*, consists

DEVELOPMENT OF MILITARY OFFENCES.

It is an important fact in the history of armies, that a great number of soldiers pass their lives in a continual alternation of close captivity and partial liberty. From this state of existence, so antithetic in all its phases to the habits of civil society, delinquencies, considered venial in civil life, amount to breaches of discipline, and become punishable offences in an army. The result of this existence, the chief element of which is *exactness*, is frequent conviction and never-failing punishment; and the amount of defaulters is so great that the ultimate effect is a numerical deficiency of the strength of armies. The subject, then, of the development of military offences, is deserving of serious consideration, not only from its directly affecting, in proportion to the number of criminals, the numerical force of an army, but likewise indirectly its health, inasmuch as the separation of defaulters from their proper duties, and their detention in prison, impairs their own health, and imposes additional, and often irksome and unhealthy duties upon the remaining well-behaved soldiers. The strength of an army must, in great measure, consist in its number; therefore its health should be preserved, as well as its desertions and general offences limited, by every means in our power.

The daily average number of prisoners in confinement in military prisons alone in Great Britain, in 1849, was *	750
The daily average number in barrack cells, and in guard-houses, waiting courts-martial and otherwise, may be estimated approximatively at	750
On foreign stations, of the two classes as above	1500
Deserters constantly absent, and not recovered in Great Britain, Canada, and other stations	1000
Total.....	4000

Out of a force of 140,000 men, about the strength of the English army in 1849, 4,000 are to be daily deducted on account of crime, and if we estimate each prisoner to cost £30. annually on account of food and raiment, and including expenses of prison establishments, salaries, &c., (under-rated, were the interest of money laid out in building prisons, taken into consideration) 3,000 prisoners would cost the Government £90,000., and the army loses their services, as well as those of the 1,000 deserters uncaptured.

With liability to some variation, a certain degree of crime will always occur in the best regulated armies, and even in their most select portions. It is universally acknowledged that with the improvements in the physical and moral conditions of soldiers of latter generations, crimes have diminished. Such misconduct as soldiers were chargeable with in former times † has long since disappeared. ‡ Cases of rebellious conduct have altogether ceased. Of the whole army, only one or two have been punished by death for years past; and the number and

* Report of Military Prisons for 1849.
† The commencement of the Peninsular war.
‡ Napier (Charles) and *all* old soldiers.

degree of cases of drunkenness have greatly reduced; circumstances which appear almost incredible, when compared with the number of punishments formerly inflicted. Owing to the laxity which then prevailed, the position of officers, at the commencement of their duty, was most difficult, and they were compelled to exercise a certain degree of severity to bring the men to a state of order; but this being once established, and the *law* understood, to severity succeeded milder statutes, and by the practice of kindness, and also constant attention to the personal comforts of the men, proper discipline has been ever since effectually maintained; at least, officers are guarded from insult, their decisions regarded, and crimes are impartially punished. Daring wickedness is never suffered to triumph. There are no villains above the control of the law. A positive proof of this state of things may be advanced in the Duke of Wellington's evidence taken before the Commissioners on Military Punishments, when he answers to the following question, (5833) viz:—"Towards the latter time of your service in the Peninsular, was corporal punishment very frequent in the army, or more frequent at the beginning?" "I cannot say that I know exactly how it was in the regiments. I rather believe it was not so frequent. I am positively certain that crime had most enormously diminished; that there was not one crime for one hundred, that there were in the beginning of the time. I think my orders shew it. There was a man convicted of robbery, and I pardoned him, because crime had become so rare. There are things of that sort that shew clearly, that by discipline, and by care and attention, the army was brought into such a state of discipline, that every description of punishment was almost discontinued altogether." Since the commencement of that war discipline has been less harsh, but strict. The improvement

effected in discipline is, in great measure, the result of improvement in military morals generally. Officers of regiments, and the superior authorities, by encouraging good conduct by rewards, have constantly endeavoured to inspire the men with a feeling of self-respect; to the displacement of the system of *repressing* crime by punishment. Before this, crime and punishment were looked upon by the men as no disgrace, and a dozen men have been flogged in a regiment in one morning. The improvement has been gradual and constant, and where ten men were guilty of theft in former times, not more than one is now.

The whole past and present history of armies shows that, as they have hitherto been constituted, crimes have never been wholly avoided. They certainly may have been more or less, at this time or that, but take them at their least, and their amount is yet great. Modern investigation, by its enumerations, gives a still further reality to their existence. The constant recurrence, within but slightly varying limits, which is exhibited by statistical inquiry of regular amounts of various classes of crimes, both in civil and military life, give a formidable character of fatality, to these and such like signs of evil. The utility of the regime of the "cell system" of imprisonment, "hard labour," and "shot drill," as affecting the question of morality is null and void. The frequency of crime is precisely the same since the institution of secondary punishments. The broken, yet admirable, statistics of military offences that have come before the public of late years, may, at first sight, appear to prove the reverse; but, though interesting enough, they have been too accidental and uncertain to establish anything. Every system of summary and secondary punishment conceived for re-

formation of military prisoners, has proved futile, for the amount of criminality, as far as attempts at *repression* affect it, remains as determined as that of the fall of bodies. Every one must know from the history of the soldier, at all periods, that the "repressing" system has not conduced to diminish his wayward delinquencies; for we still find him the victim of excessive irritation, intense gloominess, and, when drunk, and when sober, to kill himself, and to perpetrate extravagancies in proportions far greater than prevail in *any other* human communities. Seeing all this, should not more efforts be made *to remove the cause* of crime, than to punish it? Nay, it is most apparent that it should be less our object to attempt to correct criminals, than to seek for those circumstances which, it will be presently seen, have been established, oppose the development of crime. The sources of crime are to be sought for in two causes; the one *particular* and the other *general;* just the same as poverty is attributable as well to *individual* indolence as to *universal* scarcity. For instance, *individuals* are instigated to desert by *specific* motives; but *all* desertions are more or less favoured by further general causes, which should be sought for prior to private reasons—as various as those that lead to enlistment. Military crimes will remain unaltered so long as the circumstances under which they are developed continue unchanged; their antagonisms are found not in coercion, which often only still further deforms them, so much as in modifying the peculiar circumstances under which they have had their growth. To produce a good tone and reformation in the army by fear, is hopeless, so long as the obstacles remain uncontrolled. Men without principle, and many such are permitted to enter it, present to the chaplains, schoolmasters, officers, and military gaolers, nothing to reform with; good principles have been absent from

the beginning in bad men, whose views, as well as many others of their comrades too, are generally confined to the present moment, and who endeavour, midst the distraction of riot and dissipation, to forget their situation; accustomed to the uncertainty of events, for military laws determine them imperfectly—many being left wholly to the decision of commanding officers and others—the consequences of their crimes become problematical, which gives additional force to the strength of their passions.

Military offences are not always crimes against the social customs and habits of the civilian—about a fifth of the offences annually punished by imprisonment in the British Army being "absence without leave" (absent for one or more hours from barracks)—nor do they consequently materially outrage his doctrine of the duties of life. It is difficult to find a mode of punishment suitable to such deviations from rectitude: for they are not always the result of morbid perversions of habit, and moral (*civil*) dispositions, as cause and amount to, in the civil criminal code, "felony," or even "misdemeanor," although the retribution is often equal in both cases, as in armies, offences of the most opposite nature are punished by the like means. Instances of a defect in the administration of criminal justice, and especially the disproportion between the punishments adjudged to offences, are conspicuous in armies. The effect of severity and fear in checking *faults* against discipline is over-rated, and the exercise of undue severity towards a soldier, for offences free from mutinous and insubordinate tendencies is questionable: a soldier is often punished far more severely for a trifling offence than a civilian who is a practised thief; and such a discipline is urged on the plea of its never having been found possible to satisfy the conditions of

military order, without employing the operation of fear. Fear and severity will but little deter a soldier from committing an offence not *directly* and *personally* injurious to others; but there is greater hope that such will prevent mutiny, insubordination, and theft. Many military offences are chiefly degrees of unsoldierlike conduct, virtually opposed to military morals, and their arrest is to be looked for by inducing self-respect in the men; it is, however, a difficult thing to inspire *all* soldiers with such a feeling, from the variety and difference of characters amongst them.

Military crimes find equally their means of growth and propagation in opposites: they are encouraged by impunity as well as harshness. They become less confirmed by a *really* soldierlike retribution, than ignominious punishment, and even most punishments are variable and uncertain in their effect upon them, being more or less dependent upon the character and situation of the individual. Uncertainty encourages a crime by making punishment a lottery, and too great leniency is an injury, by making offenders indifferent to detection. Reformation is an incident, and though an important, it is never to be considered otherwise than as a secondary one. Punishment is no compensation or satisfaction to the service; prevention is the means by which alone we can attain a diminution of crime in it. Improvement is to be sought for in diminishing hope of impunity, and increasing *wholesome* fear of *the law, not of men*,—by mitigating the causes which dispose to the development of offences, and thereby making punishments more sensible, positive, and concise, in reducing the probabilities of escape, and rendering the consequences of detection as certain as possible.

A vast number of soldiers tried and punished are relapsed criminals. Some crimes are followed by a greater number of relapses than others. Relapses occur at early and remote epochs; and are the result of intervention of new causes, powerful enough to destroy the work of redemption, effected during detention in prison. But the early period of the recurrences of crimes testifies not only to the uselessness of such detention as a means of reformation, but even also to the increase of the moral perversity in the growth of moroseness and dissembling, and which only seek occasion for breaking out into new crimes, especially when the presence of temptation is ever more powerful to attract crime than the recollection or anticipation of suffering to deter.

Considering that old criminals can never now corrupt new comers into prison, which was a source of great complaint before the establishment of separate places of confinement and the silent system, it is surprising that so little has been done in reducing the number of criminals in the army, particularly too as there is so much encouragement to good behaviour; and as every regiment has its school, with the benefit of libraries, regimental and garrison, and chaplain's advice in every command. On the 2nd of July, 1845, Captain Layard, when speaking in the House of Commons, stated that by "a Return he held in his hand, it appeared that from 1839 to the year 1844, 3,355 soldiers had received corporal punishment, and the number of imprisonments during the same period, was 28,190, being nearly one-third of our whole army. Some of the latter were even of repeated imprisonments, as there were many soldiers who spent the greater part of their time in gaol." Col. Sir James Leonard Greenwell, when examined by the military commission, in 1835, mentions that 216

men were sent from Chatham garrison, consisting of 2,100 men, to Maidstone gaol, by his committal, 117 of which were sent back a second time within the year. Out of 4,043 prisoners admitted in 1848, into military prisons alone, in Great Britain and Ireland, and, exclusive of those confined in barrack cells, the previous convictions were as follows, viz:—Once, 842; twice, 399; three times, 256; four times, 155; five times, 89; six times, 59; seven times, 46; eight times, 32; nine times, 17; ten times, 12; eleven times, 8; twelve times, 5; thirteen times, 2; fourteen times, 9.* Whilst these facts pretty plainly shew that the mass of military delinquencies is difficult to be subdued, and that a primary imprisonment is soon followed by a relapse, it may be remarked that crimes which come under the heads "disgraceful," "mutinous," and others, and generally *civil* ones, are less influenced in their development by the causes which produce other military offences. They are independent of such causes, in most instances; whereas offences not deemed equal in magnitude to civil crimes, and corresponding to the common faults of men in private society, such as "absence," "drunkenness," &c., may rather depend upon peculiar incitements in the army (all men and circumstances of the different branches of it being considered equal), than upon the universally wicked inclinations of soldiers. It is thus that the crimes of "absence" and "drunkenness" are followed by a proportionably greater number of relapses than "desertions," "disgraceful conduct," and other crimes.

In proportion as troops are well situated with respect to physical comfort and moral positions, so will crime the less prevail amongst them. In the cavalry, artillery, and sappers and miners, the soldier is held in greater esteem

* Report on Military Prisons, for 1848.

on account of his generally superior education—scholastic and professional—brought with him, and subsequently obtained in the service, by the more intellectual nature of his duties, his more expanded sphere for the exercise of intelligent qualities, and his state of greater self-reliance at all times. It has been observed for a long period past, in military history, that there are fewer punishable offences among those troops who are the best fed and clothed, whose duties are least artificial, or more consonant to nature, whose moral standing is held highest—the cavalry, artillery, and sappers; and that there are more in those whose services are worse paid, are the most *intense*, most artificial, whose clothing and diet are inferior, relatively to the other branches, * and whose social indulgences are the most stringent and arbitrary—the infantry. It is very generally maintained that the exercise of this extra stringency towards the infantry soldier is the result, and required by reason, of his inferiority in class in society. Every due allowance conceded on this score to the men composing these higher branches of the service, there is not, nevertheless, so much difference in the social character of cavalry and artillery recruits as to be the *sole* cause of better behaviour; there is no positive reason to warrant such a conjecture; and the supposition is much shaken by the fact that the system of recruiting in the English army makes no distinction of class in admitting recruits into any of its branches; and volunteers rather select the infantry to serve in, in foreign armies raised by conscription. That crime is far less prevalent in the cavalry and artillery of civilized armies is perfectly well known and acknowledged, and in regretting the absence

* The rations issued to all branches are alike, but the cavalry and artillery by reason of their superior pay, contribute more than the infantry to the support of their mess, which is superior, both in quality and quantity, to that of the infantry.

of systematic statistical information to demonstrate such an important subject, gleanings from the evidences in the Report of the Commissioners to inquire into the system of military punishments, will go far to supply such deficiency. It is mentioned in that Report that only two instances of corporal punishment had occurred during a period of nearly six years in the cavalry depôt, of the average strength of 300, at Maidstone. This is infinitely much less than did occur at the same period in the infantry. It was not, however, by the number of corporal punishments that the ratio of crime, or rather of punishments, was to be determined in any arm of the service at that time or now, but by the aggregate of all sorts of punishments. From other reliable sources I am enabled to state that in a regiment of Life Guards, averaging 404 strong at the period when the observations were made, and whilst in quarters in London, the daily average number of men under punishment was nearly fifteen during three summer months. The daily average number of men in a battalion of Foot Guards, for the *same period* nearly 81; the average strength being 650. In a regiment of infantry of the line, in garrison at Portsmouth, the daily average for the *like period* was 104$\frac{3}{4}$; average strength being 850. In the Report above referred to the daily average number of men under punishment is stated to have been in the Foot Guards between 80 and 100. Not only is *general* crime less prevalent in the cavalry and artillery, but there is also less of a heinous character. Upon the authority of a correspondent of the United Service Magazine for December, 1843, it seems that during the half-year ending 31st August, 1843, no less than 1,510 deserters appear in the War Office list (published in the London Police Gazette), giving an annual loss of upwards of 3,000 men by desertion, upon a

force of about 43,000 in the United Kingdom. The desertions from the cavalry during the six months over which the observations extended were seventy, or less than nine per 1,000 upon the average force of about 8,600 at that time in Great Britain and Ireland. Those from the artillery were twenty, or about five per 1,000 in a corps of the average strength then at home of about 4,000; leaving 1,354 (deducting the quota for the Foot Guards) deserters to be divided among about 27,000 infantry of the line, and showing an annual loss by desertion of fifty men per 1,000 in that branch of the service.

There would appear to be less moral power in force in the infantry than other arms of the service in counteracting that apathy so prevalent in men doomed to monotonous and often frivolous occupations, repeated to satiety. Officers of infantry see less of their men off or on duty; the very nature of the service subjects their men to be treated more as machines, and parts of a machine, and consequently they have less *esprit-de-corps;* they feel it less a responsibility and obligation to their officers to remain constant to their colors, than cavalry and artillerymen, who, on the contrary, are more associated with their officers on duty, and at other times, and though not free from monotonous occupations, expend the vigour of mind and body in less useless labours, are in higher spirits, and are less easily led to debauchery and insubordination, and their too frequent ultimate consequence in the British Army—desertion.

In support of the opinions advanced in these papers, a remark, by the author before quoted, in illustration of the relative prevalence of desertions in different arms, may here be introduced. He says, "Viewing the numerical

proportion which the cavalry bears to the other branches of the service at home, the desertions from the former, amounting to only one twenty-second of the whole number, are exceedingly low. This fact affords another argument for endeavouring to raise the character of the army, by devising means to encourage enlistment amongst a superior class of men to that from whence our ranks are chiefly recruited." The writer might with even more justice have included the artillery in the same category, inasmuch as only twenty desertions occurred amongst about 4,000 men at home—a smaller proportion than in the cavalry. On referring to the evidence of witnesses examined before the military commissions, in 1835—6, it can at once be learned that offences are infinitely fewer in the cavalry and artillery *proportionally* than among the infantry; indeed it may be safely asserted, that cases of desertion, absence, or drunkenness, do not occur either with the same frequency or equal heinousness in the former as in the latter;—that is, the offences are not committed in such a spirit of insubordination. Mr. Hume (see page 57 of the Commissioners' Report) says that "he found, in the Company's European Infantry, punishments extremely frequent. Drunkenness was frequent in the European artillery, but by no means so frequent as in the infantry." And at page 59 he expresses his opinion that the East India Company's artillery is a very superior class," and says that "he did not recollect ever attending or seeing the flogging of an artilleryman in camp." I saw it mentioned in a local newspaper that up to 1846 not more than one man had been flogged in the sappers and miners at home for a period of twenty years.

The infrequency of offences in the cavalry and artillery compared with the infantry is in part referred to the

greater self-respect of the former, and a consciousness of superiority of tone to the infantry, which stimulates them to seek association with the more respectable class of civilians, to uphold a more upright, and, so to speak, exclusive bearing (the respective ranks conceiving, with no little conceit, that they are entitled to associate with those next above them in the infantry) and to keep aloof from infantry *of the same rank*. It is well known that there does exist this difference in the society of private soldiers and non-commissioned officers of different arms of the service, not extending to every individual of course, but prevailing generally, and enough, with other causes, to produce a different effect in the one from the other; and it is alleged to be favoured by the superior pay of cavalry and artillerymen, who are enabled thereby to enjoy less degrading amusements than the inferior pay of the foot soldier can afford.

Offences are absent or present according to the *personal* character of soldiers. This, when good, is a greater antagonism to crime in proportion to the particular character of the service; the very best men will become less easily governed the more antithetic their position to their previous condition. The infantry will suffer more in this respect than cavalry and artillery, from the greater contrast of the cavalry to the soldier's former mode of life, as has been before mentioned. When placed in a position more or less repugnant to his feelings—albeit his own seeking—it is not easy to estimate the *absolute* moral character of a man; it can be calculated *relatively* only to that situation. A man when employed at a trade (all other things being equal) and unembarassed by personal interference, and not nervously dreading perpetual supervision, may pass through life with unruffled temper and

such an amount of happiness as he can expect to realise in this nether world. Whereas had he been circumstanced oppositely, it is probable that he would have encountered much trouble, due equally to bad judgment in others as to want of command of himself—the fault, doubtless, having been mostly his own. In addition to either of these positions, a soldier is more liable than a civilian to be provoked to periodical fits of excitement, apart from his duties, and to suffer correspondingly more, which must be further set off against the difficulty of estimating the actual value of a soldier's moral qualities.

Although unlettered men are not always the most ignorant, nor learned men always wise, yet it must be conceded that an educated person only is fit for a soldier. Crime is less easily repressed in ignorant and degraded (whether by themselves or others) men by punishment, than in more intelligent and upright persons; for we cannot otherwise account for the persevering desperation with which abandoned men daily and repeatedly commit themselves with the knowledge that they are risking incarceration in a military prison, where it is universally acknowledged, the utmost physical pain, short of sudden and violent injury, and mental constraint, is inflicted that can safely be borne. It is unsuitable and dangerous to subject the more intelligent and upright soldiers to equal punishment with the less reputable, even for *crimes* and not *faults:* a system of correction which punishes all men alike may lead to exasperation and despair. Men of a low state of morals, whether possessed of scholastic education or not, do not hesitate to evade punishment by falsehood and deceit, which an honest soldier, from a natural disinclination to conceal an evident fault, or avoid just conviction, never seeks to escape. A soldier's honor is greater

than he gets credit for, and is often capable of being raised to a high pitch; it is more conspicuous in the cavalry, artillery and sappers, than in the infantry, which is the most artificial service; where the laws of nature are physically at the maximum of perversion—the probability of life being half per cent less than in the cavalry and artillery—and where the military constraint is the highest, and consequently heart-burnings and disgraces are most frequent.

A vicious contingency of inferiority of personal character in an army is a mean eye-serving class of non-commissioned officers, who connive at dissembling, permit a low state of morals amongst the men, and conduce to the training up of the worst set of military offenders. It is this class of men who have most often their favourites and victims of persecution.

Offences, as those who have watched their progress in a regiment will have seen, observe a certain order in their distribution over the year. This law of periodicity is to be seen in both the *crimes* and *faults* of soldiers. The regularity of the amount and kind of offence is remarkable amid a variety of causes, which would seem to dispose to the greatest fluctuations. For example, "desertion" and "absence" in the British army, at home, conspicuously observe this law of periodicity—being far more prevalent in summer than winter. In summer also the amount of *all* offences is much greater than in winter, not only in the United Kingdom but also on several foreign stations. In some of the latter, of course, they vary as little as the seasons, except when they do so on the supervention of other causes. On home service, the crime of "drunkenness" would appear to preponderate during winter pro-

portionally to other crimes; at least the offence is more conspicuous at that time, possibly from the unfavourableness of that season for the soldier to absent himself long, and compelling him to seek shelter in his barrack room, and hazard detection of his doubtful state of sobriety. In summer, in Canada too, the number of "desertions" and "absence" exceed innumerably those that occur in winter. From British garrisons near the American lines, desertion has occasionally been frequent even in winter, when the rivers are frozen over, and favour the quick passage of the deserters over the frontier.

Besides this the amount and species of offence would appear to vary with other means and opportunities of development. The predominant military crimes are "absence," "drunkenness" and "desertion," "disgraceful conduct" and other crimes, manifesting themselves in a very small proportion to these. All these again differ in amount with respect to each other according to circumstances. Differences of station, duty, and other accidents, make a battalion exhibit very dissimilar states of crime. I happen to know from a reliable source that a Battalion of Foot Guards will have a higher average number of men under some sort of punishment or other in London than Windsor—observations extending over the *same* three summer months in two successive years, giving a daily average of 81 defaulters in London and 47 in Windsor; or instead of an *eighth* part of the corps being under punishment at one period and in one locality, there would at another time and place be only a *fourteenth* part. Such a difference in the amount of defaulters in the same period of the year in two different localities is suggestive of important inquiry. This result may be attributed to transition to a locality where a soldier was further removed

from temptation and bad example, and where there was a check against extravagant behaviour in the facility for observing the conduct and movements of individual members of a corps. Probably too the duties of the garrison were comparatively lighter and less strict than in London, and consequently there was less discipline exacted and less punishment inflicted. In a regiment of infantry of the line in which I served for several years at home and abroad and in every variety of quarters—the isolated fortress and lonely barrack, the dense garrison town and quiet country quarter—offences always fluctuated according to the seasons and localities, subject only to the intervention of some prominent and well-known exciting cause of delinquency. This general and local periodical development of offences is quite independent of punishments or relaxations; they increase and decrease under certain circumstances, however stationary the *mode* of punishment may remain during these periods, and they do not increase with the slightest corresponding relaxation in punishment. Immunity from crime does not by any means depend upon any particular mode or degree of severity of punishing it. Crime is punished *generally* in the same uniform way—by imprisonment *without military duty*—in all arms of the English service and in all seasons and climates, and yet with different results in some than others—cavalry and artillery having far fewer primary and relapsed offenders. Were good conduct due to the amount of punishment awarded to crime, then the infantry, which receives treble or quadruple the sum the other branches do, should be without blame, which, unfortunately, is not the case. Not only so, but by an intentional and apparent relaxation of the elemental *exactness* of armies, the amount of defaulters may be materially reduced, as would be expected, and, it is not strange to

say, without impairing discipline, as is instanced in the case of the Life Guards and Royal Horse Guards, who to the exclusion of all other corps, are allowed to remain out of barracks till ten o'clock at night (and among whom, were the restriction limited to nine o'clock, it is but plausible to conclude the number of defaulters for "absence" at least would at once materially increase), and also in that of the Foot Guards, who have fewer defaulters when removed from London to Windsor, or Winchester, where, as has been said before, we suppose discipline to be less exacting, and not to mention many critical cases where it is made a virtue of necessity to waive the infliction of severe, frequent, aye, and sometimes, any punishment at all.

When offences prevail equally in those regiments where punishment is *constant*, as in those where it is only *occasional*, for many regiments present these contrasts (as such a prevalence of crime may be observed *for a certain time* among two or more regiments *in the same garrison*), it may be attributed to *the same impulse* to development having presented itself to all. And upon the accidental cessation of drunkenness, absence, desertion, or other crimes in a regiment, at the simultaneous infliction of unusually severe punishment, perhaps it must not be omitted to look for other frequent causes of such discontinuance in the English service; as, for instance, the temporary establishment of temperance societies in regiments, or of the soldiers joining them in garrison towns, the introduction of a batch of new men, the joining of new officers or sudden creation of a set of non-commissioned officers, removal to new quarters, the approach of seasons of the year unfavourable to remaining out of barracks—to the discouragement of absence and often desertion—the tem-

porary regimental lack of money, although when the incitement is great there is often presented the anomalous fact that no extent of bankruptcy will shew a decline in delinquencies, to which money would be supposed to be indispensable, in each of which occasions various classes of offences either decline or suffer some modification.

I have always been convinced that there are powers at work which produce desertion and other crimes and delinquencies besides a man's own choice, or free will; for if not, why should not these occur as much at one time and place as at others? which they do not; but at certain seasons, in certain regiments, in certain places, and under certain circumstances. There was a leading paragraph in the United Service Gazette of 28th May, 1853, stating, that "In the 88th regiment there was not one man in the military prison, garrison cells, nor in the guard room; neither is there a single man confined to barracks."!! The science of Military Economy as regards these things may be ranked among the positive sciences. Were Returns made out at regular periods, to illustrate the relative prevalence of desertion and other crimes in different arms of the service, in different seasons, and under other circumstances, to try and discover what favours and what counteracts the commission of various offences, some more positive information would be acquired. I admit that *individuals* are instigated to desert by *specific* motives, which are the reasons assigned to account for this and other offences in the army, and which the modes of correction, not *prevention*, in use, fully prove, are supposed to be the causes. But all offences are more or less favoured by further *general* causes. It is, therefore, presumed that some instructive deductions could be drawn from such Returns, as those proposed respecting the development of the crime of desertion, drunkenness, absence, and other offences, both general and local, in this class of recruit and in that. I believe that desertions, like other offences, fluctuate by seasons, and even in different years, and vary frequently in different branches of the service. Such Returns would offer opportunities for further remarks as to the indications of cure of this moral disease in our service. When facts are known the causes will be investigated, and a general law will be evolved. For example, we should see whether desertion seems proportionately more frequent among labourers or artizans, among indiscriminately enlisted men, in those recruited within their own native places, or when absent from home, among those enlisted in manufacturing towns, or rural districts.

Many effects which appear to be accidental, cease to be so when the observations are extended over a large number of facts; and as Quetlet remarks, "the liberty of choice (free will), whose results are so capricious when individuals only are observed, leaves no sensible traces of its action when applied to multitudes." Hence the important law is adduced, "that social facts, influenced by liberty of choice, proceed with even more regularity than facts submitted simply to the action of physical causes."

To shew the various shades and degrees of moral character of the men who pass through the ranks of the army annually, an enumeration of how many are required to fill up the vacancies caused by desertion, blank discharges, discharges with ignominy and transportations, should be periodically made. Besides shewing at one glance the actual number of each class we have to deal with every year, we might, with closer examination perhaps, be as-

sisted by it in devising means to avoid some of these *criminal* discharges and to diminish the number of offences by controlling the causes that lead to the vacancies.

The estimate of 4,000 men given as *constantly* absent from regimental duty, and their services lost to the public, may be too low, but is high enough to stimulate us to inquire into our Military Criminal Statistics. The average number of cases of desertion *punished* in the United Kingdom for four years ending December, 1850, according to the Reports on Military Prisons at home, was 1,168; but this number may be far from correctly representing the number *committed*. Possibly it may be within a few hundreds, and very likely too it may not be by many hundreds even at home—those in the Colonies not being included in the Reports. Desertions in all the Colonies, except Canada, are very few: so that there would be but a hundred or two to add to the above amount of deserters from the whole army annually. The rate of desertion occurring in one half year in 1843, may possibly not shew either the correct average in the army half-yearly. And it may be again repeated, that this is the question that requires to be *statistically* proved, and that the number of men returned as *punished for desertion* will not exhibit the actual amount of deserters.

Deserters are by no means always men of, what is usually termed, bad character, but often quite the reverse, and desert from some sudden impulse only, and not I think through vicious premeditation, as is generally supposed. Besides a man deserts often to leave a certain regiment only to re-enlist in another: and I believe that hundreds of both the good and bad class of deserters are now serving in the ranks of the army, and very many

with credit to themselves and the service, who re-enlisted before capture and branding. We may have a notion of this by the number of men who are discovered as deserters in other regiments, and others who, when they get into a scrape, or are piqued at some disappointment, report themselves deserters from such or such a regiment or regiments—for some men repeat the offence.

Undoubtedly the *peculiar circumstances* of an army create offenders, by driving men to drink and to commit other offences, which they never did before coming into it. The recruit joins a regiment composed of men of different characters, and is exposed to temptation, always the more acceptable in proportion to the sum of restraint a man is subject to, and bad example of the vicious, that before he has learnt his drill, he has acquired the habits of the worst characters. Hence is presented the fact that the recruit is, even in a few years, made worse than we found him, and is punished for sins he has learnt since he entered the service.

I think it will be found that the amount of offences varies always much less in the *separate* arms of the service than it does in the *aggregate* of those services. The amount of offences will vary little too, one year with another, in a battalion, except so far as it will do in different localities, in which case it will always preserve a *sameness*, or nearly so, as the following examples from a reliable source of cases will show: viz.—in one battalion, in

1839	there occurred a monthly average of	72	of "absence"
1840	ditto	49½	,,
1841	ditto	45½	,,

In another battalion in

1839	there occurred a monthly average of	103½	of "absence"
1840	ditto	104¼	,,
1841	ditto	99¼	,,

In the first named battalion there occurred in

1839	a monthly average of	170⅛	of "drunkenness"
1840	ditto	165¼	,,
1841	ditto	142⅞	,,

In the second battalion there occurred in

1839	a monthly average of	152⅛	of "drunkenness"
1840	ditto	100½	,,
1841	ditto	74¾	,,

The almost uniform rate of prevalence of the two offences in the two battalions is striking, the first battalion *uniformly* exhibiting a lower rate of "absence" than the second, which, as if it were to compensate for excess in that delinquency, maintains *as uniformly* a lower rate of "drunkenness" than the first. What was the secret guide to the relative prevalences of these offences, it would be difficult to conjecture. Military offences may assume new phases; now developing themselves in the form of desertions, then in drunkenness or absence. Their aspect may vary, but their progress is stealthy and continuous. Rules and regulations do not crush them. Nor will they be banished by "shot drill," "low diet," and "cropping of the hair" in prison. The incentives to these offences are various, at one time unusual restraint, *adopted as a precaution against their commission*, but which as the army is a life of restraint already, not only often proves the defeat of its own object, but aggravates the cases by increasing the chances of their multiplication, at another time they are fostered by ignorance in the mere bluntness of perception of good and bad, and by want of sufficient *active* occupation and too short an interval of

relaxation. When men desert for instance, in large bodies, and these good men, there is sure to be something faulty, things must be different and more *fatiguing*, or more stringent than in another regiment, under which circumstances they are *imitative*; and the desertion may go on unchecked even by the proximity of a military prison, or in the very midst of any amount of punitive tampering, so long as the *general* incentive to the crime remains in force. Instances of large bodies of some of the best men in regiments deserting under these circumstances frequently occur in Canada, where the temptation is exalted by the proximity of a foreign country, by the newness of the colony, scanty population, and absence of a properly organised system of police for the purpose of capturing deserters in that country, however questionable in utility such an accomplishment would be; for no doubt that by improved means more deserters would be taken, and consequently our prisons would be far more crowded, which is less desirable than the *prevention* of desertion. When men commit desperate acts under a distressed mental and physical state, the most severe examples of punishment do not check them. Napier mentions, in the sixth chapter of the fifth volume of the "History of the War in the Peninsula," "that the Portuguese troops took to desertion in 1812." "Beresford checked the desertion for the moment, by condemning deserters to hard labour, and offering rewards to the country people to deliver them up; yet griping want renewed the evil at the commencement of the campaign, and the terrible severity of condemning nineteen at once to death, did not repress it."

The object of punishment is the *moral* reformation of those who undergo it, and the punishment most likely to be attended with such a result, is that which inclines the

defaulter to turn his thoughts inward upon himself and give birth to firm resolutions of future amendment. "Shot drill" and "deprivation of bed" in particular indispose a man to a thoughtful retrospect of his past life; they harden him against profiting by warnings afforded by present restraints; they render him morose; they are the enemy of every feeling bordering on reformation; they are the parents of deception and falsehood. To avoid "shot drill," under an incomparably lower diet than the man enjoyed when not exposed to such severe labour, every species of deceit will be resorted to, sickness will be feigned, falsehoods uttered and persisted in. Nothing should deter us from using every lawful expedient to keep a man out of prison. He is too often ruined there: temper, habits, feelings, alike vitiated. It is no school for young soldiers, however silent, and however little they mix with the old confirmed defaulters. In the Report on Military Prisons for 1850, it is mentioned by the Medical Officer of the Fort Clarence Prison, that "17 men were placed under observation as suspected of malingering." This species of immorality had disappeared from the army, and its revival is to be abhorred. After the experience of having myself seen 1200 prisoners pass through a Military Prison during an uninterrupted course of nearly four years, my opinions were strengthened by each succeeding year's experience that the organism is deteriorated; that is, a low state of vitality ensues, and the mental faculties are degenerated in the prisoners—rendering the reason more assailable by temptation—resolution less firm, leading to the consequent evil of increase of crime and delinquencies unconscious even to the offenders themselves; as is clearly proved by the increase of *relapses* of crimes, according to recent reports upon the discipline and management of Military Prisons in the United Kingdom.

It is to prostitute science to the basest purposes, sophistically and speciously to assert that eight ounces each of oatmeal and bread and six or nine ounces of Indian meal with a small proportion of milk are sufficient daily sustenance (after having immediately previous been living on animal diet and under a certain freedom from constraint) for days, weeks, and months, with frequent privations of bed, and under circumstances too of great depression, and to pander to the worst passions and prejudices of men, and grossly to deceive the administrative military and medical authorities, to suppress the facts of the fluidity of blood and failure in the tone of the brain and nervous power generally, as indicated by listlessness, indifference of temper, languid expression of countenance, dulness of eye, excessive irritability of kidnies, puffiness of the integuments, wakefulness, slowness of pulse and "bellows" sound in the large vessels, which are so many symptoms of degeneration and diseased function, requiring as attentive treatment as any overt disease in any system of nosology. How can a man reduced to a listless state of mind profit by the admonitions and exhortations of a chaplain? Exclusive of the restraints under a state of punishment, there is in armies already much restraint, and its mental effects are seen in the frequency of insanity and suicide in soldiers. From 1825 to 1836 there were discharged as unfit for service from the Windward and Leeward command in the West Indies 1221 men, of whom 22 were mad, making nearly 2 per cent!! of those discharged, the average annual strength of the troops being 4627. In the same period from Jamaica there were discharged 425, of whom 17 were mad, giving an average of 4 per cent!!!, the average annual strength being 2617.* At page 8 of the "Statistical Reports of Sickness and Invaliding

* See Page 8, "Statistical Report of Sickness in the West Indies."

in the United Kingdom," it is mentioned, "that there is one suicide in France annually in 18,000 inhabitants; in London, one in 5,000; in the Dragoons at home, one in 1274! Again, out of an annual average of 3684 in the Ionian Islands for 19 years there were *admitted* into hospital an annual average of 5⅞ insane men. Out of an annual average strength of 3368 men in Canada, there were *admitted* an annual average of 2⅛ insane men. These men were *admitted*, and probably were never *cured*, but, with a few exceptions taken into the Military Lunatic Asylum, were discharged from the army and sent to their friends, or some parish asylum, thereby casting aside and throwing into another channel an amount of insanity, which properly belonged to the army itself, and which, had the army to account for until death, would exhibit an appalling amount of mental disease. Men who live in an absolute and forced communism, and most of them in the *unmarried* state, which favours insanity, although the chosen part of the population, are more exposed to mental and physical disease and mortality than more free men. This must be the case, when we see the army draining from the population, already sapped beyond a wholesome condition, some 10,000 of the chosen men *annually* on account of death, invaliding, transportations, which one military authority calculates at one out of every regiment annually, discharges, free and with ignominy, and desertion. In the science of psychology are included the study of not only overt mental aberration, but likewise the operation of the depressing moral influences on the mind (without producing overt insanity), which have an extensive sway in an army, and whose results, although falling short of causing decided insanity in every case, may be seen in the *double* amount of sickness and mortality among soldiers,

even in their own country, to that which exists in people of the corresponding age in civil life, and which could not possibly be attributed to physical causes alone.

I have before stated that there were circumstances which oppose the development of military offences. When we see that offences are less frequent in a battalion of the Guards at Windsor, as has been before pointed out, than in London, it is more rational to attribute this lesser development to the influence of some *general* causes, than to suppose that the men have become suddenly vicious *independently* of *general* causes, but that their *individual* natures have all at once taken a crooked turn without any *external* cause whatever. It is pretty clear that there are circumstances which oppose the development of military offences, and in illustration of this, the following list, obtained from a reliable source, of offences punished monthly in three consecutive years in two battalions of infantry is presented.

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1182	1462	1488	1564	1517	1694	1528	1472	1535	1443	1418	1364

This list shews that offences generally are more prevalent in summer than winter. The increase in summer I believe is supplied by the offence of "absence." The monthly average for the six summer months (April to September inclusive), in three consecutive years in two battalions of infantry of this offence was 188⅓ and in the remaining winter months 129⅓. I am inclined to think that a *continued* stringency leads to this inequality. Some *relaxation* in the way of permission to be out later in summer than nine o'clock in the evening, when other peo-

ple and even children are yet abroad, would counteract this tendency. These few statistical tables of military offences that have been offered are exceedingly defective, but sufficiently startling: and it will be seen that, although it would be unwise to generalize widely from the few statistical observations yet made on these offences, there would appear to exist a certain uniformity in their development, indicating that a *uniform* punishment might be inflicted on those who committed them. For, after all, *punishment* is of a *relative* character; the *rebukes* of one man are as deterring of offence as the *stripes* of another. The least demoralizing punishments are of the *deprivative* character—that is the *loss of privilege*. This would appear peculiarly adapted to a domestic force like the militia, as it obviates extremes in punishments and maintains discipline equally as well, and admits of falling back on *positive* punishments when required. A table, open to the perusal of all, with the amount and sort of privilege to be forfeited for each kind and repetition of offence written upon it, would point out that no offence could pass unnoticed, that no forfeiture of privilege could be remitted; but that all offences would *certainly* be punished.

As *positive* and more moralizing a punishment, as the useless carrying of shot from one place to another, exists in making men work *with shot* the large guns of a fortress. The man is made to actively employ his energies of mind and body and to forget his recent delinquencies in wholesome repentance, and thereby preserving his mind in a wholesome and his body in a vigorous state, and so to antagonise the *creation* of offences, and dispense with keeping open the outlets—ignominious and *blank* discharges—for their disappearance in regiments.

The *prevention* of military offences has not grown into a science, and when first stated there will of course be some uncertainty in the practice of such a science. In the absence of this we are obliged to have recourse to punitive measures which impair the power of endurance of the body. When crime presents itself of course it must be punished. If it can be avoided by *prevention* there are gained health and morals.

We can draw no conclusions for ourselves without a systematic statistical record on the subject, which has many important practical relations. I have therefore not delayed drawing attention to the subject, now that there will exist an opportunity of elucidating the development of offences under the condition of military duties in "camps of instruction," to be enabled to compare these with the relative development of offences in barracks and elsewhere. The marking the rise and progress of military offences in a suddenly-formed, isolated military institution —the militia—to compare as well as the above, would tend to throw light upon the sources of production of military crimes. For *I think* there will be observed a different sort of offences under canvass to those in quarters. At the end of this book will be found tables with fictitious figures, introduced to shew what is required. From these fundamental tables others can be easily made out to illustrate particular subjects.

In looking over the Annual Statistical Record of offences in the last table, the important question presents itself of whether as good discipline could have been preserved throughout the year, by punishing fewer than 450 "*in prison*," and more than 3138 "*in regiment*," and have a greater number of men for duty? And again, considering

that were fewer punished "*in prison*," is it likely that with the soldier's pecuniary daily means of three-pence for dissipation, there would be materially more crime?

Daily Statistical Record of Defaulters in the Regiment.

Date.	STATION.									
Strength. 800	Committed.	Convicted.	Uncaptured.	Detained in Guard Room.	Punished. In Regt	Punished. In Prison.	English. 300	Scotch. 200	Irish. 300
Desertion.	1	...	1	...	...	...	1	...	...
Absence.	2	1	...	1	...	1	1	1	...
Drunkenness.	4	4	...	...	3	1	1	1	2
Insubordination.	1	1	...	...	...	1	1	...	...
Disgraceful Conduct.	...	...	...	...	...	...	...	...	...
Other Offences.	3	3	...	...	3	...	1	1	1
Total.	11	9	1	1	6	3	5	3	3

REGIMENT.

Year. 1853.	Total uncaptured.	Total detained in Guard Room.	Daily average No. of offences committed.	Daily average No. of offences convicted.	Daily average remaining uncaptured.	Daily average detained in Guard Room.	Punished. In Regiment.	Punished. In Prison.	Committed by English.	Committed by Irish.	Committed by Scotch.
Average Strength.	2	...	$\frac{8}{11}$	$\frac{8}{11}$	$\frac{3}{11}$	...	...	4	3	2	1
English... 300	...	31	$3\frac{8}{11}$	$3\frac{8}{11}$	...	1	46	50	33	33	33
Irish 300	...	31	$3\frac{7}{11}$	$3\frac{4}{11}$	...	1	48	60	40	40	30
Scotch 200	...	...	$\frac{3}{11}$	$\frac{3}{11}$	...	...	...	7	3	2	2
Total... 800	...	...	$\frac{3}{11}$	$\frac{3}{11}$	...	...	...	5	2	2	1
	...	...	$5\frac{3}{11}$	$5\frac{3}{11}$	...	...	76	100	76	50	50
	2	62	13	$12\frac{8}{11}$	$\frac{3}{11}$	2	170	226	157	129	117

REGIMENT.

Strength. Average.		Daily average No. of offences committed.	Daily average No. of offences convicted.	Daily average remaining uncaptured.	Daily average detained in Guard Room.	Punished. In Regiment.	Punished. In Prison.	Committed by English.	Committed by Irish.	Committed by Scotch.
English 300 Irish ... 300 Scotch . 200										
Total...800										
	Des6	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{2}{12}$	...	5	2	2	1
	Abs0	$2\frac{3}{12}$	$2\frac{3}{12}$	...	$\frac{6}{12}$	790	200	300	390	300
	Dru0	$2\frac{7}{12}$	$2\frac{7}{12}$	...	$\frac{6}{12}$	706	100	300	300	206
	Ins6	$\frac{7}{12}$	$\frac{7}{12}$	...	$\frac{7}{12}$	...	36	12	12	12
	Dis9	$\frac{9}{12}$	$\frac{9}{12}$	...	$\frac{9}{12}$	...	9	3	3	3
	Oth0	$4\frac{6}{12}$	$4\frac{6}{12}$	...	$\frac{6}{12}$	1642	100	600	600	542
	0	$10\frac{2}{12}$	$9\frac{6}{12}$	$\frac{1}{12}$	$2\frac{3}{12}$	3138	450	1217	1307	1064

my intention to introduce the subject of gunnery and its sequences.

MONTHLY STATISTICAL RECORD OF OFFENCES COMMITTED IN THE REGIMENT.

| Year. | Month. | Stations. | | |

MILITARY SURGERY.

GENERAL STATISTICS OF "LOCAL VENEREAL ULCERS," "SYPHILITIC BUBO," AND "CONSECUTIVE OR SECONDARY SYPHILIS," AS MET WITH AMONG SOLDIERS IN THE UNITED KINGDOM AND IN INDIA.

By C. A. Gordon, M. D.,

SURGEON LATE OF 57TH NOW OF 10TH REGIMENT OF FOOT.

Various as are the opinions regarding the treatment of most diseases entertained by physicians and surgeons, there is, I believe, no malady or class of maladies, regarding which so many doctrines are held, as in the case of venereal disease or syphilis. This circumstance alone is sufficient to show us the importance of the subject, but when, as military surgeons, we consider that the majority of cases in our Regimental Hospitals are very frequently the result of some description or other of venereal infection, that great numbers of our men are thus rendered, for greater or less periods, incapable of performing their regimental duties, and thus, while suffering in their own persons, casting the onus of increased duties upon their more steady and well conducted comrades, it becomes, I think, a question well deserving our best attention, how the ravages of such disease can best be moderated, and the present as well as after sufferings of the affected, ameliorated.

It is almost needless to observe that the great bone of contention in the treatment of syphilis has for many years been "mercury," nor indeed are surgeons at all agreed even now upon the distinct characteristics of a venereal sore; some maintaining that an ulcer to be purely venereal or syphilitic,* can only have one invariable appearance; while others go so far as to insist upon it, that such a thing as venereal disease does not exist now-a-days.

Having paid continued attention to this class of diseases for a period of upwards of nine years, I conceive I have at last the same right to hold my opinions regarding it, which I willingly concede to others. In this paper it is my intention, however, only to express these opinions in as far as they relate to the appearances and general characters

* For the sake of convenience, I shall use the words "venereal" and "syphilitic" indifferently, as meaning "local venereal ulcer," it not being my intention to introduce the subject of gonorrhœa and its sequences.

of a fully formed venereal ulcer, before it has been in any way modified or altered by the application of remedial agents; confining the remainder of my remarks to the result of my experience, and as in this way their success or otherwise shall be shown, it will be easy for the readers of this paper to compare my figured statements with their own, and draw those conclusions which such comparison justifies.

It may, perhaps, be advisable to mention that, in the following classification of ulcers, I have been guided either from personal inspection of them, or by the description of the ulcer noted in the hospital registers, and that where the description was so imperfect or dubious as not to justify me in referring the ulcer to any particular denomination, it has been noted as "indefinite." So also in reference to several points connected with "bubos" and "secondaries;" but in no case have my statistics been *cooked*, nor have I inculcated my particular classification upon the medical officers, under whose immediate care some of these cases have been from time to time, for, as according to some statistical wag, figures may, like soldiers, be made to face any way, it becomes evident that in commencing and carrying on such calculations, the particular result to be arrived at must not have been previously determined.

I have then been induced to divide all venereal ulcers into six distinct classes, although each of these is subject to particular modifications, which might at the first sight confuse an inexperienced observer, and must of course be duly considered in forming this diagnosis. The following is a brief description of each of these.*

1*st*—or Hunterian chancre as it is called; a round excavated ulcer with hard base, everted edges, and its interior having a reticulated appearance.

A common modification of this is where the depth of the ulcer being comparatively small, and the hardness at the base diffused, the ulcer looks almost like a superficial reticulated abrasion, seated upon a cartilaginous base.

2*nd*—A superficial ulcer without hardness, more or less irregular outline, elevated edges, whitish or reddish surface, and no appearance of granulations.

3*rd*—Is also a superficial ulcer, destitute of hardness, the centre considerably elevated, generally of a bright red color, and almost fungous appearance.

This, as will appear afterwards, is a comparatively rare form of ulcer.

* See a paper by the author in *Dublin Medical Press*, 26th February 1851.

4*th*—Is mere excoriation of the glans or prepuce, attended by more or less purulent discharge from the surface of the abrasion.

5*th*—Is the phagedænic sore, having what is called a corroding appearance generally, without hardness or granulation, and increasing rapidly in size.

6*th*—Is the sloughing ulcer, which commences as a black spot, from which sloughing extends to an indefinite extent in depth and circumference.

The difference between the *phagedænic* and *sloughing* ulcer must be noted, so as to prevent after confusion.

The period to which these remarks are intended to refer, extends from September 1846 to March 1851; the cases during that time being observed in the United Kingdom; and from April 1852 to March 1854 in this country, as shall afterwards be more particularly described; but as in the preparation of my summaries, I have adhered to the yearly periods according to official custom (namely from 1st April to 31st March) as being the most convenient, this fact must be borne in mind, as also that the broken period in 1846-7 is occasioned by the circumstance, that the 57th Regiment landed in England from foreign service; and proceeded to Chatham and Canterbury in September of the former year.

We shall consider these annual periods numerically, and in the Table No. 1 appended, represent the prevalence of particular forms of local ulcer accordingly, as well as at particular Stations, showing, at the same time, the strength of the Regiment at each of these. From it then we derive the following conclusions, namely, that the rate of prevalence of different ulcers to mean strength varies in different Military Stations, thus:—

TABLE No. 1.

Stations.	Ratio per Cent. mean strength of the different local venereal ulcers.						
	1.	2.	3.	4.	5.	6.	Indefinite.
Chatham, Canterbury and Dover,	2·51	3·77	1·53	1·67	·27	·13	1·25
Dover, Weedon & Hull,	·73	3·78	·73	·12	·12	...	1·34
Enniskillen,	4·41	4·65	·98	·73	·98	·49	.98
Enniskillen,	3·18	7·09	...	·98	·98	...	·73
Dublin,	4·18	6·28	·24	2·09	·36	·36	.....
Wuzeerabad,	·60	2·47	...	·53	...	·10	·75
Wuzeerabad & Mean Meer,	1·74	4·03	·10	·98	...	...	·76

From an examination of the above Table, we perceive not only that the relative prevalence of different forms of local ulcers varied according to station, but from the circumstance of No. 1, or the "Hunterian Chancre," being most abundant at large garrison towns in England, such as Chatham, Canterbury and Dover, and then at Enniskillen and Dublin, we may presume that the filthy habits of the prostitutes of such Stations, had something to do with the prevalence of this form, which is the most severe of the four first classes.

In tracing the history of such cases as shall be considered in this paper, the most convenient plan seems to be to investigate the different classes of local ulcers individually, and afterwards to describe the statistics of the various sequences and complications which presented themselves.

No. I. or Hunterian Chancre.

No. 1 *Ulcer.*—On the 13th September 1846, the 57th
1846-7. Regiment marched into Chatham garrison from board-ship, and from that time till 31st March 1847, was quartered there, at Canterbury and Dover. Out of an average strength of 715 during that time, eighteen cases of this form of ulcer took place, the average age of men affected being 25 years, average service 6 years. Fourteen of these cases were treated without mercury, and cured in an average period of 21 days; two becoming affected with secondary within the next six months; while of four treated with mercury, the average period under treatment was 35 days, but no secondary followed. It appears, moreover, that of the whole number, eight were uncomplicated, six complicated with bubo only, three with gonorrhœa only, and one with bubo and gonorrhœa. Of the four cases in which mercury was given constitutionally, bubo occurred in two, the average period under treatment of these being 44 days, while of the two cases of this form of ulcer treated with mercury, and in which no bubo formed, the average number of days under treatment was 22. The remaining five cases of bubo occurred among those treated without mercury; the average of such cases under treatment was 29 days, while those in which no such complication occurred, were cured in an average of 21 days.

During this period, the Regiment being at Dover and
1847-8. Weedon, only six cases occurred; the average age of the men affected being only 21 years, and their service 3 years. Four were treated without mercury and cured in an average period of 14 days, while two treated with mercury were on an average 45 days in hospital, but among neither class did secondaries supervene. Four were uncomplicated, and two complicated with bubo only.

Of the four cases treated without mercury, bubo occurred in one, the patient, however, being discharged cured in fourteen days, which was the average period required for the cure of the three in whom no bubo occurred. Of the two treated with mercury, bubo took place in one, the patient being in hospital 64 days on this account, the other in whom no bubo formed having been cured in 26 days. It must also be noted that in one of the cases treated without mercury, the ulcer was of that superficial character with hard broad base, which has already been described, yet it was cured in 20 days, merely by the local application of Nitrate of Silver and Sulphate of Zinc lotion, without either the occurrence of bubo or of "secondaries."

Eighteen cases of the Hunterian Chancre came under
1848-9. observation during this period, the men affected being on an average 22 years of age, and five in the service. Thirteen were treated without mercury, the cure being effected in an average of 20 days, and secondary occurring in one; the remaining five being under treatment on the mercurial plan for an average of 65 days.

Of the thirteen cases treated without mercury, two were complicated with bubo, and two with bubo and gonorrhœa. Of the five treated with mercury, bubo did not occur in any, but gonorrhœa was present in one, and in it considerable hæmorrhage took place, in consequence of the ulcer penetrating a small vessel.

Notwithstanding the great difference noted as taking place in the period of cure of the cases treated without and with mercury, it must be observed, that while no bubo occurred in any of the five cases treated with mercury, this complication was present in four of those treated without it, so that this circumstance makes the difference even more notable.

The number of cases of the same ulcer which occurred
1849-50. during this period, and while the Regiment (57th) was stationed at Enniskillen, was thirteen—the men affected being on an average 22 years of age, and four in the service; seven were treated without mercury and cured in 19 days,* no secondary affection occurring in any of them. The remaining six cases were treated with mercury, cured in 38 days, but one of them was followed by secondaries. The only case complicated, was one of those treated non-mercurially, and in it bubo formed, but it must be observed that in one of those treated with mercury, this remedy was

* It may be well to mention here, that when the period in which a cure of a number of cases is simply noted as in the text, it is to be understood as meaning the average period—repetition being in this way saved.

administered in consequence of an attack of iritis, which supervened a few days after the admission of the patient on account of the local ulcer; neither was the mineral administered in any of the other five cases, until after the sores had ceased to improve under an opposite mode of treatment, and it must be further observed, that in these cases, immediately on the mouth becoming slightly affected, the sores assumed a healthy aspect and progressed rapidly towards cure. In no case, however, either during this or other period was ever the system brought more under the influence of mercury, than was indicated by a slight taint of the breath.

1850-1. The Regiment having marched to Dublin, was stationed in various parts of that city. During this period we find that a great increase took place in the cases of the local sore now under consideration, thirty-four cases having been treated. The soldiers who were the subjects of it were 23 years of age, and four in the service. Of the number under observation, 29 were treated without mercury, cured in 35 days, but of these five became subsequently affected with secondaries; five were treated with mercury, cured in 70 days, and in one instance secondaries supervened. The only complication mentioned as occurring is bubo, which formed in fifteen instances.

1852-3. My observations now are transferred to Upper India, having been stationed with the 10th Foot at Wuzeerabad in the Punjab, during this period. The number of cases treated during it was only six,* the men so affected being 27 years of age, and five in the service. Four of these were treated without mercury, and cured in 18 days, the remaining two, who were treated with mercury, were in hospital 47 days, but among neither class did secondaries follow. One case only was complicated, and it with bubo, it occurring among those treated without mercury.

It also appears that of the two cases treated "with mercury," a fair chance was given to both in the first instance on the opposite principle, only such applications as the red-oxyde and black-wash being used locally, and it was not till the failure of these in effecting a favorable change in the ulcers, that mercury was given constitutionally.

1853-4. A manifest increase now takes place, in consequence of the removal of the Regiment to Mean Meer in the vicinity of Lahore, the capital of the Punjaub, for

* It must be noted that the Regiment arrived at Wuzeerabad in the early part of 1850, that it was a comparatively small station, and that weekly inspections of the *prostitutes attached to the Regiment* (for such are Indian notions of morality) were made by an apothecary.

while only six cases occurred between April and November at Wuzeerabad, ten were admitted from the latter month to the end of March, or immediately after the arrival of the men at their new station.

Of these 16 cases, the average age of the men affected was 26, their services six years. Fourteen were treated non-mercurially, cured in an average period of 27 days, but secondaries occurred in no fewer than four of this small number; while the two cases treated with mercury, although in Hospital 46 days, did not subsequently suffer from secondaries. The proportion of cases complicated also exhibits an increase on what occurred in the United Kingdom, there having been eight complicated with bubo only, two with gonorrhœa only, and one with both gonorrhœa and bubo, making in all eleven of the sixteen treated. It is also not a little remarkable that, of the six cases of this sore treated in the first half of the period, five were attended with bubo, all having been treated non-mercurially, although in four of them preparations of that metal, as black and yellow wash, &c., were applied to the sore. After our arrival at Mean Meer, two of the cases manifested a tendency to partial sphacelation of the mucous membrane, yet, with all the true character of the No. 1 Ulcer, being in one what Acton calls "indurated phagedænic Chancre" and in the other the prominent hard button-like cartilaginous sore, to which allusion has already been made, and of these two, one was followed by secondaries.

No. 2 Ulcer.—We now proceed to a consideration of the statistics of No. 2 Ulcer, taking it in the same order as regards years, as has been done with the Hunterian Chancre.

1846-7. In this period, or rather that portion of it extending from the middle of September to the latter end of March, twenty-seven cases of this sore came under treatment, occurring in men of 22 years of age and four in the service. It appears that twenty-six of these were treated without mercury, and cured in 15 days; secondary symptoms occurring in one, while the only case treated with mercury was 23 days in hospital, but in it no secondaries supervened. A somewhat large proportion of these seem to have been complicated, bubo being present in twelve, and gonorrhœa in six. It also appears that in the case in which mercury was administered constitutionally, it was given more in consequence of an attack of pneumonia which supervened while the patient was under treatment, than for the local disease, and that in it, no bubo or other venereal complication was present.

1847-8. Thirty-one cases were treated during this period, the age of the men affected being 23, their services four years; of this number mercury was used in the treatment of twenty, the period of their stay in hospital being 19 days, and only one was followed by secondaries. The remaining eleven were treated non-mercurially, cured in 23 days, and without the occurrence of secondaries in any instance. It seems that of the whole thirty-one, bubo occurred in ten, that however being the only complication.

It would also seem that the period under treatment of those cured without mercury is apparently increased by the circumstance that one of these patients became affected with erysipelas of the face, on which account he was in hospital 53 days.

The proportion of these cases also treated with mercury is, as will be remarked, somewhat large, and arises from the fact of the medical officer who had the management of them, making it an almost invariable rule to administer a slight "course" of mercury in every case of venereal sores.

1848-9. Nineteen* cases only of this form of ulcer are recorded during this period, the men affected being 22 years of age, and four in the service. Of this number sixteen were treated without mercury, and cured in an average period of 15 days, secondaries supervening in one; while three cases treated with mercury required 42 days to effect a cure, but no subsequent affection took place in either. Of the sixteen treated without mercury, bubo occurred in four, phymosis in one, and gonorrhœa and phymosis in one. Of the three treated with mercury, one was complicated with paraphymosis, and one with gonorrhœa, while bubo did not occur in any.

1849-50. The number treated during this year was twenty-nine, all without the employment of mercury. The average age of the men affected was only 21, and their services 4 years, a cure being effected in 18 days. Eight of them were variously complicated, namely four with bubo, requiring 34 days for their cure, three with gonorrhœa and bubo, being in hospital 28 days, and one in which gonorrhœa alone, and of a mild nature, being present, the patient being discharged in 7 days.

* It appears that the actual number of cases of syphilis primitiva, borne on the records during this period, was one hundred and two, but of this number only fifty-four are recorded in such a way as to render them of any value, and this circumstance will show the difficulties attending the preparation of statistical returns even in the army, where all records are supposed to be kept with such scrupulous exactness.

1850-1. During this year the fifty-one cases of this ulcer which occurred were treated without mercury, the ages of the men affected were 23 years, their service five, the average period under cure was 21 days, but secondaries occurred in five. Twenty-five were complicated, namely one with gonorrhœa and twenty-four with bubo; the latter complication occurring in three cases out of five, in which the usual preparations of mercury were applied locally, and in twenty-one out of forty-six treated without mercury, either locally or constitutionally.

1852-3. Twenty-three cases came under notice in men of 24 years of age and five years' service; twenty were treated without mercury in any shape, of which number bubo was present in eleven, and gonorrhœa in one, all being cured in an average of 28 days, but with the subsequent occurrence of secondaries in one. While the three treated by mercury, both constitutionally and locally, were cured in 18 days, without the accompaniment of any complication or the supervention of secondaries.

1853-4. Thirty-seven cases occurred during this period in men of 25 years of age and five in the service. Thirty-one were treated without mercury and cured in 31 days, but with the occurrence of secondaries in three instances. Six were cured on the mercurial plan in 39 days, but in them secondaries occurred in two. Fourteen of the whole were complicated, namely, twelve with bubo only, and two with gonorrhœa.

No. 3 Ulcer.—It will be seen that throughout the years to which these statistics refer, this form of ulcer has been comparatively rare, and I am of opinion, from what I have elsewhere observed, that it is indeed every where a rare form of local ulcer, yet it is not on that account the less important.

1846-7. The greatest number of cases of this sore took place, as will be remarked from the appended Table (No. 2), on the first arrival in the United Kingdom of the 57th Regiment,—ten having occurred between September and the latter end of March. The age of the men affected was 20, their service four years, from which we may presume it prevailed principally among such as had enlisted as boys. Seven of the cases were treated without mercury and cured in 25 days, the three treated mercurially being 72 days in hospital, but in neither class did secondaries follow. Complications however occurred in three, namely bubo in two of the first class (non-mercurial). Gonorrhœa was also present in one case (but it is omitted to be noted whether mercury was used or not in its treatment), and it is

deserving of notice that in one instance, where the non-mercurial plan failed to effect a cure, the sore assumed a healthy action, and speedily healed on the system becoming affected by this mineral; but although in the first instance no complication was present, yet a bubo subsequently formed, which separated and assumed so peculiar an action, that a large fungus ulcer formed in the groin, very similar to the character of the original sore. After a tedious cure it was healed, but leaving so extensive and contracted a cicatrix, that the man thus affected was discharged the service in consequence.

1847-8. Only six cases are recorded this year, in men of 20 years, and two in the service. Of these five were treated without mercury and cured in 15 days; while the one treated with mercury was in hospital 36 days. No secondaries followed in either instance, but two were complicated by bubo, namely, one of each class.

1848-9. Four is the number that came under observation during this period, still occurring in young lads, the subjects being 21 years of age, and two in the service; three were treated non-mercurially; in one bubo formed, but a cure of the three was effected in 38 days: that in which mercury had to be given was complicated with gonorrhœa, was cured in 41 days, and in no instance did secondaries follow.

1849-50. No case of this form of ulcer occurred during this year.

1850-1. Two cases appear on the return for this period, occurring in men of 21 years of age, and two service; both were treated non-mercurially and cured in 16 days; although bubo occurred in one, no secondaries followed.

1852-3. No case is recorded during this period.

1853-4. Only one case occurred during this year; it happening in a man of 23 years, and five in the service; it was attended by bubo, but cured in 45 days, and without being followed by secondaries.

No. 4 *Ulcer.*—This ulcer, although nothing more than an excoriation in general appearance, and not even recognised as "venereal" by many authors, is nevertheless one of considerably more importance than is usually accorded to it.

1846-7. During the first period of home service, twelve cases of this simple ulcer came under notice in the 57th Regiment, in men of 24 years of age and three in the service. All these were treated without mercury, cured in 14 days, and without the supervention of secondaries in any. Complications occurred in five, namely, bubo in two, and gonorrhœa in three, but in neither of the former cases did the enlargement of the glands proceed to suppuration.

1847-8. Only one case occurred during this year; it was uncomplicated, took place in a man 25 years years of age, and seven in the service, and was cured in 15 days, no secondaries occurring.

1848-9. Three instances of this ulcer happened among men of only 21 years of age, and one in the service, all were treated without mercury and cured in 9 days, no complication occurring in any, nor did secondaries follow.

1849-50. The number of cases this year was four, the age of the men affected 21, their service four years. The cases like those above were cured without mercury in nine days, without the supervention of secondaries, but with bubo as a complication in one instance.

1850-1. A very remarkable increase took place this year in the number that occurred, no fewer than seventeen having been recorded; these were in men of 23 years of age, and five in the service, were all treated without mercury, and cured in 23 days, without secondaries occurring subsequently in any. Three of them were complicated, namely, two with bubo, and one with gonorrhœa.

1852-3. Five cases are this year recorded, occurring in lads of 21 years of age, and two in the service. They were cured without mercury, and without the subsequent occurrence of secondaries in 12 days, although the two cases complicated were attended by bubo.

1853-4. Nine cases came this year under observation, and are distinguishable from those of previous periods by being in one instance followed by secondaries. The subjects of this ulcer were 24 years of age and three in the service. Eight of the cases were treated without mercury, cured in an average period of 35 days, being in one followed by constitutional symptoms; one case was treated with mercury, it was 75 days under cure, but no subsequent affection supervened. Of all these cases, four were complicated with bubo.

No. 5 *Ulcer.*—This, as has already been said, is the phagedænic or corroding ulcer, and although fortunately of comparatively rare occurrence, is nevertheless rendered important by the rapidity of its destructive progress, and the difficulty with which its cure is effected.

1846-7. In the few months of this annual period, to which the previous remarks apply, only two cases of this form of ulcer were treated, occurring as noted in the returns in men of 22 years of age, and six in the service, but the latter high number is occasioned by one of the men affected, having been born in the regiment and enlisted at 14—consecutive symptoms did not supervene in either. In

one instance no mercury was employed, no complication occurred, and the cure was effected in 83 days. In the other instance, however, the non-mercurial treatment having, after a fair trial, failed, mercury was administered constitutionally with good effect—a bubo formed, and the patient was discharged *in* 178 *days*.

1847-8. Only one case occurred this year, in a lad of 19 years of age, and one year in the service. It appears that the ulcers in this instance were of a mixed character, inasmuch as the patient on being admitted suffered from two distinct sores upon the glans, one of which throughout its course maintained its phagedænic character, until the progress of the disease was checked by treatment, but the other, from its being phagedænic at first, became after a time a true sloughing sore. In the treatment, local applications only were in the first instance employed, but these failing of themselves to check the disease, mercury was administered constitutionally. No bubo occurred—the case was cured in 40 days, but secondaries subsequently appeared.

1848-9. During this year (the regiment being at Enniskillen,) four cases of this sore occurred, these being in men of 21 years of age, and one in the service. As these cases present some points of more than usual interest, it appears advisable to enter somewhat more fully into their history, than has been done with the others.

Of two cases treated without mercury, the true phagedænic ulcer became soon after admission of a sloughing character, destroying a considerable amount of tissues before its course was arrested by Nitric Acid and poultices of yeast. After the sores, however, had commenced to heal favorably, an abscess appeared in the perineum, and proved troublesome, yet, notwithstanding these mishaps, a cure was effected in 27 days, without the occurrence of bubo. The second case was at first only one of warts on the glans, and in the interspaces a series of superficial ulcers, which, from their concomitants, appeared as mere No. 4 Ulcers, (excoriations,) or certainly not more severe than the form of ulcer noted as No. 2. After a time, however, they became phagedænic, but healed under the use of Muriatic Acid in 42 days, and without bubo forming.

Of the two cases treated with mercury, one was complicated with gonorrhœa and paraphymosis. In it the sore was obstinate, but the patient was discharged cured in 112 days; no bubo forming. In the other case hæmorrhage took place from one of the small vessels, which had become penetrated by the phagedænic action. No bubo formed,

and a cure was effected in 36 days. No secondaries occurred in any of the above.

1849-50. Four cases also took place this year, the regiment being still at Enniskillen. The men affected were 25 years of age, and on an average seven in the service. One case was treated without mercury, and cured in 22 days. Three were treated on the mercurial plan, cured in 57 days, but followed by secondaries in two instances. Of the four cases treated, two were complicated with bubo.

1850-1. Three cases came under treatment; these subjects being men of 26 years of age, and eight in the service. Of these two were treated without mercury, cured in 44 days, the one treated with mercury being in this instance cured in 33 days, and without, in any of them, the occurrence of bubo or of secondaries.

1852-3. No case came under observation.

1853-4. Neither were any cases of this ulcer treated during this period.

It is my object in this statistical summary merely to record the result of two opposite plans of treatment, in such classes of venereal ulcers as have come under my observation; but having in the treatment of the four now under consideration found the application of Chlorinated solution of Soda, so superior to all other applications, even including the mineral acids, I am desirous to mention the fact, in order that it may be tested by others.

BUBO.

The following remarks include only those cases of bubo that clearly depended on the inoculation of venereal virus as indicated by the occurrence of local ulcers, for it does not seem to be indicated by any of the cases here recorded, that this virus is ever received into the system of the patient without in the first instance producing one or other of the forms of local sore already described.

It is well known that "bubo," although a common symptom, or concomitant, or complication of primary syphilis, may also arise from causes totally unconnected with this disease, and that then its phenomena and progress are exceedingly variable; thus, the precise position with regard to Poupart's ligament, as well as with reference to the axis of the groin, is seldom alike in two consecutive cases: even the tissue affected is subject to like uncertainty, for while a gland or glands may be the seat of affection in one set of cases, the

inflammatory and suppurative action may in another set be confined to the subcutaneous tissues immediately surrounding these bodies, the healthy glandular tissue being in such instances easily detected free at the bottom of the sack, when an opening has been made for the evacuation of its fluid contents. In another series of cases the tissues suffer to a very considerable extent in every direction; the character of the inflammation being not unlike those of phlegmonous erysipelas; pressure with the finger leaves pitting, matter forms imperfectly, and sinuses extend deeply. In another class of cases we find that, after the bubo has opened spontaneously, or its contents have been evacuated artificially, the wound speedily assumes all the characters of the local sore cotemporaneously present on the penis, and some continental observers have even gone so far as to propagate syphilitic disease by inoculation with the discharge from such. These and many other varieties come under observation in Military practice, each depending upon constitutional peculiarities in the patient affected, and all requiring different modes of tratment.

The following Abstract exhibits at a glance the ratio of prevalence of bubo compared to venereal sores during each of the annual periods under consideration, *viz.*—

Years.	Cases of Local Ulcer	Cases complicated with Bubo.	Ratio of Bubos per cent. of Ulcers.
1846-7, ...	79	30	37·97
1847-8, ...	56	16	28·57
1848-9, ...	54	11	20·36
1849-50, ...	53	11	20·75
1850-1, ...	110	42	38·18
1852-3, ...	42	16	38·09
1853-4, ...	70	29	41·42
Total, ...	464	155	

It will thus be seen that great variety exists in the rate of occurrence of bubo in cases of local venereal ulcers, nor is it easy to explain the cause of this variety.

It would indeed appear that the nature of the local applications used has considerable influence in this respect, but the degree to which this operates may be best gathered from what follows in these remarks.

As regards the side affected—the following Table is intended to indicate how this varies, *viz.*:

Years.	Right.	Left,	Both.	Not Noted.
1846-7, ...	6	16	5	3
1847-8, ...	7	5	2	2
1848-9, ...	6	4	0	1
1849-50, ...	3	8	0	0
1850-1, ...	16	20	6	0
1852-3, ...	7	7	1	1
1853-4, ...	12	9	6	2
Total, ...	57	69	20	9

From the above it will appear that the left groin is more frequently the seat of bubo, than the right, although not to the extent that many authorities are induced to believe.

The notes from which these remarks are taken being imperfect, down to 31st March 1850, the minute points connected with syphilitic bubos can only be obtained during the years subsequent to this. It appears, however, (see *Dublin Medical Press*, 26th February 1851) that up to the time noted, two hundred and fifty-two cases of local ulcer were treated in the Regimental Hospital. Of these bubos occurred in sixty-eight, and of this number, the complication was in the right groin in twenty-two and in the left in thirty-three, both groins in seven; and in six the side affected is not recorded.

During the same period, of one hundred and ninety-two cases of local ulcers treated without mercury, bubo occurred in 53, being in the proportion of 1 in 3·62, and of 50 treated with mercury, bubo occurred in 15, being in the proportion of 1 in 3·33.

From 1st April 1850, the notes on bubo become more minute, my attention having been then particularly directed to this form of complication; and in the following remarks on the subject, I shall consider it with reference to each annual period, this being the readiest means by which the connexion of my remarks with the Table appended may be traced.

During the year then, from 1st April 1850 to 31st March
1850-1. 1851, the 57th Regiment, 812 strong, was stationed at Dublin. Bubos formed in forty-two of the one hundred and ten cases of local venereal ulcer then treated; being in the proportion of one in 2·61. Of these, sixteen were in right groin, twenty in left and six in both right and left—thus it appears that the liability of each groin to be affected was in the proportion of five for the left to four of the right, and this was not materially affected, whether we consider the instances in which only one groin was implicated, or include those in which both were simultaneously affected. It moreover appears that the phagedænic and sloughing ulcers were less liable to be accompanied by bubo than any of the others.

As regards the probable connexion of particular modes of treatment with the occurrence of bubo, it is important to observe that of 13 cases of No. 1 ulcer, in the treatment of which preparations of mercury were applied locally, bubo occurred in six, and of the twenty-one cases in which it was not so used, bubo formed in nine, and of two cases where mercury was used constitutionally, but not locally, bubo supervened in one. Of five cases of No. 2 Ulcer, treated locally with mercury, bubos formed in three, and of forty-six treated without mercury in any form, the complication was present in twenty-one. Both cases of No. 3 Ulcer were treated without the use in any way of mercury, and bubo formed in one. The case of No. 4 Ulcer, in which mercury was used locally, was unattended by bubo, and only two occurred among the sixteen cases of this sore, where the remedy was not employed. The three cases of No. 5, and three of No. 6 Ulcer, were unattended by bubo; thus we find that of ninety cases of all descriptions of venereal ulcer treated without the local use of mercury, bubos formed in thirty-

hree, and of twenty in which it was applied locally, they formed in nine.

In the above remarks the term "bubo" has been employed to indicate a painful swelling of one or more of the inguinal glands, or superjacent cellular tissue, and although in cases of venereal ulcers, such complication is usually confined to this region, yet it sometimes happens that the small glands situated upon the penis itself become thus affected. Of this, two instances occurred during the time the 57th Regiment occupied barracks in Dublin. Both took place in men affected with the No. 1 or Hunterian Chancre. In one no bubo formed in the groin, and no preparation of mercury was used in the treatment. In the other, there was a bubo in either groin; Bichloride of Mercury having on one occasion been applied to the local ulcer.

The following remarks refer to the 10th Regiment stationed
1852-3. in India. In the year from 1st April 1852 to 31st March 1853, this Regiment, 928 strong, occupied cantonments at the retired and small station of Wuzeerabad in the Punjaub.

Of only forty-two cases of local venereal ulcer treated during that time, bubo formed in sixteen, or a ratio of 1 in 2·55 namely, right side in seven, left in seven, both in one, and in one, the side affected was not recorded. In this instance then, the liability to be affected of each groin seems alike.

Mercury had not been used constitutionally in any of the cases in which bubo formed.

We find that in all the seven cases of bubo in the right groin, suppuration took place, requiring the artificial evacuation of their liquid contents; but of the seven in the left groin, three were discussed without having suppurated; three suppurated and were opened, and in one, the issue of the case is not stated. The case of bubo in both groins was discussed, as was also that where the side affected is not noted.

The case of bubo following No. 1 Ulcer was seated in a gland inferior to Poupart's ligament in the left groin, and was discussed without suppurating; the local sore, which is described as superficial, but very hard, was on the glans near the sulcus, to the right of the mesial line. It was treated by the local application of red Oxyde of Mercury and solution of Sulphate of Zinc.

Of the bubos arising from No. 2 Ulcer, six occurred in the right groin, and five in the left. In all the former, the

subcutaneous tissues seems to have been the seat of the affection. In one case, the bubo was situated superior to Poupart's ligament, and one both superior and inferior, in two inferior, and in two the precise position is not noted. All suppurated, and were opened artificially, the local ulcers in all having been treated without mercury.

In one case, the ulcer was situated in the sulcus to left of mesial line, in one, on the corresponding place to the right, but in four the sores were close to the frœnum on left side, and more or less involving that band.

Of the five cases of bubo in left groin arising from No. 2 Ulcer, one was situated superior and three inferior to Poupart's ligament, the position of one being unrecorded. Three involved the glands alone, and two, as far as could be ascertained, affected both glands and tissues. The local sores appear in one case to have been on the glans to right of mesial line, in one, involving the whole extent of inner surface of prepuce; in one, the inner surface of prepuce to right, in one on frœnum, and in one, the position is not noted.

It deserves attention that in none of the three cases of No. 2 Ulcer, in which mercury was administered constitutionally, did bubo occur.

In two of the above, suppuration took place, the tissue affected being the gland in one, and uncertain in the other. In two more, namely, one affecting the gland alone, and one both gland and tissues, suppuration did not occur, and in one affecting both gland and tissues the result was not noted.

Of the two cases of bubo accompanying No. 4 Ulcer, one occurred in the left groin, and one in both groins. In the first, neither the tissues affected nor the precise locality of the enlargement have been noted, but it appears to have suppurated and been opened artificially. The precise position of the local ulcer is also unrecorded, further than that it was under the prepuce, but the treatment was entirely non-mercurial. In the second case, where both sides were affected, the glands inferior to Poupart's ligament suffered, but the enlargement was discussed without the occurrence of suppuration. The local sores appear to have implicated the whole of the mucous surface of the prepuce, and to have been treated by simple (non-mercurial) local applications.

Of the two cases of bubo arising from the ulcers returned as "Indefinite," one occurred in the right groin superior to

Poupart's ligament; it ended in suppuration, was opened artificially, but the nature of the tissue affected is not noted. The local sore was on the upper part of the prepuce, and was treated by Nitrate of Silver. In the other case the groin affected is not noted, but the tissues inferior to Poupart's ligament were the seat of the affection; the enlargement being discussed without suppurating. The position of the local ulcer is not recorded, but it seems to have been treated by Nitrate of Silver.

From 1st April 1853 to 31st March 1854, the 10th Regi-
1853-4. ment was stationed first at Wuzeerabad, and then at Mean Meer, a few miles from the populous city of Lahore. The average strength of the Regiment during the year was 916, the number of cases of local venereal ulcer treated, seventy, of which twenty-nine were accompanied by bubo, or one in 2·41. The groins affected were right—twelve, left—nine, both six, and side not noted—two. Seventeen suppurated and were opened, eight were discussed without matter forming, two were discussed after suppuration had taken place, one sphacelated, and the termination of one is not recorded.

Of the bubos arising from No. 1 Ulcer, five were in the right groin; one of these was situated superior to Poupart's ligament, two inferior, and in two the position was not recorded. The first affected the gland only, was discussed without suppurating, and arose from an ulcer situated to the left of the mesial line. Of the two inferior to Poupart's ligament, the tissues around the gland were affected in one, which suppurated and was opened, the local ulcer originating it being situated on the internal surface of the prepuce at the mesial line. In the second both the glands and subcutaneous tissues were affected; it was discussed without having suppurated, and arose from an ulcer in the sulcus to left of mesial line, gonorrhœa being at the same time present. Of the two bubos whose position has not been noted, one affected the tissues, suppurated, and was opened, the local ulcer being situated on the inner surface of the prepuce; the other also suppurated and was opened, the tissue affected was not recorded, but the local ulcer was situated in the sulcus.

Of the two bubos in left groin from No. 7 Ulcer, one occurred in the tissues inferior to Poupart's ligament, and arose from a sore in the sulcus to the left of the frœnum. In the second, neither the position of the bubo, nor the tissue affected is recorded; it arose from an ulcer on the internal

surface of the prepuce. Both these were discussed without suppurating.

Of the two bubos affecting both groins, the precise position does not seem to have been noted, in one both glands and tissues were affected, the enlargement suppurated and was opened; the local sore was in the sulcus. The other was discussed, the particular tissue affected was not recorded, the local sore was situated on the exterior of the prepuce.

Among the bubos arising from No. 2 Ulcer, four occurred in the right groin, all inferior to Poupart's ligament. Two are definitely stated to have been so, both of which suppurated and were opened, one of these affected the subcutaneous tissues, but the precise tissue affected by the other is not stated. In the other two, neither the situation of the bubo nor tissue implicated is noted; one suppurated and was opened, the other was discussed without suppurating. The notes taken at the time go on to say "in all these the position of the local sore does not seem to have had any influence on the occurrence of bubo, or the side it affected."

Five cases of bubos (from the same ulcer) occurred in the left groin, four of these affected the tissues inferior to Poupart's ligament, and all these suppurated, but two only were opened, absorption of the matter taking place in the other two. One succeeded an ulcer on the left aspect of the glans, one a sore to the right, one where the circumference of the prepuce at its free extremity was implicated, and one where the ulcer was confined to the frœnum. In the fifth case, neither the precise position nor tissue affected has been noted; it suppurated and was opened, and arose from an ulcer on the internal surface of the prepuce.

In the three cases where both groins were affected, one occurred in a gland situated on Poupart's ligament; it was discussed, and arose from an ulcer to the right of the frœnum; one was inferior, implicating both glands and tissues, and arose from an ulcer on the minor surface of the prepuce at the mesial line of the dorsal aspect; the patient affected in this instance was a man of scrofulous diathesis; extensive sloughing in the groin took place, but ultimately terminated favorably. The third case is indefinitely recorded, both as regards the situation of the enlargement and tissues affected; it suppurated, was evacuated, and arose from an ulcer on the frœnum.

The bubo arising from No. 3 Ulcer affected both groins,

the tissues affected are not recorded; it was situated superior to Poupart's ligament; suppuration took place, requiring the artificial evacuation of its contents, and the position of the local sore was posterior to the glans (in the sulcus.)

From No. 4 Ulcer one bubo occurred in the right groin, affecting the subcutaneous tissues inferior to Poupart's ligament. It was discussed without suppurating, and arose from local sores affecting the circumference of the glans and internal surface of the prepuce. Two bubos from the same class of ulcers occurred in the left groin, also inferior to Poupart's ligament; both affected the subcutaneous tissues, suppurated, were evacuated, and arose from ulcers situated in the mesial line. A fourth bubo occurred, but in which groin or implicating what tissues, does not appear; it formed superior to Poupart's ligament, suppurated, and was evacuated, but the position of the local ulcer is not stated.

Of three bubos from "Indefinite" ulcer, one occurred superior to Poupart's ligament, the position of the other is not noted. In the first the subcutaneous tissues were alone implicated; suppuration took place and an opening was made; the other (tissues affected not noted) suppurated but was subsequently discussed. The third case of bubo from this ulcer was very imperfectly recorded, it seems to have been superior to Poupart's ligament, but neither is the groin, tissues affected, nor termination recorded.

SECONDARY, OR CONSTITUTIONAL SYPHILIS.

Before proceeding to the consideration of the various forms of affection included under the head of constitutional syphilis, it may be useful to exhibit, in a concise tabular form, the proportion of local ulcers followed by this train of symptoms during each of the seven annual periods to which the observations that have been already made refer—such a table then, the subjoined is intended to be,

Year.	Cases of Local Ulcers treated.	Number succeeded by "Secondaries".	Proportion per Cent. of "Secondaries" to Local Ulcers.
1846-7, ...	79	4*	5·06
1847-8, ...	56	2	3·57
1848-9, ...	54	2	3·62
1849-50, ...	53	3	5·66
1850-1, ...	110	11	10
1852-3, ...	42	1	2·61
1853-4, ...	70	10†	14·28
Total, ...	464	33	

A simple glance at the above, and a reference to the military stations occupied during each period, will at once show the great variety that exist in the ratio of liability to secondaries at different places.

It must be borne in mind that these returns include only that portion of the official year 1846-7, extending from September to the end of March, and that were the records for the whole twelve months complete, we might expect to have a much larger percentage of constitutional symptoms at Chatham, Canterbury and Dover, than is shown in the table. We next find "primary syphilis" as affecting soldiers in Dublin exceedingly liable to be followed by "secondaries," while at the quiet retired station of Wuzeerabad, this liability is small, but increases to a great extent when the troops proceeded to the vicinity of the debauched city of Lahore.

A Table is hereto appended,‡ a reference to which will show at a glance the various points of interest connected with the various cases of consecutive syphilis, that can be

* One man admitted twice and so returned, Private Tobin.
† Private Richardson admitted twice, but only returned once.
‡ Table No. 3.

clearly traced to the local ulcers recorded in the first portion of this paper. It is necessary, however, to point out that from the circumstance of one man being on some occasions twice admitted, and only considered as one "case," an apparent discrepancy is thus occasioned in the numerical tables.

For the sake of convenience, the plan already adopted of considering the "primary" ulcers according to successive years shall be adhered to, as in this way the bearing of one set of remarks on the other, will be most readily observed, and it is only necessary further to observe that, in order to allow what is considered sufficient time for the developement of secondaries, the returns of these affections are extended to six months beyond that of the others, except when, from circumstances which will appear, impracticable.

Two cases of local ulcers were treated with mercury, and among these secondaries did not follow in any instance, whereas of sixty-nine men to whom no mercury had been administered during their treatment, on account of "primaries," two of those affected with No. 1 Ulcer became affected with constitutional symptoms; neither having had bubo, the particular secondary affection being returned in one as "red spots on skin, interspersed with red tubercles," and in the other "vesicular eruption and nocturnal pains in limbs," and of the two* cases in which secondaries followed No. 2 Ulcer, no bubo had at any time formed in one, but in the other there was slight enlargement of the glands in the left inguinal region, but suppuration did not take place. It must be observed, however, that these two cases refer only to one man, who appears to have been twice admitted, the class of affections being the same on both occasions, namely, No. 2 Local Ulcer, and a "squamous eruption."† 1846-7.

It appears by the hospital returns for this period, that during the six months, extending from 1st April 1847, three more cases of "secondaries" were admitted, but as these must have had the local affection at a period anterior to the commencement of these observations, it is not deemed necessary to include them here.

* It is necessary to observe that one patient was admitted twice, so that numerically he is noted as two cases, although actually he ought to be one.
† These "constitutional" symptoms are, it is to be regretted, exceedingly imperfectly described, but it is almost needless to observe that accounts of diseases not actually kept for statistical purposes are always more or less imperfect, as any person may readily test for himself by making an attempt to prepare particular statistics from records kept only for general purposes.

Of the cases numerically recorded under the head of "Local Ulcers" during this period, secondaries followed in two only within six months after the expiration of the official year. In one the primary sore had been superficial of the class No 2. No bubo formed, a cure was effected without mercury, and the form of consecutive disease was "eruption," but of what precise description does not appear. In the second, (returned as from Ulcer No. 5,) the patient appears to have been treated originally for a combination of the phagedænic (5), and the sloughing (6) Ulcer, no bubo formed, but the system was brought under the influence of mercury. It appears also that this patient had been under treatment on two other occasions during the same year on account of local ulcer, but on neither does his case ever appear to have been entered in the register.

1847-8.

It must be observed here that many authors who have paid special attention to the study of "venereal disease" lay it down as a rule that neither the phagedænic nor sloughing ulcer, (which by the way, are in a great many instances either confounded or imperfectly distinguished in works,) are apt to give rise to bubo or to be followed by "secondaries," nor do they require the administration of mercury for their cure. This may or may not be the case, but such questions are foreign to the object of this paper; nothing more being intended at present than to lay before my professional brethren a bare enumeration of statistical facts, so as to enable them to draw their own conclusions in the same way that I have mine.

Two cases only of "secondaries" occurred from the local sores treated during this year; both had been treated without mercury, and were uncomplicated with bubo. In one, the "primary" sore was No. 1 or Hunterian, the after affection being "condylomata" around the anus. The ulcer in the other case was No. 2, and the consecutive affection "eruption," but of what precise description is not recorded.

1848-9.

It must be borne in mind that the above two cases of secondaries only represent those that occurred from the fifty-four cases of local sores, treated during the period in question, several others of affection, evidently owing their origin to inoculation with venereal poison were treated, but no record of the admission of such men in the first instance being obtainable, it is deemed proper to include them here, as otherwise confusion in the numerical tables would be occasioned.

It is worthy of especial remark that while no case of secondaries followed in forty-four treated without mercury, three occurred out of nine treated with this remedy, and that in these three the system was brought distinctly under its influence, while undergoing treatment for the local affection.

1849-50.

In one of these cases* the patient had suffered during October 1849, from the No. 1 Ulcer, in the treatment of which mercury had been employed, and in February 1850, from Ulcer No. 2, for which no mercury was given, and it is inferred that his secondary affection occurred as a sequence of the former and not of the latter attack; it having been so slight that he was cured in 16 days, whereas he was forty-nine in hospital on account of the Hunterian Ulcer. No bubo formed during either of the times this soldier was in hospital, and the imperfect description given of his constitutional disease states it merely to have been "aphthous sores in the mouth" and "eruption," leaving the distinctive characters and locality of the latter undetermined.

In a second case† the person affected had been under treatment in January 1850, for No. 1 Ulcer; no bubo formed, and a cure was effected without mercury. The succeeding month, however, he was again admitted with phagedænic (No. 5) ulcer, for which mercury had to be employed constitutionally; a bubo formed in the left groin, but was discussed without suppurating; and on 2nd March, that is while undergoing treatment for the latter sore, the secondary affection appeared as a "pustular eruption and swelling of the cervical glands." It is considered to be attributable to the second attack of local ulcer.

In the third case,‡ the character of the ulcer was distinctly phagedænic from the first; in it the consecutive symptoms came on in the form of "superficial ulcers on the tonsils, and pustular eruption" while the patient was treated for the local ulcer, on account of which he was in hospital 99 days, being only nominally discharged to be re-admitted under the latter head, for which, as will be seen from the table attached, he was in hospital 55 days more. No bubo formed.

---

* Private O'Neil—See Return No. 3.
† Private Lamb—See Return No. 3.
‡ Private Mandesley—See Return No. 3.

Of one hundred and ten cases of local sore treated during
1850-1. this year, secondaries occurred in a comparatively large proportion, namely, in eleven, to wit, in six of No. 1, and five of No. 2 Ulcer.

Of the first class, twenty-nine were, as has already been observed treated without mercury, and of this number secondaries occurred in five, and of five treated with mercury, this train of symptoms followed in one. In these six cases, preparations of mercury had been used locally only in the treatment of two; both locally and generally in one; and not at all in three.

It also appears that bubo occurred in three cases of those followed by secondaries, and where no preparation of mercury had been applied to the local ulcer; that in two the bubo terminated in resolution, that is, was discussed without suppurating, but suppurated and was opened artificially in one; the patient in this instance being an unhealthy young man, who had, on previous occasions, suffered from local ulcers of the 2nd form, and been frequently in hospital on account of porrigo, icterus, and anasarca.

The fifty-one cases of the second class of local ulcer, were all treated without the constitutional employment of mercury, and of these secondaries supervened in five. Of those thus followed by consecutive symptoms, a preparation of mercury was used locally in only one instance, and of the remaining four, in which it was not used at all, it appears enlargement of the inguinal glands took place in one, but the termination of the bubo is unrecorded.

As regards the particular forms of secondaries following particular local ulcers, we find that of the six succeeding Hunterian Chancres, two were papular, one that form of pustular forming rupia; one simply pustular; one pustular attended by anasarca of the limbs; and one, namely, that originally treated on the mercurial plan, pustular, with pains in the joints. Of the five cases following No. 2 Ulcer, the consecutive symptoms were in two, papular; one, papular with pains in the joints, iritis, enlargement of the cervical glands and phthisis pulmonalis; one, squamous with iritis; and one squamous, with superficial ulcers on the tonsils.

In five of the above eleven cases the secondary affection came on while the patient was under treatment on account of local ulcers, in the other six, they appeared within two months from the apparent cure of the primary sores.

Only one case of secondary symptoms occurred from the
1852-3. forty-two of local ulcers treated during this year, it taking place among thirty-seven of all kinds of sores treated without mercury; the five treated with that remedy, having been all cured without the subsequent attack of such affection. In the above case, the local ulcer had been of class No. 2, and had been cured by the mere application of solution of Sulphate of Copper, and without the formation of bubo. The constitutional symptoms manifested themselves under the form of papular eruption, and iritis.

It may be well to observe, before entering more fully upon
1853-4. the consideration of "secondaries" during this year, that with regard to the table of these affections for the period, one man* was admitted on two different occasions on account of local ulcers, but only once on account of "secondaries;" and it will, moreover, be observed, on reference to the table, that in some instances† men were admitted twice on account of secondaries, and that the same train of symptoms did not appear to manifest themselves on both such occasions.

As regards the occurrence of constitutional symptoms after bubo, it appears that of two cases of No. 1 Ulcer, in which bubo formed and consecutive symptoms supervened (the local sores having been all treated non-mercurially,) the bubo suppurated and was opened in one, but in the other, (in which gonorrhœa was also present) it was discussed. Of the cases following No. 2 Ulcer, the primary treatment had been non-mercurial in three, and mercurial in two, Private Richardson appearing in the table as two different "cases," and treated first on one plan and then on the other. Bubo had formed in two of these, namely, in Private Lyons (treated non-mercurially), in whom extensive sphacelation took place in the groin, and in Private Dowell, in whom it suppurated and was opened in the usual way.

The only other form of local ulcer followed by secondaries was No. 4, from which one case occurred, the primary ulcer or "excoriation" having been treated non-mercurially and without the occurrence of bubo.

With reference to the particular form of constitutional symptoms following individual local sores, we perceive in the present instance, that they occurred almost promiscuously;

* Private Richardson—Table No. 3.
† Privates Roach, Noonan and Ringrose—Table No. 3.

thus from No. 1, or Hunterian Chancre, there occurred one of periostitis on shaft of tibia, and nocturnal pains; one sclerotitis together with eruption of pustular maculæ and papulæ, and two of squamous eruption, one of the latter becoming subsequently the subject of amentia.

From No. 2, we had two cases of cynanche tonsillaris, one of ulcerated tonsils with pustular eruption, and one of maculæ on the body; and from No. 4 Ulcer, there was one case of nodes and nocturnal pains.

We find that the general ratio of secondaries to the total of local ulcers treated respectively without and with mercury has been as follows, *viz.*

Year.	Without Mercury.			With Mercury.		
	Total treated of all ulcers.	Followed by secondaries.	Proportion of secondaries per 100.	Total treated of all ulcers.	Followed by secondaries.	Proportion of secondaries per 100.
1846-7, ...	69	4	5·79	10	...	.....
1847-8, ...	40	1	2·5	16	1	6·25
1848-9, ...	39	2	5·12	15	...	.....
1849-50, ...	44	...	.....	9	3	33·3
1850-1, ...	104	10	9·61	6	1	16·6
1852-3, ...	37	1	2·70	5	...	.....
1853-4, ...	59	8	13·55	11	2	18·18
Total, ...	392	26	39·27	72	7	74·33
Average, ...			5·61			10·61

The above Table, rigidly prepared from the records of the hospital, indicates a variety in the liability of persons to

attacks of secondary symptoms at different stations, and after different modes of treatment, so great and unexpected, that had the calculations not been made by myself, I should have been inclined to believe some error had crept in; as it is, the results of seven years' experience show that as a general rule soldiers who have been treated for local ulcers with mercury, are more liable to be attacked with secondaries than those treated on the non-mercurial principle; and this as a general rule, indicates the superiority of the latter over the former plan.

It also appears that the ratio of consecutive symptoms to local ulcers varies so much according to geographical position, that we may presume the nature of these forms of venereal diseases to be influenced by locality, as many other maladies, such as fevers and many others are considered to be*

Having now, in the course of the preceding pages, endeavoured to give as succinctly as possible an account of such important points regarding some forms of venereal disease as were deducible from hospital records or came under my own personal observation during a period of seven years, it appears to me that little more is required to be said in this place than to briefly note some of the more evident conclusions that must naturally present themselves on a perusal of my remarks.

1*st*. With reference to local venereal ulcers, we find from the preceding observations that—1st, the ratio of cases of what is called "primary syphilis" or local venereal ulcer to mean strength, as also of individual forms of these ulcers, vary at different stations.—2nd, that the prevalence of the worst forms of ulcers is in proportion to the known filthy habits of the unfortunate classes at such stations.—3rd, some sores are more liable than others to be attended by bubo.—4th, as a general rule, local ulcers treated without mercury heal more rapidly than those treated on the mercurial plan.—5th, but in some instances the administration of this mineral, to the extent of affecting the system slightly, is absolutely necessary; nor (6th) do the individual characters of particular ulcers serve as an invariable criterion of whether or not they shall heal without the use of mercury, whether bubo shall arise, or secondaries supervene.—7th, although not definitely indicated in the statistics, yet

* See a paper on remittent fever by the author, in the "*Annals*" for April 1855.

I conceive I may here be pardoned for introducing my conviction from personal observation that soldiers exposed to the same venereal infection are likely to suffer from local ulcers of different characters.

2*nd*. As regards bubos, we find—1st, the position of the local ulcer does not appear to have any reference to the groin affected by bubo—2nd. The ratio of cases of bubo to local ulcers varies according to station, but seems to be greater in India than in the United Kingdom—3rd. The lymphatic glands are not invariably affected, the subcutaneous tissues, the glands alone, or glands and tissues being in different cases implicated—4th. A large number of bubos are discussed without suppurating, and some even after that event has taken place—5th. The occurrence of a *running* bubo would seem in the United Kingdom to diminish the liability to become affected with secondaries, but this rule does not appear to hold good in India—6th. Upon the whole the left groin appears to be more liable to bubo than the right in England and Ireland, but the reverse seems to be the case in India.

3*rd*. "Secondary symptoms"—1st. The proportion of cases of these where the primary ulcer has been treated on the mercurial plan is nearly double that where the treatment has been non-mercurial—2nd. Their occurrence after a "running bubo" is very rare at home, but by no means so in India—3rd. Definite trains of consecutive symptoms do not follow definite forms of local ulcer—4th. "Secondaries" in the army, although frequently destroying the general health of men affected, yet do so in a far less proportion of cases than is usually believed.

TABLE No. 1.

General Summary of Local Venereal Ulcers treated in the United Kingdom and in India—from 1846 to 1854.

LOCAL ULCER.	1st period—Chatham, Canterbury and Dover.		2nd period—Dover, Weedon, and Hull.		3rd period—Enniskillen.		4th period—Enniskillen.		5th period—Dublin.		6th period—Wuzeerabad.		7th period—Wuzeerabad and Mean Meer.		Total cases in the United Kingdom.	Total cases in India.	Grand total of cases recorded.
	Strength of Regiment.	Cases.	Strength of Regiment.	Cases.	Strength of Regiment.	Cases.	Strength of Regiment.	Cases.	Strength of Regiment.	Cases.	Strength of Regiment.	Cases.	Strength of Regiment.	Cases.			
1	713	18	818	6	408	18	408	13	812	34	928	6	916	16	89	22	111
2		27		31		19		29		51		23		37	157	60	217
3		10		6		4		0		2		0		1	22	1	23
4		12		1		3		4		17		5		9	37	14	51
5		2		1		4		4		3		0		0	14	0	14
6		1		0		2		0		3		1		0	6	1	7
Indefinite, ...		9		11		4		3		0		7		7	27	14	41
Totals, ...	.....	79	.....	56	.....	54	.....	53	.....	110	.....	42	.....	70	332	112	464

General Summary of Venereal Local Ulcers,

SPECIES OF ULCER.	Period. From	Period. To	Number of cases admitted.	Average ages of men admitted.	Average service of men admitted.	Without Mercury. Number treated.	Without Mercury. Average number of days in Hospital.	Without Mercury. Number followed by "Secondaries" in 6 months after discharge.
First.	13th Sept. 1846,	31st March 1847,	18	25	6	14	21	2
	1st April 1847,	31st March 1848,	6	21	3	4	14	0
	1st April 1848,	31st March 1849,	18	23	5	13	20	1
	1st April 1849,	31st March 1850,	13	22	4	7	19	0
	1st April 1850,	31st March 1851,	34	23	4	29	35	5
	1st April 1852,	31st March 1853,	6	27	5	4	18	0
	1st April 1853,	31st March 1854,	16	32	10	14	34	4
Second.	13th Sept. 1846,	31st March 1847,	27	22	4	26	15	1
	1st April 1847,	31st March 1848,	31	23	4	20	19	1
	1st April 1848,	31st March 1849,	19	22	4	16	15	1
	1st April 1849,	31st March 1850,	29	21	4	29	18	0
	1st April 1850,	31st March 1851,	51	23	5	51	21	5
	1st April 1852,	31st March 1853,	23	24	4	20	28	1
	1st April 1853,	31st March 1854,	37	30	8	31	63	3
Third.	13th Sept. 1846,	31st March 1847,	10	20	4	7	25	.....
	1st April 1847,	31st March 1848,	6	20	2	5	15	.....
	1st April 1848,	31st March 1849,	4	21	2	3	38	.....
	1st April 1849,	31st March 1850,	0	0	0	0	0	.....
	1st April 1850,	31st March 1851,	2	21	2	2	16	.....
	1st April 1852,	31st March 1853,	0	0	0	0	0	.....
	1st April 1853,	31st March 1854,	1	23	4	1	45	.....
Fourth.	13th Sept. 1846,	31st March 1847,	12	24	3	12	14	.....
	1st April 1847,	31st March 1848,	1	25	7	1	15	.....
	1st April 1848,	31st March 1849,	3	21	1	3	9	.....
	1st April 1849,	31st March 1850,	4	21	4	4	9	.....
	1st April 1850,	31st March 1851,	17	23	5	17	23	.....
	1st April 1852,	31st March 1853,	5	21	1	5	12	.....
	1st April 1853,	31st March 1854,	9	48	5	8	70	1
Fifth.	13th Sept. 1846,	31st March 1847,	2	22	6	1	83	.....
	1st April 1847,	31st March 1848,	1	19	1	0	0	.....
	1st April 1848,	31st March 1849,	4	21	1	2	24	.....
	1st April 1849,	31st March 1850,	4	25	7	1	22	.....
	1st April 1850,	31st March 1851,	3	26	8	2	44	.....
	1st April 1852,	31st March 1853,	0	0	0	0	0	.....
	1st April 1853,	31st March 1854,	0	0	0	0	0	.....
Sixth.	13th Sept. 1846,	31st March 1847,	1	21	6	0	0	.....
	1st April 1847,	31st March 1848,	0	0	0	0	0	.....
	1st April 1848,	31st March 1849,	2	21	3	1	46	.....
	1st April 1849,	31st March 1850,	0	0	0	0	0	.....
	1st April 1850,	31st March 1851,	3	21	3	3	46	.....
	1st April 1852,	31st March 1853,	1	27	4	1	22	.....
	1st April 1853,	31st March 1854,	0	0	0	0	0	.....
Indefinite.	13th Sept. 1846,	31st March 1847,	9	23	5	9	11	.....
	1st April 1847,	31st March 1848,	11	22	3	10	16	.....
	1st April 1848,	31st March 1849,	4	25	6	1	8	.....
	1st April 1849,	31st March 1850,	3	23	5	3	9	.....
	1st April 1850,	31st March 1851,	0	0	0	0	0	.....
	1st April 1852,	31st March 1853,	7	24	4	7	12	.....
	1st April 1853,	31st March 1854,	7	47	5	5	73	.....

General Summary of Bubos noted in the above

Period. From	Period. To	Right Side.
13th Sept. 1846,	31st March 1847,	6
1st April 1847,	31st March 1848,	7
1st April 1848,	31st March 1849,	6
1st April 1849,	31st March 1850,	3
1st April 1850,	31st March 1851,	16
1st April 1852,	31st March 1853,	7
1st April 1853,	31st March 1854,	12
	Total,...	57

from the 13th September 1846 to 31st March 1854.

With Mercury. Number treated.	With Mercury. Average number of days in Hospital.	With Mercury. Number followed by "Secondaries" in 6 months after discharge.	Uncomplicated.	Complicated with Bubo only.	Complicated with Gonorrhœa only.	Complicated with Bubo and Gonorrhœa.	Total Complicated.
4	35	0	8	6	3	2	10
2	45	0	4	2	0	0	2
5	65	0	0	2	2	2	6
6	38	1	12	1	0	0	1
5	70	1	19	15	0	0	15
2	47	0	5	1	0	0	1
3	86	0	5	8	2	1	11
1	23	0	9	12	6	0	18
11	23	0	21	10	0	0	10
3	42	0	13	4	2	0	6
0	0	0	21	4	1	3	8
0	0	0	26	24	1	0	25
3	18	0	11	11	1	0	12
6	78	2	23	12	2	0	14
3	72	.....	7	2	1	.....	3
1	36	.....	4	2	0	.....	2
1	41	.....	2	1	1	.....	2
0	0	.....	0	0	0	.....	0
0	0	.....	1	1	0	.....	1
0	0	.....	0	0	0	.....	0
0	0	.....	0	1	0	.....	1
0	0	.....	7	2	3	.....	5
0	0	.....	1	0	0	.....	0
0	0	.....	3	0	0	.....	0
0	0	.....	3	1	0	.....	1
0	6	.....	14	2	1	.....	3
0	0	.....	3	2	0	.....	2
1	75	.....	5	4	0	.....	4
1	178	0	1	1	0	.....	1
1	40	1	1	0	0	.....	0
2	74	0	3	0	1	.....	1
3	57	2	2	2	0	.....	2
1	53	0	3	0	0	.....	0
0	0	0	0	0	0	.....	0
0	0	0	0	0	0	.....	0
1	28	.....	1	.....	.....	.....	.....
0	0	.....	0	.....	.....	.....	.....
1	76	.....	2	.....	.....	.....	.....
0	0	.....	0	.....	.....	.....	.....
0	0	.....	3	.....	.....	.....	.....
0	0	.....	1	.....	.....	.....	.....
0	0	.....	0	.....	.....	.....	.....
0	0	.....	4	5	.....	.....	5
1	13	.....	9	2	.....	.....	2
3	35	.....	2	2	.....	.....	2
0	0	.....	3	0	.....	.....	0
0	0	.....	9	0	.....	.....	0
0	0	.....	6	2	.....	.....	1
2	62	.....	2	3	.....	.....	3

Return, according to the Groin affected.

Left Side.	Both Sides.	Side not stated.	Total.
16	5	3	30
5	2	2	16
4	0	1	11
88	0	0	11
20	6	0	42
7	1	1	16
9	6	2	29
69	29	9	155

TABLE No. 3.

Return of Local Venereal Ulcers, followed by Constitutional or "Secondary" Symptoms, from 13th September 1846 to 30th September 1854.

Form of local sore followed by Constitutional symptoms.	NAMES OF PATIENTS.	Under treatment for Local Ulcer.					Under treatment for Constitutional Symptoms.				Remarks.
		From	To	Number of days in Hospital.	Treatment whether Mercurial or not.	Complication if any.	From	To	Number of days in Hospital.	Character of the Constitutional or "Secondary affection."	
	Private Michael Murphy, ...	27th Sept. 1846,	24th Oct. 1846,	28	N. M.	None,	30th Dec. 1846,	10th Jan. 1847,	12	Vesicular eruption and nocturnal pains in limbs,...	At duty January 1851.
	,, Joseph Massey, ...	28th Nov. 1846,	21st Dec. 1846,	24	N. M.	None,	29th Jan. 1847,	31st Jan. 1847,	3	Red spots on the skin intermixed with small tubercles,...	At duty January 1851.
	,, Murtagh Glynn, ...	31st March 1849,	28th April 1849,	29	N. M.	Phymosis,..	19th July 1849,	30th July 1849,	12	Condylomata,...	At duty January 1851.
	,, John O'Niel, ...	28th Oct. 1849,	15th Dec. 1849,	49	M.	None,	2nd April 1850,	19th April 1850,	17	Aphthous sores in the mouth and "Eruption,"...	At duty January 1851.
	,, Michael Connelly, ...	17th June 1850,	4th Sept. 1850,	79	N. M.	None,	14th Oct. 1850,	27th Nov. 1850,	44	Pustular—*Rupia*, on body and limbs,...	Ox. H. Rub. and Cal. applied locally to primary sores,—at duty June 1851.
	,, William Druman, ...	23rd July 1850,	3rd Sept. 1850,	42	N. M.	None,	14th Oct. 1850,	16th Nov. 1850,	33	Pustular—(leaving depressions,)	Ox. H. Rub. applied locally to primary sores,—at duty June 1851.
	,, John Barrett, ...	1st June 1850,	14th Nov. 1850,	162	N. M.	Bubo,	... ...	... ...	...	Pustular—Anasarca,...	Secondary disease appeared while he was being treated for primaries, was of unhealthy Diethesis—*Invalided*—M was used *generally* only after the appearance of eruption.
1	Corporal William Airey, ...	20th July 1850,	19th Sept. 1850,	55	N. M.	Bubo,	... ...	... ...	...	Papular, ...	Secondary disease appeared while he was being treated for primaries—no preparation of *M.* used at all—*at duty* June 1851, Bubo did not suppurate.
	Private Francis Ball, ...	18th Jany. 1851,	4th Feb. 1851,	17	N. M.	Bubo,	30th March 1851,	13th April 1851,	14	Papular on body and arms,...	No. M. used—Bubo did not suppurate—at duty June 1851.
	,, Patrick Cahill, ...	11th Nov. 1850,	29th Dec. 1850,	48	M.	None,	... ...	... ...	...	Pustular—and pains in joints,	Lot. nig. applied to primary sores, and eruption appeared while he was thus under treatment—at duty June 1851.
	Edward Roche, ...	14th Nov. 1853,	6th Dec. 1853,	22	N. M.	Bubo,	21st Feb. 1854,	4th March 1854,	11	Periostitis on shaft of Tibia and nocturnal pains, ...	Permanent thickening remained —at duty July 1855.
	William Noonan, ...	26th March 1854,	16th April 1854,	27	N. M.	Bubo and Gonorrhœa.	21st Mar. 1854,	2nd April 1854,	12	Ditto ditto ditto,...	
	Patrick Ringrose, ...	13th March 1854,	28th March 1854,	15	N. M.	None,	28th Apl. 1854,	6th June 1854,	40	Pustular, Maculæ—Schist, ...	At duty July 1855.
	Daniel Casey, ...	29th March 1854,	27th April 1854,	30	N. M.	None,	20th July 1854,	5th Sept. 1854,	47	Papulæ,...	
	Private Michael Tobin, ...	3rd Dec. 1846,	7th Dec. 1846,	5	N. M.	1 Bubo, *L.*	3rd May 1854,	16th July 1854,	13	Squamous Papulæ, No. 2 on penis, ...	In Hospital under observation for Amentia, July 1855.
	,, John Murphy,...	13th June 1847,	6th July 1847,	24	N. M.	None,	13th June 1854,	28th June 1854,	15	Squamous afterwards Amentia,	
	,, Patrick Kehoe, ...	15th Jany. 1849,	23rd Jan. 1849,	9	N. M.	None,	31st May 1854,	22nd June 1854,	23	Squamæ, ...	With the Regiment, July 1855.
	,, Joshua Brand,...	10th Sept. 1850,	5th Oct. 1850,	25	N. M.	None,	12th Feb. 1847,	7th March 1847,	24	A Squamous eruption,...	At duty January 1851.
	,, William Davis, ...	25th Oct. 1850,	14th Nov. 1850,	21	N. M.	None,	18th Oct. 1847,	10th Dec. 1847,	53	Ditto ditto,...	Discharged with ignominy, 20th February 1849.
	,, Patrick Dillon, ...	11th Feb. 1851,	12th March 1851,	29	N. M.	None,	12th Sept. 1849,	23rd Sept. 1849,	12	Eruption, but character not stated, ...	At duty January 1851.
2	,, Patrick Sweeney, ...	11th March 1851,	25th March 1851,	14	N. M.	None,	10th Oct. 1850,	22nd Oct. 1850,	12	Papular pains in joints—Iritis,	
	,, Joseph Goymour, ...	23rd Oct. 1850,	14th Feb. 1851,	113	N. M.	Bubo,	18th Jan. 1851,	15th Feb. 1851,	29	Enlargement of cervical glands and phthisis, ...	Invalided.
	,, Elias Potter, ...	16th July 1852,	3rd Aug. 1852,	18	N. M.	None,	... ...	... ...	...	Papular on body, ...	At duty June 1851.
	,, Cornelius Lyons, ...	17th July 1853,	14th Sept. 1853,	59	N. M.	Bubo,	6th April 1851,	26th April 1851,	20	Squamous eruption and superficial ulcers on tonsils, ...	At duty June 1851.
	,, Job Dowell, ...	18th Sept. 1853,	1st Dec. 1853,	75	M.	Bubo,	... ...	... ...	...	Papulæ, ...	At duty June 1851.
	,, John Richardson, ...	4th July 1853,	13th Sept. 1853,	40	N. M.	None,	16th Aug. 1852,	12th Nov. 1852,	94	Papular—Iritis, ...	Invalided for Dyscrasea, 1854.
	,, Charles Hinds,...	3rd March 1854,	21st March 1854,	18	M.	None,	17th July 1853,	14th Sept. 1853,	59	Cynanche Tonsil: and *Eruption* superficial not noted, ...	With the Regiment July 1855.
		24th Feb. 1854,	11th March 1854,	15	N. M.	Gonorrhœa.	30th Dec. 1853,	5th Jan. 1853,	6	Ditto—Cachexia, ...	Ditto July 1855 (In bad health.)
4	,, Abraham Croker, ...	7th Oct. 1853,	15th Dec. 1853,	69	N. M.	None,	3rd March 1854,	21st March 1854,	18	Maculæ on body, No.2 on penis,	Died of Apoplexy 24th June 1854.
							24th Feb. 1854,	1st July 1854,	128	Pustulæ on body and limbs, ulcer on Tonsils, ...	With the Regiment July 1855.
5	,, William Holliday, ...	12th Aug. 1847,	20th Sept. 1847,	40	M.	None,	15th Mar. 1854,	12th May 1854,	58	Nodes—Nocturnal pains—abrasions in coat of ulcer, ...	Ditto, July 1855,(in bad health.)
	,, John Mandesley, ...	30th Oct. 1849,	5th Feb. 1850,	99	M.	None,	1st Aug. 1848,	2nd Sept. 1848,	33	Squamous eruption and nocturnal pains in limbs, ...	At duty June 1851.
	,, Michael Lamb, ...	27th Feb. 1850,	31st March 1850,	32	M.	1 Bubo, *L.*	6th Feb. 1850,	1st April 1850,	55	Superficial sores on Tonsils and pustular eruption, ...	Ditto June 1851.
							28th April 1850,	18th May, 1850,	20	Papulæ eruption and swelling of the cervical glands, ...	Ditto June 1851.

invasion, there cannot be a shadow of a doubt as to which ship the greatest superiority ought to be conceded. Equally so for running into an enemy's harbour amongst the vessels at anchor. A single touch of the beak will produce an effect which hours of cannonading could not insure. In such a case, one Gloire as a steam-ram would be able to do well and effectually what the fire from half-a-dozen Warriors could never effect or even attempt. Had the Warrior been taken to pieces before launching, *two noble improved Gloires could have been constructed from the materials.* This would have been a real economy, as the country would then have gained two effective vessels instead of one unwieldly and unserviceable.

"The next good thing that might be done, is to alter the rig to four or five masts with principally fore and aft sails, take away the cutwater and bowsprit, and restore the vessel to its original character of steam-ram combination with that of the frigate.

"By removing the upper deck, except perhaps leaving short poop and forecastle, much unnecessary top hamper is got rid of, and the rolling and draught decreased.

"An able Sea Lord, who had the most practical experience of those who sat at Sir John Pakington's Board, strongly objected to the rig then about to be adopted, as well as to the proposed cutwater and bowsprit, because such alterations would take away the most formidable quality for which she was constructed, viz., to *sink* by *concussion* without making any compensations, except giving a more agreeable appearance to the eye.

"It has been asserted, but it certainly must be an error, that the Warrior was never built for, nor intended for a steam-ram. I have before me a copy of the instructions issued to the builders, in which they are desired to build her "strong enough to sink by concussion, and to be guarded against the effects of collision." A steam-ram cannot be more clearly and distinctly described, and her real stem is the same as the two professedly "rams," Resistance and Defence. The cutwater is added, and was a subsequent thought.

A Steam-Ram, *without any shot-proof protection,* but made to possess greater speed than the Warrior, and to carry at the same time a month or six weeks' fuel, by pursuing cautious tactics and making feints at night, would soon exhaust the Warrior, and her six or seven days' fuel, when that vessel must run away into port, or be infallibly sunk if attacked in a calm, or at night. If the ram were only protected by one or one-and-a-half inch plate to be ensured against explosive or incendiary projectiles, she could follow a much bolder system. A hundred solid shot hitting would do her no serious mischief. If such vessels were required in the colonies, the fore and aft sail would carry them out quite as well as the square-rigged sails. The expense of such a vessel would only be that of an ordinary line-of-battle ship.

"Let us now examine the advantages, if there are any, of building vessels of the large size of the Warrior class. I have already shown that, independent of our long-established naval superiority, we have a great and indisputable superiority over, not one, but all the nations of Europe in the energy, skill, numbers, and wealth in our manufactories of ships, both in wood and iron, and of steam-engines, we could safely allow any nation a considerable start of us in commencing, and yet be well able to complete before them similar, but much improved vessels. We have hitherto believed that ship to ship we are always the victors. Why then are *we* building ships of twice the size of those that the French and other nations are building (not *one* for a *trial*, but a *batch* of which *not one* has been tried, either by *ourselves* or by *others*, and to the tune of millions)? Have our officers and sailors become so degenerate as to require two British sailors to beat one foreigner? If not why are we creating giants if we have none to encounter? No doubt but in a contest for wasting wealth we certainly shall not be insolvent the first, but why try to force our neighbour into such a contest? Our Government appear to be influenced by Mr. Scott Russell's theory "for the navy of the future." It is another proof of how absurd a very clever but merely theoretical man may become when he comes to treat of practical matters which he does not understand."

THE INDIGNATION MEETING AT ALDERSHOT AND SOCIETY THERE.

This meeting has been inaptly designated by its projectors. People are not so much indignant as irritated at being told unpleasant truths, and the tenor of the different speeches, as reported, with two exceptions, shows clearly the predominant feeling. All admitted the existence of the evils, all but two condemned Captain Jackson's report as exaggerated, and singular enough these were the only persons who represented the public house interest; if there were any more of their calling present, they used a wise discretion in preserving silence, and leaving it to others to advocate their cause, for all that was said by the previous speakers had that indirect effect.

Mr. Boulter, publican and auctioneer, proposed the fourth and last resolution (which did not form a part of the original programme of the meeting),—"That this meeting regrets the existence of the evil complained of in the report of Captain Jackson, so far as relates to the attendance of prostitutes in public-houses and beer-houses, and pledges itself to take prompt and effectual measures to suppress it." Mr. Boulter enlarged upon the extent of the evil to which this resolution pointed, and observed that the matter was one which false delicacy ought not to prevent them grappling with. He recommended the

adoption of the continental system of licensing, and in support of his views he quoted from a letter in the *Times* of that day, signed "C. A.," in which, speaking of prostitution as an admitted fact, the writer said,—"That being so, it becomes the duty of boards of health and other public bodies to devise some means whereby its pernicious effects may be diminished, as much as it is their duty to devise measures to preserve the masses against cholera, typhus fever, and other epidemic diseases."

Mr. Allen, publican, of North Lane, seconded the motion, and declared that to such an extent was the vicious system carried in the peculiar district where he resided, that he was compelled to abandon his house because he refused to harbour prostitutes or admit them within his doors. He had endeavoured to conduct his house respectably, but such an establishment had no chance in North Lane, where vice and immorality certainly reigned triumphant.

At a subsequent meeting of the Aldershot Local Board of Health this same Mr. Boulter observed that,

"After reading the report of Captain Jackson, which had recently formed the subject of a public meeting, he *felt the full force and truth* of the Captain's statements, and thought the subject ought to be brought under the consideration of the Board, with a view to remedying the existing evil, viz., the assembling of prostitutes in public-houses and beer-shops. If there was one thing more than another which it was the duty of that Board and of every man in Aldershot to do, it was to carry out the wishes of the camp authorities. Up to the present time, notwithstanding the publication of Captain Jackson's report, not one word had been heard conveying the views or wishes of the camp authorities on the subject. The licenses of all public-houses prohibited the assembling within them of persons of notoriously bad character. As prostitutes must be considered by law persons of bad character, the harbouring of them was an offence against the tenor of the license—an offence punishable by law—and there would be no difficulty in suppressing it if the law were enforced. As to the machinery to be put in motion for the purpose, it was simple. It was within the province of the Board to direct their surveyor to report upon the houses of ill-fame, and prosecute the offending parties. By so doing, they would show to the Secretary of State and the military authorities that they were striving all they could to suppress the evil complained of."

Nothing can be more confirmatory of the entire truth of Captain Jackson's report than the words spoken by these two publicans: the one acknowledges the evil to its full extent, and points out the remedy, but does not say whether *his* doors are closed against the class of customers he describes: the other says he has been compelled to abandon house and home and what is well known to be a lucrative trade. These are men who, from the very nature of their business, must be familiarly acquainted with the evils complained of. Not so the other speakers. It was impossible to select a person better fitted to fill the chair than Captain Mangles, a gentleman long accustomed to preside at public meetings, a resident in the immediate vicinity of Aldershot, chairman of the South Western Railway Company, an active director of other companies, and a partner in the Guildford Bank, which has a branch establishment at Aldershot; to these may be added a high character for re-

spectability. Whatever Captain Mangles said, he no doubt conscientiously believed; but if the truth were known, he is perhaps as ignorant, except from hearsay, of the true state of things in North Lane, and certain other parts of Aldershot, as he is of Timbuctoo. If he ever passed through these localities during the day time, probably nothing offensive would have met his eye. Soldiers would be then attending to their duties, and the inhabitants of indifferent character would be sleeping off the effects of the previous night's debaucheries. To see the gin-palaces in all their brilliancy, and when they are crowded almost to suffocation, to witness what is passing in the more humble beer-shops, and even in the open air, a different time should be chosen, that, when the soldiers are at liberty, and the scene heightened by a perfect illumination of gas light. But this is an hour at which most persons in the position of Captain Mangles are about sitting down to their dinners, and would not be likely to be found in North Lane, even should they not be deterred by a sense of morality, for it is one of the last places in the kingdom where anyone, having a character to lose, would care to be seen perambulating, whatever the hour or the motive. Captain Mangles was in the dilemma of having two clients to support; as the representative of a company which has extensive connections with the Government, he should have been tender in his observations on a Government officer's report, and no local influence should have induced him to depart from the conditions he had himself imposed when he consented to occupy the chair. How far he acted up to these, his own conditions, will be gathered by the extract from his speech. None of us are exempt from errors, but it certainly seems to us to be rather a ludicrous one to fall into, to accuse a man of publishing a *gross libel*, which is unquestionably personal, almost in the same breath in which he denounces such attacks; however, let the worthy chairman's own words decide their consistency:

"He had great pleasure in acceding to the invitation of the deputation that he should preside over that meeting, the only stipulation which he had thought it necessary to make being that there should be no personal attacks upon any individual. It was purely a civilian movement—otherwise he should not have been there—the object of the meeting being to repudiate the gross libel which had been put upon the town by the report of Captain Jackson, and to show by incontrovertible facts that it was altogether unwarranted. (Cheers.) He thought that the inhabitants had evinced a very proper and English feeling in coming thus promptly forward to repel this unfair attack, instead of quietly submitting to it. He had no doubt that Captain Jackson was a thoroughly good and religious man, and had an earnest desire to promote the best interests of the soldiers; but when a man mounted a hobby he was very apt—even if he didn't ride it to death—to trample upon the rights of others. Such had been the case in the present instance. (Cheers.) He admitted that the evils pointed out by Captain Jackson existed to some extent; but it was unfair for a man in his position to go down there, and, knowing nothing of the neighbourhood or the progress which it was making, to point out the black spots only, and omit all mention of the institutions, schools, churches, and chapels, and other bright and promising features which might easily be detected by any person who had his eyes open. (Cheers.)"

It was Captain Jackson's duty to make himself thoroughly acquainted with every matter connected with the cantonment and town of Aldershot, and then to make a true and faithful report. This could only be done by rigid inquiry and personal observation, so instead of "knowing nothing of the neighbourhood," he, in all probability knew more of it than the chairman, who condemns the report as exaggerated in terms not very complimentary. There are few officers at Aldershot who do not know that the report is within rather than beyond the truth, and that it might have been drawn up in much stronger language without fear of being convicted of misrepresentation. Neither schools, churches, nor chapels are calculated to mitigate the evil; the two latter may be well attended, but not by the persons principally concerned; the soldiers have their own church parades, and the women will be occupying themselves in their preparations to appear to the best advantage when the church doors are closed, and their usual companions are at liberty to meet them. These establishments are admirably adapted for the fixed population, and to prevent contamination, but they exercise no influence over the soldiers or the camp followers; the first are bent upon enjoying their few hours of liberty according to their own ideas, and will submit to no interference other than that which military discipline imposes, the second gain their bread by administering to passion or vice, and do not often listen to the voice of the preacher. How institutions, and other bright and promising features (what these are Captain Mangles does not explain) can alter the facts stated in the report, is beyond the comprehension of ordinary men, to the Captain's mind they may be satisfactory. That nothing of this kind is calculated to mitigate the real evil Captain Jackson knows perfectly, and so doubtlessly does Captain Mangles, for he never touched upon this part of the subject, he confined himself to a condemnation of the report, offering in opposition to it the praiseworthy exertions of the inhabitants, which, they must confess, were chiefly for their own benefit.

No one can be better informed of the habits and customs of sailors than Captain Mangles, or of the after effects of their excesses, and there is no great difference between them and soldiers; their appetites for indulgence are the same; but the former enter more freely into temptations, because they have commonly more money to spend, and during their cruise on shore they are not subject to control or authority. The chairman, however, did not give to his audience the benefit of his experience.

The next speaker was an old soldier; he may not be considered strictly responsible for the words of a resolution, but he was a party concerned in their approval, and moreover gave them utterance.

Not many years since, if one gentleman had told another he had written or spoken what was untrue, or in plain English given him the lie, it would have been a question of Chalk Farm, or the Gravel Pits—*tempora mutantur*. It ought to be a point of honour with gentlemen to be careful in the words they make use of, now that the same responsibility is no longer attached to them.

Captain Newcome moved the first resolution:—"That this meeting has observed with pain and regret a paragraph in the *Times* newspaper, headed 'The Soldier at Aldershot,' purporting to be extracted from a report of Captain Pilkington Jackson, R.A., to the Secretary of State for War in September last; and, while deploring the existence of the evils therein depicted, the meeting feels that most of the statements are highly exaggerated, and many of them untrue; and, being so, are likely to prove most injurious to the well-disposed and respectable portion of the inhabitants." Although he did not think it necessary or desirable to take notice of every paragraph which appeared in a newspaper, it must be remembered that the one in question formed portion of a report which had been laid before the House of Commons, whereby an amount of authenticity and importance was attached to it which it would not otherwise possess. Speaking from his own personal observation as a regular attendant at the Aldershot, Odiham, and Farnham benches, he could bear testimony to the great improvements which had been effected in the town since the camp had been first established. He had been a soldier himself for fifteen years, and he thought that the discipline and order which prevailed at their camp, considering the tribe of camp followers and those other evils which were inseparable from such an establishment, reflected the highest credit upon the military authorities. He did not mean to say that 20,000 men could be assembled together without there being black sheep among them. It must be borne in mind that young recruits were often taken from among the lowest of the population in villages and country towns; and, if there was any devil in a man, it would just exhibit itself in its strongest colours at the age when these persons joined the army. These men, however, after due training and sobering down, made the best soldiers in the world. A camp could not exist without its concomitant evils; but, contrasting the present state of Aldershot with that which prevailed some time since, he contended that vast improvements had been effected, and that, at all events, there were no substantial or exceptional grounds for the sweeping charges which Captain Jackson had made. As to the women who infested the neighbourhood, experience showed that it was impossible to get rid of them in a garrison town; but he hoped that something might be done, by bringing them under better control, to mitigate as much as possible the evils—both moral and physical—arising from indiscriminate intercourse."

At the close of his speech Captain Newcome touched upon the real evil; everyone will wish him success, and if he can only bring the women under control he ought to be canonized; for he will have effected more even than the grand Turk can do, notwithstanding the system of seclusion and the occasional use of the sack.

The Rev. Dr. Rule proposed the second resolution:—"That this meeting denies that the new village or town of Aldershott is principally inhabited by the class of persons described by Captain Jackson, and believes that in making his inspection he only directed his attention

to the existence of the evil, to the exclusion of all that was good, and totally ignored the many philanthropic institutions which have been established for ameliorating the condition of the lower classes, and establishing in them a higher condition of morality." As an inhabitant of Aldershot, and a Minister of the Gospel, he had read the extract from the report of Captain Jackson with feelings of regret, because he could not shut his eyes to the fact that the evils mentioned in that report did exist to a considerable extent in all garrison towns. His especial object in attending the meeting, however, was to contradict the exaggerated and untrue statement of Captain Jackson with regard to the inhabitants of the town. The report stated that the new village of Aldershot was inhabited principally by publicans, brothel-keepers, prostitutes, thieves, and the receivers of stolen property, and it insinuated that the more influential inhabitants pandered to the vices of the soldiers. How far this was from the truth he appealed to that large and respectable meeting to testify. He should like to ask Captain Jackson whether he had walked across the town and seen that old gray tower of Aldershot Church, and noted that the parish church had been doubled in size to meet the increasing exigencies of the neighbourhood. Had he observed the two new churches and the other chapels and meeting-houses built by voluntary contributions? Had he seen the large schools and the institutes established for the common use of soldiers and civilians? Had he noticed the infirmary, also the result of voluntary contributions? Had he glanced at that elegant hall in which they were then assembled, a proof of the public spirit and enterprise of the town? Had he passed through the streets upon the Sabbath, and seen the various Scripture readers carrying on their Godly work? And lastly, when he visited that den, North Lane, had he observed the preaching station, and did he know that there were two ministers there labouring incessantly to do good without any payment or reward? It was only just that Captain Jackson should have looked at all these things before making his report to the Secretary of State for War, and had he done so it could scarcely have been couched in those unmeasured terms of condemnation which marked the document.

Mr. Elstone proposed the third resolution:—That, in order to remove the injurious effects of such a report if left uncontradicted, the following gentlemen be appointed a committee, with authority to draw up a reply to the statement made by Captain Jackson; and to publish and circulate the same in the manner which may appear to them best:—The Rev. Dr. Rule, Mr. F. Eggar, Mr. M. Dewar, and Mr. T. White."

The second resolution proposed by Dr. Rule, a Wesleyan minister, is of much the same import as the first, varying only in expression. The third gave rise to a deputation which waited upon the Secretary of State for War on the 22nd ult. to present a reply to Captain Jackson's report, drawn up by the committee nominated for that purpose at the "Indignation Meeting."

Mr. F. Eggar read the answer, for which he requested such an amount of publicity in Parliament and elsewhere as would in some degree remove the stigma which had been cast upon the town. After citing the more objectionable portions of Captain Jackson's report, to which attention was first generally called by their publication in the *Times*, the document proceeded as follows:—

"If Captain Jackson had applied his remarks generally to all places where the British soldier is stationed, we should, in all probability, have left his report to be dealt with by the Secretary of State for War, to whom it was addressed, or by the House of Commons, by whose

order it was printed, in the confident belief that its merits and demerits would have been carefully sifted and duly appreciated; but since Aldershot has been singled out for special censure, injurious imputations have been cast upon the principal inhabitants, and we therefore beg leave to point out a few of his inaccuracies and many of his omissions. We can make great allowance for the desire which Captain Jackson manifests to prove the necessity which exists here for the Homes of which he is so great an advocate, but his ardour cannot justify a single assertion which contains either more or less than the actual truth. After alluding to the number of the public-houses and beer-shops, his estimate of which appears to be correct, he states that many of them 'have large halls attached, fitted up with great splendour,' whereas, there is only one music-hall which can by any possibility lay claim to such a description. And we have every reason to believe that this and the one or two other halls most frequented by the soldiers are conducted with a regard for decorum not inferior to what is met with in similar establishments in London and elsewhere. That others are less scrupulous in their management must be conceded, and we should hail with satisfaction any remedy which would tend to ameliorate this great evil; but the difficulty in obtaining a conviction is no great secret, and an already overtaxed community like that at Aldershot can hardly be expected to incur the heavy expenses of a prosecution with so little prospect of a successful issue. The next paragraph, which demands our strongest condemnation, is as follows:—'The parish authorities will not incur the expense of prosecuting against the wishes of the rate-payers, a large number of whom, and the most influential, derive pecuniary benefit from the evils in question.' Here again Captain Jackson does not hesitate to make a statement totally devoid of truth, and to malign and attribute sordid motives of the most humiliating description to a number of honourable and respectable men, who derive no benefit whatever, pecuniary or otherwise, from the evils in question, and who are altogether incapable of being actuated by such mercenary and unworthy views.

"It seems unnecessary to dwell further upon the report, as if inaccurate and exaggerated in such important points, which affect the character of our principal inhabitants, it necessarily loses the weight to which such a document is otherwise well entitled, but as Captain Jackson has given such unremitting attention to the search for evil, to the exclusion of all that is worthy of commendation, we must briefly point out the efforts which have been made, and the steps already taken to promote the social, moral, and religious welfare of the population of Aldershot. A few years ago, before the introduction of the camp to this neighbourhood, the place was little better than an uncultivated wilderness, with a scattered population of some 500 inhabitants, and in six short years it has increased to 5,000, exclusive of the military. The parish church has been considerably enlarged at a cost of about £1,200. National schools have been erected at a cost of £1,000. A Wesleyan church and minister's house have been contributed by that influential and liberal denomination at an expense of nearly £5,000, and an annual expenditure of about £500, the sittings in which are entirely free to both the military and civil population. A mission has been opened by the United Presbyterians in the New Assembly Rooms, for which they pay £50 per annum, and which they throw freely open to all worshipers, and arrangements are now being made to erect a permanent chapel and school-house for their congregation, at an outlay of at least £3,000. A temporary place of worship has been opened by the Baptists, who have recently commenced the erection of a new chapel. A mission has been in active operation at North Lane (one of our worst localities) for a considerable time; £500 have been offered by one gentleman, land

by another, and various smaller sums promised by other friends towards the building of another church, more central in position, in connection with the Church of England. A new cemetery has been constructed at a cost of nearly £2,000, a market-place built, an institute for social recreation and mental improvement opened, the premises occupied for which, worth £50 a year, are gratuitously lent by one of our principal tradesmen. A handsome new assembly-room has been built, at which concerts, lectures, and amusements take place, which cannot be objected to by the most fastidious or the most bigoted. A local board of health has been formed, through whose means, and under whose directions the public streets and roads have been drained, paved, and lighted with gas; and last, though not the least valuable, an infirmary and dispensary has been established, which has furnished medical advice and relief to upwards of 540 persons during the first three months of its existence, besides accommodating and relieving many in-patients labouring under severe and noxious diseases. These and many other minor matters unnecessary to specify have all been effected within a few years, and if we except £2,500 contributed by Government towards the drainage of the parish, and a grant in favour of the National Schools and the Infirmary, have all been accomplished at the expense of the local population and their friends. The parish clergyman and his Scripture reader, the Wesleyan minister and his assistant, the Presbyterian pastor, and many other philanthropic persons are unceasing in their efforts to promote the moral and religious advancement of all classes; it is, therefore, most ungenerous and unfair that Aldershot should be pictured by Captain Jackson as little better than a plague-spot on the map of England, and a nursery of the worst diseases which can sap the health of the British army. That many of the evils depicted by Captain Jackson exist cannot be concealed, and most sincerely do we deplore it, but that they are either peculiar to Aldershot, or exist there to a greater, or even an equal extent, with other military or naval towns, we most emphatically and fearlessly deny.

"It is not for us to look coldly on the well-intentioned and we thoroughly believe the earnest efforts and proposals of Captain Jackson, and most heartily we wish him all the success which he can most hopefully anticipate, but we must be allowed to express our conviction, that to prepare the way for that happy conversion which is so desirable, the Government and the multitude of charitable and philanthropic friends with which this country abounds must join us heart and soul with their encouragement and their purse, the former by aiding us in the increase of our civil police, at present limited to five men and a superintendant, and the latter in support of such useful institutions as our churches, our institute, our infirmary, and other charities, and we may then joyfully and gratefully look forward to render Aldershot a purer and a happier residence for the British soldier, and purge it from the foul imputations with which it has been so unmercifully, and, we must say, so undeservedly assailed."

The above extracts contain all the main points in the reply, it was in fact a mere echo of the speeches made at the meeting, no new features were shown. Had Captain Jackson's report included other military and naval stations, the inhabitants of Aldershot, it was said, would probably have taken no notice of it; but it being confined to their own town, they said it was their duty to rebut the imputations cast upon them as exaggerated. Surely these gentlemen ought to have known that whatever may be the state of other towns, it had nothing to do with that of Aldershot, and any

reference to them would have been extraneous matter—Captain Jackson was ordered to make a special report upon a specified locality, and to travel beyond it formed no part of his business. When the shoe pinches people are apt to cry out, so the inhabitants of Aldershot, smarting under the truths they were told, have given vent to their feelings, as they term them, of indignation.

All the improvements they vaunt have nothing to do with the question, they are the natural consequences of an increased population. Had the large military station never been formed at Aldershot, it would have remained a scattered hamlet in a very wild country. With the arrival of the troops new wants arose, and the village soon assumed the dimension of a town, and it is very evident that the town, such as it is, depends chiefly for its support upon its relations with the camp, and its followers. These last must be housed, and wherever there are occupiers ready to pay rents, builders are always to be found who very speedily suit all comers. There is always a rush where there is a prospect of making money; hence at Aldershot, banks, hotels, shops, and public houses have been established in an incredibly short space of time. Of these last, one hundred (which it is admitted is no exaggeration) seems to be out of proportion for a town containing no more than five thousand inhabitants, it is therefore clear that the major part of them must depend upon the custom which the soldiers bring. So with the shops—were the troops removed the greater number would very shortly be closed. The expenditure incidental to a corps of 20,000 men is large, and this in the main supports the shopkeepers, for the neighbourhood is not populous; the military therefore, and those connected with that body, are looked to for the disposal of the quantities of goods advertized for sale in the local paper.

These persons deny that they derive any benefit whatever, pecuniary or otherwise, from the evils in question, in other words, from the camp followers of a certain class: in answer to this denial, take the advertisement of a large shop, a sort of Moses and Son transplanted to Aldershot where all kinds of goods are to be obtained—"T. White's Leviathan Stores." The title in large letters is attractive, so is the bill of fare which, amongst a great variety of articles enumerated, sets forth a quantity of cheap finery, such as feathers, ribands, &c., just what the women spoken of delight to decorate their persons with, and just what as regards price may be likely to suit their pockets. Going with money in their hands, however moral Mr. White may be in his ideas, he could not refuse such customers; for when a tradesman exposes his goods for sale, he is bound for money tendered to supply money's worth, at least what may be considered to be so by the purchaser. Other tradesmen are precisely in the same position, how then can it be said they derive no pecuniary benefit?

The licenses of the public houses, it is said, forbid the assemblages of persons of *notoriously* bad character within their doors. Now who is to determine the degree of reputation which is to exclude men or women from these places of public resort? Certainly not the publican, for so long as the persons who present themselves at his bar are sober, and decently conducted, it is both his interest, and his business to serve them with his commodities. Mr. Boulter would very quickly bring a hornet's nest about his ears, were he to shut his doors against the women who accompany the soldiers. He appears to labour under the impression that their admission to public houses is an offence punishable by law, if however he would consult the police reports in London, he would find that the magistrates have decided over and over again in favour of these unfortunate women—they have as much right to enter a public house and take refreshments, or be supplied with beer or spirits as any other person. In cases of riot, or drunkenness, or when these houses are kept open at hours not allowed by law, the police can interfere, but not otherwise.

One or two of the music halls most frequented by the soldiers are stated to be conducted with great decorum, while others are the very opposite, and that they have not been indicted is attributed to the difficulty of obtaining a conviction, and the expense attending a prosecution. On this part of the subject Captain Jackson says no more—that, these evils exist, and that the inhabitants take no steps to put them down, both of which are acknowledged, yet his report is condemned as untrue! No one can doubt that much of the debaucheries now going on might be checked, though possibly not entirely put a stop to, were the inhabitants of Aldershot in earnest; but they plead poverty, and call upon the government and philanthropic individuals to open their purses and aid them in their efforts, notwithstanding they have already received very liberal assistance from both sources. For a town and district, where so many persons of doubtful characters are known to be located, a superintendent and five constables are undeniably insufficient, but the remedy rests with the inhabitants themselves, and not with the government or the charitably disposed. The former does its duty by establishing an efficient military police for all matters connected with the troops, but they have no power over the civilians.

Dr. Rule, and his brother ministers and preachers of different denominations, are no doubt zealous and devout men, and have faith in the means they take to reclaim the fallen, but people of abandoned character are more often scoffers than listeners. Perseverance, however, may partially succeed, and if all sorts of dens of iniquity are to be found at Aldershot, churches, chapels, and meeting houses rise up to frown upon them.

Amongst the most useful and beneficial institutions are the local board of health, the infirmary, and dispensary. During *the first three months* of the establishment of the infirmary, upwards

of 540 patients received medical relief, besides many in-patients suffering from noxious diseases! after this confession no impartial person can say with any degree of truth that Captain Jackson has drawn too dark a picture of the diseased state of Aldershot.

This is the most difficult part of the whole question to deal with. In all times, and in all countries, what is termed the "social evil" has existed, and it is clearly impossible to put an end to it, even were it advisable, when the fate of the cities covered by the Dead Sea is remembered, but it is possible to mitigate the baneful effects, if false delicacy is put aside, and proper measures be taken. When the difficulties women find in obtaining employment, even at starvation wages, are borne in mind, and that there is an excess of half a million of female over the male population of this country, it can scarcely be matter of surprise that so many of the weaker sex should go astray. Inclination, seduction, miserable homes, and want, all help to swell the list. By the exertions of benevolent persons, a few are snatched from the pit, but thousands continue their course, and die an early and painful death. The licensing system, as established in other countries, has been proposed, but it would never be tolerated in England, besides it is objectionable as being subject to gross abuses. Considerable powers are delegated to Boards of Health, and if they are not sufficient to reach known prostitutes, they ought to be made so, and women of that class, suspected to be labouring under foul diseases, should be sent to the infirmary or hospitals. Soldiers undergo a weekly medical inspection, and it has been suggested that the military police should be armed with larger powers, so that at least camp followers might be reached, but this plan could never succeed, they might indeed with the civil police assist the Board of Health by means of giving information, though not beyond, for civilians of whatever class are jealous of military interference. This is however taking a narrow view of the evil, for it is not confined to naval and military stations, it is a question of a very serious nature, and one for the government to deal with. General rules which would neither offend public decency, nor be construed into giving encouragement to vice, should be laid down with a view to prevent the spreading of diseases, more baneful in their effects than some which on their appearance alarm the whole country, and cause active interference.

Soldiers' homes, (or clubs, which is the more appropriate appellation) may do much towards diminishing the attendance at music-halls, dancing-rooms, and public-houses, but will scarcely check the intercourse with women, though it will diminish wholesale drunkenness, the parent of all military crimes. These clubs alone will not have the effect anticipated. In fine weather, men of all classes, who enjoy good health, seek out-door amusements, and there can be no question that they are more conducive to robustness of constitution, one of the first and most important consider-

ations for soldiers. Far better to have a soldier who can shoulder his rifle, and in full marching order get over thirty miles of ground in the course of a day without feeling much the worse for it, than to have the ranks filled with men, well read in novels and light literature, who would give in before they had gone a third of the distance. Clubs are not wished to be deprecated, but there are other pursuits of a higher value, which may be placed at the soldier's disposal. Cricket grounds, which in the winter can be turned to other purposes, as every one educated at Eton and other public schools, where similar spaces are allotted, knows and can explain. Gardens also would afford amusement and employment to vast numbers. There is no one, from the child to the octogenarian, who does not take an interest in the gradual development of nature's works. The French are great cultivators of flowers, and the small gardens of the soldiery of that country are found to give occupation to vast numbers, and fill up the hours of idleness. Our own pensioners at Chelsea have their small plots of ground, grow many things useful to themselves, and have always something to offer for sale. Here under the eyes of the War department may be seen how men appreciate a garden, and it ought to give encouragement to their establishment on a more extensive scale, at every military station, and adjoining every barrack in the kingdom.

The object of expence, compared with the benefit which would accrue, is not to be thought of for an instant. They would in the course of time not only be self-supporting, but would be the means of creating a fund to be applied in such manner as future wants may point out. In connection with Aldershot, where so large a number of men are assembled, and at wide distances, different gardens and cricket grounds should be fenced in. Taking for instance the permanent barracks at the north camp there ought to be three, for the three several arms of the service, Cavalry, Artillery, and Infantry, and similar establishments for the South camp, though perhaps not to an equal extent, that however would depend upon the average number of troops occupying the huts during the year. Both gardens and cricket grounds should be open to soldiers and their *bonâ fide* families at all times, strangers desirous to enter them should be admitted on payment of a small fee. The gardens if made of sufficient extent, and if adjoining the cricket grounds all the better, should be partly ornamental, and partly for the cultivation of fruits and vegetables, and these should be sold to the soldiers at half the market price, the proceeds to go to the fund in support, and whatever supplies there might be would always find a ready sale. The ornamental part would furnish two sources of emolument, the sale of flowers and plants, and the entrance money paid by visitors to whom the regimental bands would be an attraction.

The expences of keeping up such gardens would be trifling. Two or three old soldiers (and none other should be appointed)

who understand the different branches of cultivation, would be sufficient for the superintendence of each department, to have charge of the tools, deliver them to the men disposed to work, and show them what it is they have to perform. It is surprising what large numbers can do, even in an hour, when systematically employed. There would be no difficulty in keeping a register of the names of those who presented themselves for employment, and at the end of the autumn, they should receive a gratuity in accordance with the hours of their labour, if the fund in hand would admit of a division over and above a reserve. That it would do so eventually is certain, and in the mean time, the more ample supply of fruit and vegetables than that to which the soldiers have been accustomed, and the cheaper rate at which they would be supplied, may be deemed a fair remuneration, for what is in truth more recreation than toil.

The primary cost to government would be small, there is plenty of waste land contiguous to the barracks at Aldershot which could be devoted to the purposes, building materials are cheap, and the soldiers are on the spot to do all the labour of drainage, rearing the enclosures, and erecting the tenements, sheds, &c., which would be required. The choice of situation should be carefully made, the culinary department should face the South, and if on a declivity it would be advantageous. The soil at present is none of the best, but there is no want of manure of all sorts, and arrangements could be easily made with the contractors for a supply. Taking into acccount the numbers of men quartered in the different barracks of Aldershot, from 15 to 20 acres, of what is now waste land, would be about the amount sufficient for each garden and cricket ground to be alotted to the three respective branches of the service. To bring the cricket grounds into good order, there is nothing better than to let the horses of the Cavalry and Artillery use them in watering order during the winter, and foot parades tend to level the ground; in the early spring they should be closed after being bush-harrowed and rolled, and the soldiers would then have cricket grounds equal to any in the country: as soon as the season commenced, and as long as it lasted, public houses would probably be at a discount. The gardens, should they prove as attractive to the men as is supposed, at the end of three or four years would vie with those of many noblemen and gentlemen in the land, all the finer fruits might be grown, and sold at remunerative prices, and why should not the soldiers have their crystal palaces in the shape of conservatories?

The long winter evenings are the greatest enemies to contend with, and it is during that time that the experiment of the clubs will be on its trial. The games proposed by Captain Jackson will attract some who cannot read, or do not like to open a book, workshops also may give employment to others, provided men are allowed to receive the money they may earn themselves, in lieu of its being placed to their credit in their saving banks; many soldiers will do this of their own accord, but they do not like to be forced to do that which ought clearly to be at their own option. Compulsion never answers in matters where of right the choice ought to be free, and sooner than submit to it, men of all classes are apt to throw away advantages, and pass their hours in idleness and dissipation.

The only objection that can be raised against gardens on a large scale, is that, consequent upon the frequent changes of quarters, the soldiers would not derive the benefit anticipated from their labour, that it would be a case of "*sic vos non vobis*," but, if the system became general, they would find as good as they leave at their new stations, and in the case of regiments going on foreign service, it would be an act of justice to have the culinary crops valued, and the proceeds paid to the men in due proportion who have contributed to rear them.

In aid of Captain Jackson's clubs, gardens and cricket grounds would be invaluable, and the men would be more likely to seek the former after a few hours of healthful occupation and amusement, than were the choice confined to the clubs, or the different rendezvous and haunts of vice. The games enumerated by Captain Jackson can only be enjoyed by a limited number, whereas the establishments here proposed would afford pleasurable pursuits to all disposed to partake them.

PERSONAL EXPERIENCE OF AMERICAN POLITICS.

It is often curious, always interesting, and in many cases instructive to study the different constructions that are put on the same words or actions by persons having different or opposing opinions. Seldom has this been made more conspicuous than in the various publications which have appeared with reference to the present civil war in the United States.

On the one side the Confederalists are stigmatised as traitors, their war as rebellion. On the other the Federalists are accused of trampling the Constitution under foot, and of acting tyrannically as well as unjustly towards the Southern States.

This question has been generally treated of from a legal point of view. The archives of the different states have been ransacked by either party in turn in their search for documents to support their respective claims; and each has left satisfied that it has found convincing proof of the justice of its cause. It is not, however, by their legality or by their illegality, by their conformity or by their nonconformity with the Constitution of the United States, that the pretensions of the Northern or of the Southern States

will be settled. These are merely speculative considerations, valuable sometimes in giving to the action of either party the sanction of legal right in the eyes of its own adherents. The grounds of quarrel must be sought for deeper than this, as must also the means of arranging it. They arise from the political and social condition of the country, and it is there alone they are to be found.

The want of centralization which exists in the government of the United States, owing to the independent internal sovereignty of all the different states which constitute the Federal Union, is the source from which all the evils in its system spring. By this subdivision of interests the general welfare of the commonwealth as a whole is almost invariably sacrificed to the natural desire which each state has to secure in the first place its own individual prosperity without reference to that of the rest of the community. From this latter cause, the present feeling of dissatisfaction in the southern portion of the country has almost solely arisen, and not, as is generally supposed, from a difference concerning the subject of Negro slavery, which is rather an accident in the dispute than a ground of dissension, although for party purposes it has been brought most prominently forward by a great number of the Northern politicians. The problem now under solution is twofold; first, whether intelligence and wealth or ignorance and masses are to rule on the other side of the Atlantic; and secondly, whether all the other states of the union are to be taxed for the purpose of enriching New England, and the states of New York, and Pennsylvania. It may at first appear that the one of these propositions is a contradiction of the other; but a fair consideration of the subject will show that, however anomalous it seems, they are in this instance identical. In the Southern states the elector is for the most part a man of some substance, in the Eastern the bulk of the electors are mechanics and labourers of the lowest class, often foreigners drawn from the dregs of European society; yet these men's votes are just as weighty as those of their wealthier and more intelligent fellow citizens. That such persons should be ignorant of the first principles of political economy is not to be wondered at; and that they should support the interested cry of the manufacturers and merchants of these states in their opposition to every measure tending to remove the existing obstacles to free trade is what might be expected. Indeed, in all countries the uneducated have always been the steady opposers of every reform in this department. Looking only to the present, they are incapable of appreciating the common necessity, for individuals as well as for nations, of often submitting to present loss to secure future profit. Supported by the suffrages of these classes, not only in their own, but even in the more Western states, the manufacturing and commercial towns of New England, New York and Pennsylvania have succeeded not only in maintaining the old system of high import duties; but have even succeeded in getting these duties increased, thereby putting a premium on their own work, which has

MEMORANDUM.

The late Secretary for War, MAJOR-GENERAL PEEL, was pleased to convey his approval of Captain Grant's System of Cooking for the Army, in the following terms:—

"After full consideration of this Apparatus, he considers it the "one best suited to the Military Service of any that have been sub-"mitted to him, and he proposes to adopt it generally in Barracks "as circumstances may, from time to time, render it expedient.— "Secretary Major-General Peel desires at the same time to convey "to you his thanks, for the prolonged exertions which you have "made for the benefit of the Public Service in this matter."

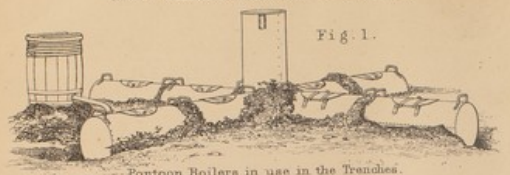
In addition to the above testimony, it has been highly approved and recommended for adoption by many of the most experienced Officers in the Service, practically acquainted with the working of it, which is fully borne out in many Official Reports: one of which was printed by order of the House of Commons, and laid before Parliament in June, 1858, headed "*Captain Grant's Kitchens.*"

These favourable Testimonials have not yet induced the authorities to establish a Uniform System of Cooking throughout the army, which is a matter of much importance to the health and comfort of the Soldier.

The mode of Soldiers' Cooking was a subject of general complaint previous to the introduction of Captain Grant's system, and, as cooking experiments are still sanctioned under the old system, it is proposed to apply for a Committee to investigate and decide upon the merits of this question. The health and comfort of the Soldier are as much involved in it, as the saving in the Public Expenditure.

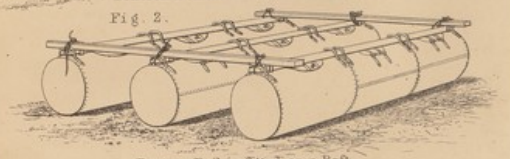
CAPTN GRANTS COOKING APPARATUS

Fig. 1.



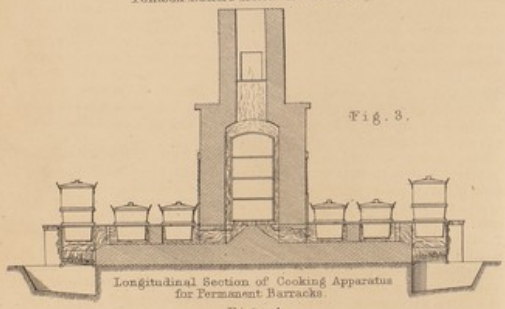
Pontoon Boilers in use in the Trenches.

Fig. 2.



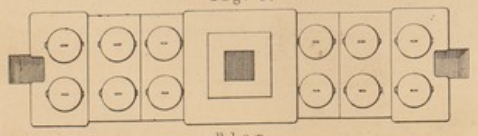
Pontoon Boilers fitted as a Raft.

Fig. 3.



Longitudinal Section of Cooking Apparatus for Permanent Barracks.

Fig. 4.



Plan.

J.R.Jobbins.

NEW SYSTEM OF COOKING FOR THE ARMY.

By Captain J. Grant, *late* R.A.

From the Journal *of the* United Service Institution, *vol. iv.* 1860.

I have been requested to offer you some explanation of this new system of cooking for troops which I have lately introduced into the Service, and, although it is a homely subject for a Lecture, it is one which is deserving of more attention than it has hitherto received.

We know what all the armies suffered from bad food during the Crimean war; and, although the British soldier is better supplied than any other soldier in Europe, he is by no means the best fed—simply from defective cooking.

This induced me to turn my attention to the subject with the view of providing a remedy for this great defect in our system, and placing within the soldier's reach some simple mode of cooking his food agreeable to his taste, instead of being confined to his every day "soup and *boulli*." We do not want Soyer cooks for teaching our soldiers, for, although the majority of them are bad cooks, there are good ones enough to teach the rest, under intelligent non-commissioned officers,—and the sooner this is reduced to a system the better, for a School of Cookery is quite as essential as a School of Musketry. It is no use having rifled guns and muskets without good men to work them; and we cannot have good men without good food.

The models on the table represent the three different modes of cooking which I propose for the soldier's use, in barracks, in the field, and on the march. This model, which is on the $\frac{1}{8}$ scale, represents the mode of cooking in barracks, which enables the soldier to *bake*, *boil*, *steam*, or *fry* his food, in any way agreeable to his taste.

In this apparatus (see Plate I. fig. 3) you will observe there are two small fires on a level with the floor line,—the ash-pits being taken out of the ground, which gives the men a good command over the cooking vessels,—these two fires are connected by a brick flue, covered with iron plates, to receive the cooking vessels; both flues terminate in one chimney, in which an oven is placed, heated by the products of the two fires in its passage up the chimney, and is capable of baking 400 rations of meat.* Each of the twelve kettles will steam or boil meat and soup for

* The 400 rations of meat are baked with the *waste* heat which is generally thrown off by the chimneys, and there is no difficulty in applying this principle of baking to all our ships of war. A portion only of that heat which is now wasted in all the smoke flues and cooking galleys throughout the navy, would, if properly applied, suffice to bake bread enough for the whole fleet; and an occasional change of soft bread for the every day biscuit would be appreciated by our sailors, and much valuable stowage space gained in the bread rooms, besides effecting a large pecuniary saving to the country by the purchase of flour for our ship's crews when on foreign stations.—J. G.

50 men, and the vegetables are steamed over the kettles: thus the rations of 1000 men may be cooked in this apparatus, although it is constructed for only 500. The hot plate also affords the means of frying or stewing any small messes that may be required; and I consider a hot plate for a soldier's permanent kitchen a great acquisition.

It is supposed by some persons that this mode of cooking in barracks is only applicable to a large number of men—but this is erroneous: for, although none of the apparatus which has hitherto been constructed has been for less than 500 men, the principle is as applicable to a hundred as it is to a thousand. You will observe that the construction of this oven is somewhat different from the generality of iron ovens, which give a peculiarly strong taste to the meat; but by this mode of heating such a high temperature can be raised, that I can afford to have a current of air constantly passing through it, by means of these ventilators, so that the meat becomes more like roast than baked.

At Aldershott all the cook-houses are fitted, by order of the Government, for the requirements of 1000 men, with kettles containing 20 gallons; but I ventured to recommend that apparatus for 500, at a cost of about 80*l.*, with 12-gallon kettles, would be more convenient. This was approved of, and all that have since been constructed upon this principle have been for this number, and I have heard of no complaints. I ought to add that the work at Aldershott was badly carried out, and that this principle of cooking must not be judged of by the manner in which it is conducted in that encampment; although some allowance must be made, as this was the station where it was first introduced in April, 1855.

I will now explain the mode of cooking in the field:—

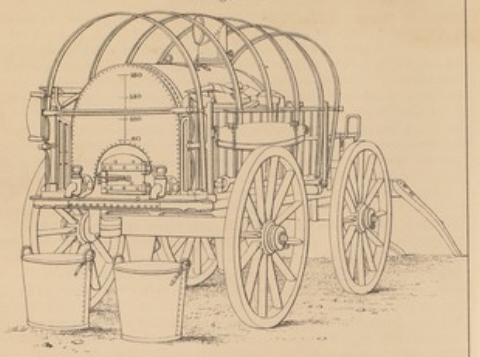
I call these cooking vessels, which are made of plate iron galvanized, "Pontoon Kettles," (see Plate I. fig. 1), because from their peculiar form they answer the purpose of pontoons as well as cooking kettles: they are packed for travelling in one of the ordinary artillery waggons (Plate II. fig. 2), fitted for the purpose, and furnished with all necessary fitments, such as spades, pickaxes, cross-cut saws, hand-saws, axes, &c., for cutting trenches, and felling trees for fuel. The waggons are drawn by a pair of horses when the vessels are empty, and by four horses when filled with provisions. When the troops arrive on their encamping ground, they select as level a spot as they can, and commence cutting the trenches in the shape of a cross, and at the intersection a small chimney, three feet high, is placed, resting on the ends of the kettles which occupy the trenches, two kettles being placed on each arm of the cross (see Plate I. fig. 1). Fires are then lighted at each end of the four trenches, and in about two hours-and-a-half the dinners for 800 men can be well cooked. During the two last summers, two batteries of artillery cooked in this way at Woolwich.

The dishes are provided for cutting up the messes, which also answer the purpose of frying-pans; and when the soup and meat is ready to serve, the frying-pans are put in requisition. Means are also provided for steaming either meat or vegetables, for wherever there is artillery there must be empty powder barrels, in which the steaming is carried on, by the aid of a short piece of gas-pipe, to conduct the steam from the cooking

Pl. II.

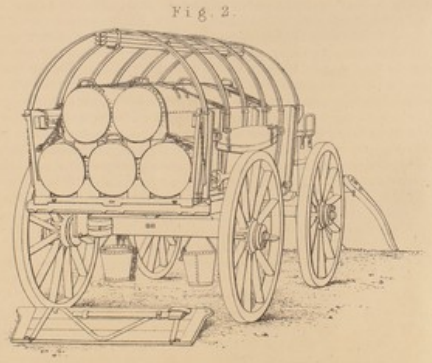
CAPTN GRANT'S COOKING APPARATUS.

Fig. 1.



End View of Ambulatory Boiler Wagon.

Fig. 2.



End View of Pontoon Boiler Wagon.

J.R.Jobbins

kettles into the barrels. These kettles may be worked from a single kettle up to the full number of eight, either in one line of trench or in the form of a cross; and a turf chimney will answer as well as an iron one; and the cooking may be carried on in any kind of weather. Another advantage is the facility of transport; for the kettles can be easily slung on the backs of horses or mules, and from their cylindrical form will bear the rough usage to which they are necessarily exposed. Each kettle is three feet long and fifteen inches in diameter, containing twenty-five gallons, and weighing sixty-two pounds. There is also a provision for roasting a sufficient quantity of coffee for a thousand men over the chimney, and grinding it at a gun-wheel during the time occupied in cooking the dinners, and the coffee roaster packs inside the chimney when travelling.

I will now shew the mode of forming a raft by the aid of these kettles, (Plate I. fig. 2), and with two sets of them I would undertake to transport a battery of 12-pounders across the Thames. I do not know whether any person present witnessed the trial of these kettles in Hyde Park, during the last summer, but His Royal Highness the Duke of Cambridge attended with much interest, and said: "I understand all about your cooking, but I want to see how you manage to get troops across a river." So after the dinners were all served the kettles were removed from the trenches (which were cut near the Serpentine), and in about five minutes two rafts were formed. Four guardsmen manned one, and four artillerymen the other, and they crossed and re-crossed the Serpentine with perfect ease and safety, to the amusement of all who witnessed the trial. A river may easily be bridged by the aid of these kettles for a regiment to cross in double file, and the cooking kettles of half-a-dozen regiments will suffice to bridge a good sized river.

I will now explain the mode of cooking while troops are on the march:—

With this single cooking vessel, which I call an "ambulating boiler," (see Plate II. fig. 1), dinners may be well cooked for 800 men in 2½ hours, the horses walking or trotting. This is also made of galvanized plate iron, but rather thicker than the pontoon kettles. It is somewhat peculiar in construction, in order to obtain a large amount of heating surface. It is fitted on one of the ordinary artillery waggons, and furnished with all the same kind of fittings and tools supplied to the pontoon waggon. The boiler contains 180 gallons and is graduated on the outside, so that, whatever may be the number of men to be cooked for, the cook has only to refer to the figures which are marked outside the boiler, and the number of gallons of water required is at once ascertained. The meat and potatoes are boiled in nets, and that which is intended for soup is cut small and put into the boiler first. The motion of the waggon while travelling keeps this in constant agitation and prevents the necessity of stirring. When it is ready to serve out, the nets which contain the meat and potatoes are hooked out of the boiler at a door at the top, and the soup is drawn off by means of two large taps into two soup kettles provided for this purpose, and from which the men receive it. I have seen the dinners of 500 men served from a boiler of this description in a quarter of an hour. There is also a great saving in the consumption of fuel, for it requires only *one-eighth* part of the present Government allowance, which is 3 pounds of wood per man a day for field service.

This admits of two days' fuel for 800 men being carried in the same waggon, which answers the double purpose of cloathing the boiler and assisting to dry the wood if green or wet. The waggon may be drawn by a pair of horses when the boiler is empty, for it weighs only 6½ cwt., but when filled four horses are necessary. I have seen one of these boilers trotted down Shooter's Hill, full of soup, and on its arrival at Dartford Heath dinners for 600 men were served out.

In introducing these modes of cooking for the army, I wish it to be understood that I do not propose to deprive the soldier of the means of cooking his own rations, under any circumstances, on the contrary, I think it so important that he should be independent of all aid that I have designed a little mess tin, which will enable him to cook his ration with a pound of vegetables in half-an-hour with proper management ; but I consider it equally important to furnish the means of transport for cooking vessels when troops are acting in large bodies, and it is only those who know the practical difficulties of soldiers carrying our lumbering camp kettles on a march, who can understand the importance of providing transport for cooking vessels. This is, however, becoming better understood, for I have been requested to direct the construction of sufficient field cooking apparatus for 5,000 men destined for service in China. This I have seen completed and shipped.

The cooking apparatus for barracks was first introduced in the Hut Barracks at Aldershott, in April, 1855, in consequence of the then mode of cooking with iron stoves being found so inefficient that it became necessary to remove them. Since that period the whole of that encampment has continued to cook upon this new plan, although the construction of the work was badly carried out under our contract system, for the brickwork was very defective.

This mode of cooking has since been extended to the Curragh and Shorncliffe camps, and some garrison towns, and, although much better carried out than at Aldershott, there is still room for improvement in the brickwork, which requires to be of the very best description.*

I must here repeat that cooking for an army is a matter of much greater importance than has hitherto been attached to it.

When I first turned my attention to the improvement of our system, the different modes of cooking throughout the service (from iron coal stoves to gas) were as varied as the cost, which ranged from *five farthings* to *five pence* per man per week for fuel to cook three meals daily. For example: at St. George's Barracks in London, where the soldiers had been cooking with gas for some years, the barrack master's fuel return for December, 1858, will shew that it amounted to *five pence* per man per week for cooking purposes alone, whereas upon this system of cooking it only amounts to *one*

* This mode of cooking and baking bread has been in operation at the London Reformatory, 237, Euston Road, for the last three years ; but the principle has been better carried out at the New Schoolhouse at Southall, than at any military station I have seen. Provision is there made for the cooking and baking bread for 500 children, besides supplying hot water for baths and washing the linen of the whole establishment. This schoolhouse has lately been erected, at a cost of £16,000, for the education of the pauper children of the Marylebone Union, and is situated close to the Southall Railway Station on the Great Western line, about ten miles from London. The establishment is well worth visiting.—J. G.

halfpenny per man per week, and I am prepared to prove that the principle admits of its being reduced to less than *one farthing*.

These results were obtained after much labour and expense, and if the authorities whose duty it may be to provide proper cooking accommodation for our troops had expressed any desire to confer with me upon the subject, a good and uniform system of cooking, which is much wanted, might have been established throughout the Service long since.

I regret to add, that during the prosecution of this work I have experienced something more than the ordinary difficulties which always attend the introduction of everything that is new, for I have had to contend with much opposition ; but the admission of improvements for the benefit of the public service should not be made dependent upon their emanating from an official source.

In conclusion, I beg to state that I have devoted many years to the consideration of cooking and baking bread for our army :—for, strange to say, the English army is the only one in Europe which does not bake its own bread, and I can now state with perfect confidence, that if this system was properly carried out, and the soldiers instructed as they ought to be in cooking and baking, that better food of every kind would be secured to the soldier, and a very large pecuniary saving secured to the country.

The Chairman : I am sure that this Meeting feels much indebted to Captain Grant for the interesting and valuable information which he has given us upon this important subject. Captain Grant has not only introduced a good system of barrack cooking in every variety, but he has designed an equally efficient mode of cooking for an army on the march and in the field.

Note.—On referring to the Official Report, printed by order of the House of Commons, and laid before Parliament the 8th of June, 1858, headed "Captain Grant's Kitchens," it is stated that Captain Grant's system of cooking is not only very superior to the old boiler system, but it effects a saving in the garrison of Woolwich of 297$\frac{1}{2}\frac{7}{0}$ tons of coal per annum upon every thousand men.—J. G.

SECOND EDITION,

REVISED AND CORRECTED.

SOME ACCOUNT

OF

THE BRIGADE OF

HOSPITAL CONVEYANCE CARTS,

ATTACHED TO THE ARMY IN THE EAST;

FORMED ON IMPROVEMENTS SUGGESTED

BY

LT.-COL. TULLOH, RL. ARTILLERY,

AND

MR. GUTHRIE.

PRICE ONE SHILLING.

LONDON:
J. MITCHELL, 33, OLD BOND STREET;
AND
HENRY RENSHAW, 356, STRAND.

1854.

LONDON:
Printed by W. J. Goldbourn, 6, Princes-street, Leicester-square.

SOME ACCOUNT
OF THE
BRIGADE OF HOSPITAL CONVEYANCE, &c.

The Secretary of State for War and Colonies having directed the formation of a Corps of Hospital Conveyance, for the purpose, not only of assisting the over-fatigued soldier on a march, by relieving him of a part of his incumbrances; but of carrying the wounded, as soon as possible, from the field of battle to the nearest eligible place of safety; until the principal medical officer of the army shall be able to remove them to a general hospital, fitted for their reception; a Corps has been formed composed of pensioners and others under the command of a Superior Officer, and an Adjutant Quarter-master. It is intended to furnish servants from it for the officers of the general Medical Staff of the army; to supply the General Hospitals, if possible, with non-commissioned officers and orderlies, so as to prevent the necessity for efficient soldiers being retained from their regiments for these services; and to take care of the carts and horses necessary for the conveyance of the sick and wounded.

A brigade has been permitted to be formed by the Commander-in-Chief, under the direction of the Quarter-master General, by Lieut.-Col. Tulloh, of the Royal Artillery, and Mr. Guthrie, on an improved principle, to be attached, on trial, to two divisions of the Expeditionary Army in the East, complete in every way for duty in the field. It is composed of twenty carts, five store waggons, one forge cart, and one portable forge, in a store cart. Each cart is drawn by two horses—one in shafts, the other affixed by an outrigger, although when loaded it can be drawn by one horse; and, in a difficult country, a third and fourth horse can be attached to the wheelers, for which provision is made. The cart weighs 10½ cwt., the stores 1½ cwt. The store waggons are drawn by four horses, the forge cart and the portable forge cart by two horses: and whilst they can always move faster than troops can march, the carts can, if necessary, keep up with horse artillery on any service; the first principle of military medical conveyance being, that wherever a gun can go, a spring cart should be able to follow. The cost of a cart is computed at the arsenal at Woolwich to be £25.

A brigade thus constituted is sufficient for two divisions of an army, provided each regiment is furnished with two waggons, drawn by oxen or horses, as the custom of the country may be. These country waggons are to be sent to the rear with the sick when an action is imminent; but one of the conveyance carts is to be attached to each of the six regiments of a division, and is to remain with it under all circumstances, the remaining four being in reserve, the whole under the superintendence and charge of the Staff Surgeon of the division. The forge cart and three store waggons A. B. and E. are to be attached to the 1st division; two store waggons C and D. and the portable forge to the 2nd division, with six regimental and four reserve carts.

The value of a well-appointed Hospital Conveyance will be perceived by its being able to carry the wounded from the scene of action in its carts and by its bearers to the field hospital; and by its being able to supply from its own stores most things necessary for their surgical care for many days, even after a general action of importance; and to continue it until the wounded can be received into a general hospital.

The stores of the conveyance waggons should also be sufficient to replace those which may be expended by the regimental surgeons in the field, so that they may proceed with their regiments, their medicaments being undiminished or replenished. The conveyance stores themselves should be replaced from time to time, from the general stores of the army.

The brigade is essentially adapted for, and is only equal in point of numbers to divisional duty in *the field*; and ought not to be employed for any other objects, unless the army is at a distance from the enemy, or under particular circumstances, by order of the General Commanding in Chief, when the carts, and especially the store waggons, may be used for any purposes. The tools belonging to each cart may occasionally be found useful in the field, whenever a larger supply of entrenching tools are required than is immediately forthcoming.

An Hospital Conveyance Cart runs on two wheels, corresponding with those of the Artillery. It is covered with a white painted canvass, has curtains of the same material all round, and an apron attached to the footboard before and behind. Each cart carries under the seat in front, a small chest of utensils, two sets of iron splints in boxes, and a small box of surgical stores, with a strap attached for the convenience of carriage, a lantern for oil, pickets and ropes for the horses, a pick-axe, spade, saw in case, ten stretchers or bearers, with appropriate slings, two empty ten-gallon casks, hung underneath for water, a bag with hammer, nails, two brass cocks for the water casks, and four horse shoes. A filter made of gutta percha (Owen's patent), in a wicker

case and sling, capable of yielding near fifty gallons of clear water in twenty-four hours when in use, and weighing 18lbs., including a funnel and a pint drinking cup; a water bucket for the horses, and a small camp kettle for three men. Two spare springs and one spare axle are carried for every three carts in the store waggons.

Ten of these carts have round tops or covers, ten have flat ones; the ten round topped carts have seats inside, and will carry sixteen persons; the ten flat topped carts carry two bearers on vulcanized springs and rollers on the floor of the cart; and nine persons before and behind, in all eleven, and a twelfth may be added on a bearer slung to the roof. These carts might also have side seats, to be raised if necessary, when the bearers on the floor are not required. On drawing out two iron supports at the end of each cart, the front seat, which is moveable, makes a table when placed upon them, for operations, or other purposes. The carts are lettered "Hospital Conveyance Carts," and are numbered from "1 to 20."

The five waggons are lettered Hospital Conveyance Store Waggons A. B. C. D. E.; the boxes, bales, tents, &c., in them, as well as in the carts, are properly secured or locked, the keys being firmly affixed to or upon them, and the contents of each are painted or printed on the covers or lids in two places to prevent trouble. It is not expected, however, that the boxes will be opened until after an engagement has taken place, or their contents are otherwise urgently called for. This corps of Hospital Conveyance being essentially formed to prevent the evils which formerly occurred after a great battle, from the want of sufficient means being attached to each division of the Army. The cases, packages, &c., in which the stores are contained, should be preserved with care, in order that they may be sent to the rear when empty, to be replenished from the general stores of the Army.

The Store Waggons, when empty, weigh 16 cwt. each; the stores of all kinds are 27 cwt., in all about 43 cwt. The waggons, having been in the arsenal for several years, are little additional expense. They are now mounted on two sets of springs, one iron, one of vulcanized india-rubber, and when carrying from four persons to ten or twelve travel very easily, and when empty would be of great use on good roads in conveying sick from the field to the general hospital in the rear.

The firelocks and knapsacks of the wounded soldiers may be carried below the carts, the barrels of water and the stores being left at the field hospital. The barrels are provided with proper cocks and moveable keys to prevent waste, and should be placed under the charge of a person competent to superintend the distribution of the water. When

the carts are fully employed carrying sick or wounded, the conductors are to lead the horses. A great advantage is derived from the construction of these carts, that whilst they will carry many persons with little motion at an ordinary pace, they will also convey one person without inconvenience; and at a trot or gallop, the movement can be borne for a time without complaint, unless under very disadvantageous circumstances, of broken ground.

One Sergeant Major of approved character, four other mounted non-commissioned officers, and 69 drivers, including two farriers, in all 74, is the *least* number of men with which the duties of this brigade can be efficiently performed in the first instance. and the same number of horses will be required; thus only five men and five horses are supernumerary in the event of illness, accident, or the occurrence of those claims for other services, which they may be imperatively called upon to perform. It would be advisable therefore to augment the number of men and horses to ten supernumeraries if they can be obtained.

If fifty or a hundred wounded men be left of an advancing division, the Staff Surgeon and such assistant surgeons as he may require should perform all the necessary operations; when these officers should be sent to their regiments, with the exception of one or two, who remain in charge with such of the medicines and stores of one or more of the reserve carts, as may be required for several days' use; the carts themselves being forwarded to the front as quickly as possible, as their services may be required.

If a larger number of wounded are left behind, one or more of the wooden panniers marked from 1 to 4 should be taken from one of the store waggons, perhaps a marquee and a tent, and such other stores as are apparently required.

If from three to five hundred are wounded, all the assistant surgeons of the brigades which have suffered most should be retained, until all the operations, &c. urgently necessary, have been performed. Two out of three of the hospital establishments of the regiments of these brigades should be sent for, and remain for a time. One or two store waggons should be retained to furnish the hospital establishment, until assistance can be obtained from the general Medical Staff of the army.

In the event of a general and decisive battle, attended by great loss, one surgeon only should remain with the troops per brigade, including the artillery in the first instance. The whole of the remaining Medical Officers should be employed with the wounded. On an advance

taking place, the regimental surgeons should return to their regiments, with such assistants as can by any possibility be spared, and as many carts as are not wanted, with their stores. The store waggons remaining with the wounded, until relieved by the arrival of supplies from the rear.

The staff surgeon of a division should have attached to him a public horse or mule, with pack saddle and two panniers, containing a case of capital instruments, and a small supply of medicines, and surgical apparatus for immediate use. The animal should be in charge of a soldier of the conveyance corps, and never leave the division until required in the rear for the service of the wounded.

A regiment of 800 bayonets, when before the enemy, should have present, if possible, one surgeon and three assistant surgeons, of at least one year's standing; officers who understand their duties as soldiers as well as surgeons. An assistant staff surgeon may be attached to each regiment, as a fourth, for instruction as well as use—for good and sufficient medical men never were hitherto in proper numbers on a field of battle.

Under the most unfavorable circumstances of no village being at hand, the corps of hospital conveyance attached to two divisions would furnish an encampment of—

6 large hospital marquees, which, by separating the linings and making poles, may be twelve;

21 Portuguese Officers' large tents;

10 empty carts (the other 10 accompanying the divisions, with stores and bearers) and 5 empty store waggons, all, when unloaded, affording cover within and below. There would be left with the wounded

130 firm bearers, capable of being raised 1 foot from the ground;

30 air beds and pillows;

54 sets of bedding, 3 sheets to each set;

144 water decks, defending 144 men from damp ground;

so that some kind of comfortable accommodation would be afforded for perhaps all the badly wounded; particularly if dry oat straw could be obtained, to fill the palliasses and to make mats; thus giving to the wounded soldier assistance unknown during the last war; whilst his means of subsistence should also be attended to, which were then more or less neglected.

When a division formerly advanced after a battle attended with considerable loss, the commissariat officers, consisting of a deputy assistant commissary-general and a clerk to each brigade, did not consider the provisioning of the wounded to be within their province, and

therefore accompanied the division. The purveyor-general, or medical commissary, considered his duties began only when the wounded were collected in the general hospital, for which he provided. In the intermediate time they were therefore left to their fate, which was sometimes rather too near starvation, even for wounded men, exposed perhaps to a burning sun by day, and to damp by night for three or four days.

A deputy inspector-general of the medical department of the army should be in the field even with one division, when a serious collision with the enemy is expected. He should arrange with the principal commissariat officer on the field, or at head quarters, for a sufficient supply of meat and bread being at hand; and with the purveyor-general for such other articles as he may require. A clerk, who should be an accountant under the purveyor, should always be attached to him, to aid in his correspondence, and to do the duty of provisioning the wounded in such emergency. If a deputy-inspector cannot be spared, the clerk should be attached to the senior staff surgeon, for this particular service, or occasion.

The removal of sick or wounded from a field, regimental or divisional, to the general hospitals in the rear, does not come within the scope of these observations. It has hitherto been principally done by the return conveyance of the commissariat; but a sufficient number of spring carts and waggons should be attached to an army for general service, entirely independent of those apportioned for the field service of a division. This conveyance for general service being under the direction of the Inspector General, or Head of the Medical department, to be employed between the general hospitals, formed on the line of march, and to give assistance on any great emergency with the army.

Extracts selected from Mr. Guthrie's Commentaries in Surgery for the TREATMENT OF INJURIES *on a field of battle.*

1.—Water being of the utmost importance to wounded men, care should be taken, when before the enemy, not only that the barrels attached to the conveyance carts are properly filled with good water; but that skins for holding water, or such other means as are commonly used in the country for carrying it, should be procured and duly filled.

2.—Bandages or rollers, applied on the field of battle, are, in general, so many things wasted; as they become dirty and stiff, and are usually cut away and destroyed, without having been really useful; they are therefore not forthcoming when required, and would be of use.

3.—Simple gun-shot wounds require nothing more, for the first two or three days, than the application of a piece of wet or oiled lint or linen, fastened on with a strip of sticking plaister, or, if possible, kept constantly wet and cold with water. When cold disagrees, warm water should be substituted.

4.—Wounds made by swords, sabres, or other sharp cutting instruments, are to be treated principally by position. Thus a cut down to the bone, across the thick part of the arm, immediately below the shoulder, is to be treated by raising the arm to, or above a right angle with the body; in which position it is to be retained, however inconvenient it may be. Ligatures may be inserted, but through the skin only. If the throat be cut across in front, any great vessels should be tied, and the oozing stopped by a sponge. After a few hours, when the oozing is arrested, the sponge should be removed, and the head brought down towards the chest, and retained in that position without ligatures; if this is done too soon, the sufferer may possibly be suffocated by the infiltration of blood into the areolar tissue of the parts adjacent.

5.—If the cavity of the chest is opened into by a sword or lance, it is of the utmost importance that the wound in the skin should be effectively closed, and this can only be done by sewing it up as

a tailor or a lady would sew up a seam, skin only being included; a compress of list should be applied over the stitches, fastened on by sticking plaister. The patient is then to be placed on the wounded side, that the lung may fall down, if it can, upon, or apply itself to the wounded part, and adhere to it, by which happy and hoped for accident life will in all probability be preserved. If the lung should be seen protruding in the wound, it should not be returned beyond the level of the ribs, but be covered over by the external parts.

6.—It is advisable to encourage previously the discharge of blood from the cavity of the chest, if any have fallen into it; but if the bleeding from within should continue, so as to place the life of the sufferer in danger, the external wound should be closed, and events awaited, according to those principles which are more fully detailed in the commentaries*.

7.—When it is doubtful whether the bleeding proceeds from the cavity of the chest, or from the intercostal artery (a surgical bugbear), an incision through the skin and the external intercostal muscle, will expose the artery close to the edge of the rib, having the internal intercostal muscle behind it. The vessel thus exposed may be tied, or the end pinched by the forceps, until it ceases to bleed. Tying a string round the rib is a destructive piece of cruelty, and the plugs, &c. formerly recommended, may be considered as surgical incongruities.

8.—A gunshot wound in the chest cannot close by adhesion, and must remain open. The position of the sufferer should therefore be that which is most comfortable to him. A small hole penetrating the cavity is more dangerous than a large one, and the wound is less dangerous if the ball goes through the body. The wounds should be examined, and enlarged if necessary, in order to remove all extraneous substances, even if they should be seen to stick on the surface of the lung; the opening should be covered with soft oiled or wet lint, a bandage when agreeable. The ear of the surgeon and the stethescope are invaluable aids, and ought always to be in use; indeed no injury of the chest can be scientifically treated without them.

9.—Incised and gun shot wounds of the abdomen, are to be treated in *nearly* a similar manner; the position in both being that which is most agreeable to the patient, the parts being relaxed. The Commentaries to be attentively studied with reference to these injuries, and particularly when the intestines are wounded.

*A copy of the Commentaries is placed in box No. 7, in Store Waggons A, B, C.

11.—In wounds of the bladder, an elastic catheter is generally necessary. If it cannot be passed, an opening should be made in the perinæum for the evacuation of the urine, with as little delay as possible. (*See* Commentaries.)

12.—In gun shot fractures of the skull, the loose broken pieces of bone, and all extraneous substances, are to be removed as soon as possible, and depressed fractures of bone are to be raised. A deep cut, made by a heavy sword through the bone into the brain, generally causes a considerable depression of the inner table of the bone, whilst the outer may appear to be merely divided.

13.—An arm is rarely to be amputated, except from the effects of a cannon-shot. The head of the bone is to be sawn off if necessary. The elbow-joint is to be cut out if destroyed, and the sufferer, in either case, may have a very useful arm.

14.—In a case of gun-shot fracture of the upper arm, in which the bone is much splintered, incisions are to be made, for the removal of all the broken pieces which it is feasible to take away, as well as the ball, if it should not pass through. The elbow is to be supported. The fore arm is to be treated in a similar manner; the splints used should be solid.

15.—The hand is never to be amputated, unless all or nearly all its parts are destroyed. Different bones of it and of the wrist are to be removed when irrecoverably injured, with or without the metacarpal bones and fingers or the thumb; but a thumb and one finger should always be preserved when possible.

16.—The head of the thigh bone should be sawn off when broken by a musket ball. Amputation at the hip joint should only be done when the fracture extends some distance into the shaft, or the limb is destroyed by cannon shot.

17.—The knee joint should be cut out when irrecoverably injured; but the limb is not to be amputated until it cannot be avoided.

18.—A gun-shot fracture of the middle of the thigh, attended by great splintering, is a case for amputation. In less difficult cases, the splinters should be removed by incisions, particularly when they can be made on the upper and outer side of the thigh. The limb should be placed on a straight, firm splint. A broken thigh does not admit of much, and sometimes of no extension, without an unadvisable increase of suffering. An inch or two of shortening in a thigh does not so materially interfere with progression, as to make the sufferer regret having escaped amputation.

19.—A leg injured below the knee should rarely be amputated in

the first instance, unless from the effects of a cannon-shot. The splinters of bone are all to be immediately removed, by saw or forceps, after due incisions. The limb should be placed in iron splints, and hung on a permanent frame, as affording the greatest comfort, and probable chance of ultimate success.

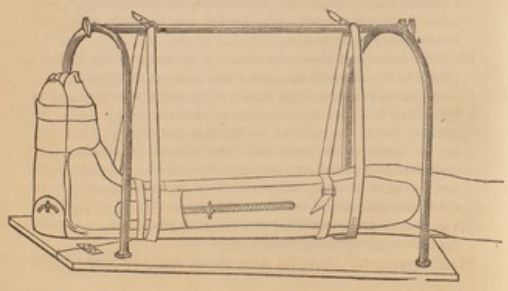
The Apparatus (Mr. Luke's) for the treatment of Fractures of the Leg by suspension, consists of a Cradle, a Leg Rest or support, two Splints, and a Folding Board. The Cradle is formed of two iron arches, held together by a straight rod, the ends of which pass through their centres and fix by binding screws. Each arch is formed of two parts, for the convenience of packing.

The Leg Rest consists of two sliding parts, and a Foot-piece, allowing of movement on either side when in use, both being fixed by a binding screw.

The Folding Board gives the Cradle a permanent support, and is absolutely necessary for the comfort as well as the safety of the sufferer.

Each splint is formed of two parts, which slide on each other, and may be fixed at the required length by a binding screw.

In using the Apparatus, the back of the leg and lower end of the thigh are to be evenly supported on a pad placed on the Leg Rest; and a Splint is to be placed on each side of the leg, and the whole secured by straps carried around near the knee and ancle. The leg is then to be suspended by two straps from the bar of the Cradle placed over the leg as represented, so as to swing without touching the Folding Board on which the Cradle is placed. The foot should be secured to the Foot-piece by a bandage.



Solid Splints, and a firmly fixed Cradle, under which the leg may hang, may be said to be the *sine qua non* of the treatment of a gun-shot fracture of the leg. The conveyance carts carry forty-six sets, with pads and slings complete.

20.—An ankle joint is to be cut out, unless the tendons around are too much injured, and so are the tarsal and metatarsal bones and toes. Incisions have hitherto been too little employed in the early treatment of these injuries of the foot for the removal of extraneous substances.

21.—A wound of the principal artery of the thigh, in addition to a gun-shot fracture, renders immediate amputation necessary. In *no other part* of the body is amputation to be done in the first instance for such injury. Ligatures are to be placed on the wounded artery, one above, the other below the wound, and events awaited.

22.—The occurrence of mortification in any of these cases will be known by the change of colour in the skin. It will rarely occur in the upper extremity, but will frequently do so in the lower. When about to take place, the colour of the skin of the foot changes, from the natural flesh colour to a tallowy or mottled white. Amputation should be performed immediately above the fractured part. The mortification is yet local.

23.—When this discoloration has not been observed, and the part shrinks, or gangrene has set in with more marked appearances, but yet seems to have *stopped* at the ankle, delay is perhaps admissible; but if it should again spread, or its cessation be doubtful, amputation should take place forthwith, although under less favorable circumstances. The mortification is becoming, or has become, constitutional.

24.—Bleeding, to the loss of life, is not a common occurrence in gun-shot wounds, although many do bleed considerably, seldom, however, requiring the application of a tourniquet as a matter of necessity, although frequently as one of precaution.

25.—When the great artery of the thigh is wounded (not torn across), the bone being *uninjured*, the sufferer will probably bleed to death, unless aid be afforded, by making compression above and on the bleeding part. A long but not broad stone, tied sharply on with a handkerchief, will often suffice until assistance can be obtained, when both ends of the divided or wounded artery are to be secured by ligatures.

26.—The upper end of the great artery of the thigh bleeds scarlet blood,

the lower end dark venous-coloured blood; and this is not departed from in a case of accidental injury, unless there have been previous disease in the limb. A knowledge of this fact or circumstance, which continues for several days, will prevent a mistake at the moment of injury, and at a subsequent period, if secondary hemorrhage should occur. In the *upper* extremity both ends of the principal artery bleed scarlet blood, from the free collateral circulation, and from the anastomoses in the hand.

27.—From this cause mortification rarely takes place after a wound of the principal artery of the arm, or even of the arm-pit. It *frequently* follows a wound of the principal artery in the upper, middle, and even lower parts of the thigh, rendering amputation necessary.

28.—It is a great question when the bone is *uninjured*, where and at what part the amputation should be performed. Mortification of the foot and leg from such a wound is disposed to stop a little below the knee, if it should not destroy the sufferer; and the operation if done in the first instance, as soon as the tallowy or mottled appearance of the foot is observed, should be done at that part; the wound of the artery and the operation for securing the vessel above and below the wound being left unheeded. By this proceeding, when successful, the knee joint is saved, whilst an amputation above the middle of the thigh, is always very doubtful in its result.

29.—When mortification has taken place from any cause, and has been arrested below the knee, and the dead parts show some sign of separation, it is usual to amputate above the knee. By not doing it, but by gradually separating and removing the dead parts, under the use of disinfecting medicaments and fresh air, a good stump may be ultimately made, the knee joint and life being preserved, which latter is frequently lost after amputation under such circumstances.

30.—Hospital gangrene, when it unfortunately occurs, should be considered to be contagious and infectious, and is to be treated locally by destructive remedies, such as nitric acid, which is supplied for the purpose in case No. 5, in waggons A. B. C., and the bivouacing or encamping of the remainder of the wounded, if it can be effected, or their removal to the open air.

31.—The extraction of balls from soft parts, is a matter which may be left to the judgment of the surgeon, although their removal is always satisfactory to the patient. When a ball is implanted in a bone without destroying its continuity, every possible effort should

be made at the time for its removal, as it will otherwise remain for years a source of constant distress.

32.—Chloroform may be administered in all cases of amputation of the upper extremity and below the knee, and in all minor operations; which cases may also be deferred, without disavantage, until the more serious operations are performed.

33.—Amputation at the upper and middle parts of the thigh are to be done as soon as possible after the receipt of the injury. The administration of chloroform in them, when there is much prostration, is doubtful, and must be attended to, and observed with great care. The question whether it should or should not be administered in such cases being undecided.

34.—Poultices have been very often applied in gun-shot wounds from laziness, or to cover neglect, and should be used as seldom as possible.

35.—If the young surgeon should not feel quite equal to the ready performance of the various operations recommended, many of them requiring great anatomical knowledge and manual dexterity (and it is not to be expected that he should); he should avail himself of every opportunity which may offer of perfecting his knowledge.

36.—The Surgery of the British Army should be at the height of the surgery of the metropolis; and the medical officers of that service should recollect, that the elevation at which it has arrived has been on many points principally due to the labours of their predecessors, during the war in the Peninsula. It is expected then that they will not only correct any errors into which their predecessors may have fallen, but excel them by the additions their opportunities will permit them to make, in the improvement of the great art and science of Surgery.

TWENTY HOSPITAL CONVEYANCE CARTS,
NUMBERED 1 TO 20.

Contents of the Box of Medicines in each Cart, written on the lid.

Ammon: Sesquicarb.	3 oz.	Liq: Ammon: fort	4 oz.
Acid Citric in Pulv.	3 „	Morph: Acet:	¼ „
Antim: Potass: Tart.	4 „	Ol: Tiglii.	1 „
Argent Nitras	1 „	Ol: Menth: Pip.	1 „
Cupri Sulph.	4 „	Ol: Terebinth	4 „
Chloroform	8 „	Pulv. Jalap	3 „
Ext: Colocynth: Co. Pulv.	2 „	Pulv. Ipecac: Co:	4 „
Hydrarg: Bichlorid.	2 „	*Pulv. Opii:	⅜ „
Hydrarg: Chlorid.	7 „		

* Medicines purchasable in Turkey have been omitted for general use.

SUNDRIES.

Bandages, 24.	Spatula and Bolus Tile, 1.
Calico, 5 yards.	Tape, Lucifers, 1 piece, 1 box.
Lint, 4lbs.	Minim Measure, 1.
Emp. Resinæ, 2lbs.	Wax Candles, 8., for operations at night.
Ditto spread, 4 yards.	
Spongio Piline, ¼ yard.	Ligature, Silk and Thread, ½ oz. each.
Surgeon's Sponges, 6.	
„ Tow, 1½lb.	Reel of Dentist's Silk, Pill Boxes, Packing Tow.
Pins, Needles & Thimble, 1 pkt.	
Paper & Pens, 12, paper 1 in cover	

TWENTY HOSPITAL CONVEYANCE CARTS,
NUMBERED FROM 1 TO 20.

One Box for each, containing Utensils for immediate use, on an emergency only.

2 Sets of Iron Splints.
1 Screw and 2 Field Tourniquets.
1 Nest of Cooking Kettles, tin square, 3 in each nest.

1 Trivet Iron ring, and 3 legs to screw.
2 Large Square Dishes, for holding soup or meat.
9 Plates, Dinner, tin.
1 Tea Kettle, tin, square (folding handles).
10 Table Spoons, iron tinned, large.
1 Cups, tin, drinking, ½rd. of a quart.
1 Carving Knife and Fork.
12 Table Knives and Forks, white handle.
1 Candlestick, tin, with shifting socket.
1 Pair of Snuffers, steel.
1 Burner, tin, single wick.
1 Lamp, tin, hand (globular).
1 Lantern, bull's-eye, Police pattern.
1 Chopper, for meat.
6 Hand Towels.
1 Square tin can, with brass screw, containing 3 quarts of Rape Oil
1 Pair of Scissors, 7-inch.
1 lb. of Cotton Wick.
1 Box of Lucifer Matches, wax.
2 Basins, hand, zinc
½ lb. of Packing Thread, middling.
½ lb. „ „ small
1 Needle, packing
12 „ sewing.
2 „ darning.
2 Papers of Pins.
1 Square Tin Box, containing 3 lbs. of Sperm Candles.
1 „ Cannister „ 1¾ lbs. of Green Tea.*
1 „ „ „ 2¾ lbs of Black Tea.*
1 Can, tin, for oil feeding, ½ pint.
1 Bottle of Brandy, in a tin can, in the tea kettle.
1 Teapot, tin, with folding handle, 3 pint.

* For particular cases, and to be used with care.

THREE HOSPITAL CONVEYANCE STORE WAGGONS,

LETTERED A, B, C, FOUR CASES IN EACH.

ADAPTED FOR CARRIAGE ON A PACK SADDLE.

Contents of each Case, written on the lid, and marked from 1 to 4.

	lb.	oz.		lb.	oz.
Ammon: Sesquicarb.	0	12	Jalap Pulv.	0	8
Acid Citric in Powder	1	0	Ipecac: Co: Pulv.	1	0
Antim: Potass: Tart.	1	0	Liq: Ammon: Acet. Co.	1	0
Argenti Nitras	0	4	Liq: Opii. JEREMIE	1	0
Chloroform	1	8	Liq: Plumbi: diacet.	1	0
Cupri Sulph.	1	0	Matico Fol.	0	4
Ext: Colocynth: Co.	0	12	Opii: Pulv.	0	3/8
Hydrarg: Chlorid.	1	0	Ol: Tiglii.	0	1
Hydrarg: Bichlorid.	0	2	Quinæ: Disulph.	0	12

SUNDRIES.

Wax Candles, No. 9.
Minim Measure, 1.
Surgeon's Sponges, 6.
Silk and Thread Ligature, ¾ oz.
Packthread, 2 oz., and Spongio Piline, ¼ yard.
Lucifer Matches, Pill Boxes, 1 box of each.
Pencils, 4, Paper & Blotting do 1 case.
Pens, 24, Holder & Ink Powder, 1 oz.
Scissors and Bolus Knife, 1 each.
Broad Tape, Corkscrew, 1 „
Blister Plaister, 1lb.
Adhesive do. 3lb.
Do. do. Spread, 4 yds.
Papers of Pins, 4, Packing Tow.
Reel of Dentist's Silk, Needles and Thimble.

DRAWER.

40 Bandages.
5 Yards of Calico.
4lb. Taylor's Lint.
1 Old Sheet.

THREE HOSPITAL CONVEYANCE STORE WAGGONS,

LETTERED A, B, C;

One Case in each, marked 5, the Contents, written on the cover, being:

25lbs. of the strongest Nitric Acid, specific gravity 1·50.
14lbs. of Sulphuric Acid, likely to be useful in Diarrhœa in autumn.
11lbs. of Perchloride of Iron, specific gravity 1·55.

Divided as equally as possible between the three cases, and most carefully packed to prevent accidents, with separate tin covers to each bottle. The Perchloride being highly useful as a styptic externally, and tonic internally.

THREE HOSPITAL CONVEYANCE STORE WAGGONS,

LETTERED A, B, C (ONE CASE IN EACH).

Contents written on the lid, and marked 6 Reserve.

*Alumin: Pulv.	3 lbs.	Empl: Lyttæ.	2 lbs.
*Plumb: Acet.	3 „	Empl: Adhæsiv.	14 „
Argent: Nitrat.	1 „	Ung: Hyd: Fort.	4 „
*Argent: Nitrat: (Points)	4 ozs.	*Ung: Hyd: Nitr.	1 „
Calcis Chlorid	2 lbs.	Quinin Sulph.	2 „
Sodæ: Chlorid	2 „	Ol: Tiglii.	1 oz.
*Zinc: Chlorid	2 „	Jalap Pulv.	2 lbs.
Ol: Ricini	2 „	Potas: Iodid.	1 „
Conf: Opii.	1 „	Hydr: Chlorid	4 „
Conf: Arom: Pulv.	1 „	Hydr: Bichlorid	1 „
Ext: Col: Co: Pulv.	4 „	Hydrar: pil.	4 „
*Cupri Sulph.	3 „	Hyd: c. Cretâ	1 „

* Reference had to the Diseases of the Eye likely to occur in an ordinary and sometimes in an extraordinary manner in the East.

SUNDRIES.

Grad: Glass Measure, 3.
Bolus Knives, 2.
Spreading Spatula.
Pill Machine, 1.
Pill Slab, 1.
Spongio Piline, 1 yard.
Gutta Percha Tissue, 30 yards.
Oil Silk, 3 packets, diff. kinds.
Wax Candles, 4 packets, tin.
Wax Lucifers, 1000, in tin.
Lamp and 3 rolls of cottons, 1.
Urinals, 2.
Weiss' Bed Pan, 2.*
Calico Rollers, 250.
Calico in piece, 30 yards.
Tape, 3 pieces.
Lead Pencils, 4.
Steel Pens, 2 packets.
Needles and Pins.
Ink Powder, 1 oz.
Ink Bottles, 3, small.
Case Book, 1.
Patent Lint, 12lbs.
Sponges, 18.
Pestle and Mortar, 1.
Scales and Weights, 1 box of.
Stomach and Enema Pump, 1.
Flannel Rollers, 18.
Solid Wood Splints, 1 set.
Case of Capital Instruments, 1.
Case of Cupping ditto, 1.
Stethescopes, 2.
Thread and Silk.

* For particular cases.

It would be advisable in future to separate the Medicines from the Sundries, making thereby two more portable cases, of less weight, of wood.

HOSPITAL CONVEYANCE STORE WAGGONS,

LETTERED A, B, C;

One Case in each, Contents written on the lid, marked 7; (PHILP & WHICKER in the left-hand corner.)

---

2 Sets of Iron Splints.
4 Long wooden Thigh Splints.
6 Arm Slings.
Thin Gutta Percha, a Sheet.
Thick Gutta Percha, a Sheet.
6 Straw Splints & 6 spare Covers.*
Mr. Guthrie's Commentaries, in a leather case (one copy).

* Reeds of wheat straw, easily renewed, and very efficient in ordinary cases. (Tufnell.)

HOSPITAL CONVEYANCE STORE WAGGONS,

LETTERED A, B, C.

Each of the Three Waggons contain the following Articles:

	Cwt.	Qrs.	lbs.
4 Bags of Bedding, 3 sets each, 3 sheets to each set . .	3	0	4
4 Portuguese Tents, complete with poles, roof, walls, pins, mallets, valize for Tents, bags for pins . . .	5	0	16
4 Cases, Nos. 1 to 4, Medicines	3	0	0
1 Case, containing acids, No. 5.	0	3	0
1 Case, reserve, No. 6., Medicines and Sundries . .	3	0	0
1 Case, 1 book splints, &c., No. 7..	0	3	0
1 Case, 30 air beds, No. 8.	1	2	0

1 Case, or pannier box, Tower, No. 9, containing
2 Nests each of 8 tin Kettles, cooking.
3 Trivets for ditto, iron (rings and legs to screw).
2 Locks, Pad, small.
1 Case, or pannier box, Tower, No. 10, containing
1 Tea Kettle, tin, with folding handle, 7 quart.
2 Teapots, ,, ,, 5 pint.
12 Dishes, tin, 13½ in.
50 Plates, dinner, tin.
24 Spoons, iron-tinned, large.
2 Carving knives and forks.
24 Table ,, ,, white handle.
40 Cups, tin drinking, ⅓rd of a quart.
1 Cannister, Tin, 7 in., containing 4lbs. Salt.
1 Ladle, soup, iron.
1 Flesh Fork.
1 Chopper, Meat.
1 Brush, hand scrubbing.

24 Towels, Hand.
1 Steelyard, weighing up to 80 lbs.
1 Pair of Diet Scales, tin hand.
Set of Weights for ditto, 2lb., 1lb., ½lb., ¼lb., iron, flat, and 2oz. brass.
2 lb. of Cotton Wick.
1 lb. of Thread, whited brown.
2 Needles, Packing.
24 „ Sewing.
6 „ Darning.
2 Locks, Pad, small.
1 Case, or pannier box, Tower, No. 11, containing
2 Bed Pans, pewter.
3 Close Stool Pans, pewter.
3 Iron frames for ditto.
2 Urinals, pewter.
2 Basins, or Bowls, zinc.
1 Tea Kettle, tin, 4 quart.
2 Candlesticks, iron flat, for oil.
2 Burners, tin, double wick.
1 Pair of Snuffers, steel.
1 Pair of Scissors, 7 in.
1 Square Tin Box, containing 6 lbs. of Sperm Candles.
1 Hand Lamp, tin, globular.
1 Lantern, bull's eye, police pattern.
1 Can, tin, for oil feeding.
2 Bottles, tin, containing 2 gallons of Rape Oil.
1 lb. of Cotton Wick.
2 Boxes of Matches, wax.
1 Axe, Felling, Canada pattern.
2 Brass Cocks, bib driving, ½ in., with keys.
1 lb. of Thread, Packing, ½lb. middling, ½lb. small.
18½ lbs. of Soap, Yellow, 6 bars.
2 Locks, Pad, small.
1 Case, or pannier box, Tower, No. 12, containing
1 Square Tin Box, for Sugar, 48 lbs.

1 Square Tin Box of best Green Tea, 7 lbs.*
1 Square Tin Box of Black Tea, 18 lbs.*
6 Bottles of Brandy, in a wood case
1 Corkscrew.
2 Locks, Pad, small.

	Cwt.	Qrs.	lbs.
Average weight in each waggon,	43	2	0

* The tea of the best quality is intended as a solace or comfort in particular cases only, not for general use.

HOSPITAL CONVEYANCE STORE WAGGON,

LETTER D.

CONTENTS.

3 Marquees, complete
4 Portuguese Officers' Tents, complete
4 Bales of Bedding, 3 sets to each bale, 3 sheets to each set
3 Bundles of or 36 Water Decks

	Cwt.	Qrs.	lbs
Waggon and Stores—Weight	42	2	0

HOSPITAL CONVEYANCE STORE WAGGON,

LETTER E.

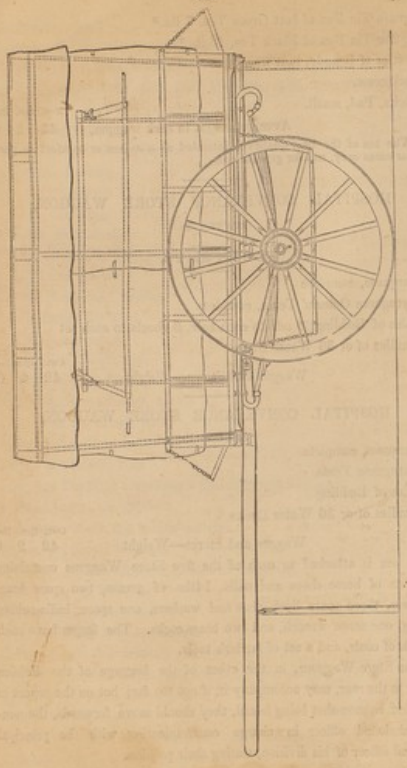
3 Marquees, complete
5 Portuguese Tents
2 Bales of Bedding
3 Bundles of or 36 Water Decks

	Cwt.	Qrs.	lbs.
Waggon and Stores—Weight	42	2	0

A box is attached to each of the five Store Waggons containing ten sets of horse shoes and nails, 14lbs. of grease, two spare brass washers, three spare linch pins and washers, one spare india-rubber spring, one screw-wrench, and two brass cocks. The forges have each a sack of coals, and a set of farrier's tools.

The Store Waggons, in the event of the baggage of the division going to the rear, may accompany it, if not too far; but on the report of the first cannon-shot being heard, they should move forwards, the non-commissioned officer in charge communicating with the principal medical officer of his division, stating their position.

May 9th, 1854.



HOSPITAL CONVEYANCE CART.

THE END.

REPORT ON THE CHOLERA

IN THE

ISLAND OF MAURITIUS,

1856,

WITH DAILY ELECTRICAL OBSERVATIONS
DURING THE EPIDEMIC.

BY

HENRY BOWLES FRANKLYN, M.D., &c.

Assistant Staff Surgeon.

CHICHESTER:
W. HAYLEY MASON, EAST STREET.

1856.

TO

DR. ANDREW SMITH,

DIRECTOR GENERAL OF THE MEDICAL DEPARTMENT

OF THE ARMY,

This Report

IS MOST RESPECTFULLY OFFERED.

CHOLERA.

Again the Cholera has been permitted to visit Mauritius, and although it has committed less ravages than in 1854, the cases have in themselves been of the gravest kind. I know that there exist in Europe many scientific men who struggle against the *opinion contagonist*, but in my opinion the contagious character of this malady was never more clearly proved than during the last epidemic. Since the disappearance of the scourge in 1854 no cases occurred until the month of March, 1856, when it again burst forth under the following circumstances.

Notwithstanding the sufferings of 1854, the quarantine had never been strict enough, and when certain ships arrived from India infected with this disease, there have been public clamours before government house; and on one occasion this building was regularly besieged, as the vessel had lost 32 men during a passage of a like number of days, and was on the point of being admittted into the harbour: fathers of families

still in mourning for the losses they had sustained, prayed the Governor and the principal medical officer to send the ship to sea for at least 10 days.

At the period of which I speak a ship, having the malady undoubtedly on board, arrived at the entrance of the harbour. She received the order to leave for Flat Island, a distance of 7 or 8 miles from Mauritius, and to leeward. Arriving there, the Indians, to the number of 400, were disembarked; and this number, added to that of the Indians on the Island, swelled the number to 600. Although government had established a quarantine station here, there had been no huts or places of shelter built; and as the sea generally runs high, the landing is troublesome, and the steam tug generally occupied, these poor wretches were left without sufficient nourishment and without shelter, consequently at the end of 4 weeks their number had diminished to half by the ravages of typhoid fever, dysentery, and cholera.

At this time the Mauritius journals began to attack the goverment, and to call on the public for assistance, and wood and nourishment were sent to save the remainder of these poor creatures.

Death continuing his work of destruction, a military medical officer (after having received authority to act as he might think the most beneficial) was sent to the Island. I should mention here that for some time cholera had existed at that Island, but had never extended to Mauritius, there having been no communication.

On arriving at the Island the medical man found but one case remaining of cholera, but many of dysentery and typhoid fever. The steamer then returned to Mauritius, and before arriving one man was attacked with cholera; for these men

had been in direct communication with the Indians on Flat Island, and had even worked with them. A medical man from the civil hospital went off to the steamer to see the sick man, and found him in a state of collapse. Will one believe that this medical man returned to Port Louis and allowed the crew of the vessel to land without even communicating with the principal medical officer on the station, who did not know any thing of it until I myself informed him on the following morning of the return of the steamer. Even then it was not generally believed that cholera had arrived, and the principal medical officer and others attributed the man's death to some violent medicine which he had taken. Consequently the steamer was not sent away till 2½ days afterwards, then in order to escape the disease the principal medical officer sent her away, but unhappily the communication had taken place and it was too late.

No case occured at Port Louis until 4 days afterwards, when a soldier of the Sappers (one of the Corps of which I was in charge) was brought to hospital suffering from very severe diarrhœa. He was at once put to bed and soon commenced vomiting. His lower extremities became quite cold, and his evacuations of the colour of rice water. In a word the man was attacked by true Asiatic cholera. He took immediately an emetic and afterwards commenced taking calomel in tolerably large doses. Hot frictions were then diligently employed and bottles of hot water were applied to the feet. After about six hours he took a change for the better and gradually got round.

When this man was admitted I sent and informed the principal medical officer, who with two others came and put the case down as one of epidemic cholera. No mention was

made of it, as the principal medical officer was of opinion that it would end there; on the morrow, however, an Artilleryman was brought in with the same symptoms, and by the like treatment gradually recovered.

Up to this time no case had been declared in town, and the people were entirely ignorant of what had taken place in the military hospital. On the day following that of which I speak, while going round the 85th hospital, the surgeon being sick, I found a convalescent from dysentery in a state of collapse. I isolated him as much as possible from the rest, but I could now see clearly that the epidemic had attacked the town, and on making further enquiries I found that a French physician of my acquaintance had seen three cases that day, all of whom were in a dying state; I remarked also that the people were panic struck and had already commenced to flee to the country districts; carriages passed at a rapid rate, and Cholera was echoed here, there, and everywhere. From this date the scourge augmented, and numbers of soldiers were carried to hospital with cholera, cholerine, and severe diarrhœa. Thus among 1200 men, 130 or 140 were constantly in hospital, and many others obliged to be treated outside.

Among this number there were always two or three in collapse. The malady appeared in its gravest form among the troops, and the greater part of the bad cases died after about six hours treatment, when the disease had made much progress at the commencement.

At least 10 cases in hospital, I traced to one of the following causes.

1 To sleeping near a cholera patient.
2 To aiding in the employment of frictions.
3 To being employed carrying away the evacuations (which I believe to be eminently contagious.)

The duties of the medical officers now commenced to be severe. Each Assistant Surgeon, or Surgeon available was on duty in a little room at the hospital during 24 hours in turn, and went round four or five times during the night; for there were sometimes five or six men in collapse at the same moment.

A medical officer on coming off duty at the hospital had still his own particular duties to attend to, and then took his tour of duty in the barracks for 24 hours, and so on; for men came almost every quarter of an hour during the night and were prescribed for by the Assistant Surgeon at once instead of being sent to hospital.

The civil medical men were also very hard worked as in the cholera of 1854, when four of them died; and in the last epidemic two of them, Drs. Rogers and Dauban, perished, performing their duties up to the last with the greatest courage and devotion.

At the commencement of the epidemic there was a considerable amount of electricity in the air; there was even thunder and lightning, but it fell gradually to none at all by Gay Lussac's electrometer. It is remarkable that the disease took the same number of days to arrive at its maximum intensity as in the year 1854, and after about 30 days it appeared in a great measure to be past; the daily mortality having fallen to about 4.

With regard to the influence of the weather on the disease, I am exactly of the same opinion as before, viz. that it has nothing to do with it; that during fine or bad weather, cold or hot, it pursues in the same way its capricious course.

With regard to Peckenbocker's theory (German) I find that there are some things probable enough, but do not agree

with him that the disease is sometimes latent during 28 days, and that the poison does not exist in the currents of air! Many cases have declared themselves after 5 days, but I think that after 10 to 14, one is generally in safety, if there has been no diarrhœa during this time amongst a large body of men in rather a small space.

Of the troops attacked, the men who had just arrived in the Colony, suffered the most; and those men who had gone through the epidemic of 1854, for the most part escaped.

The new company of Artillery was soon diminished in number, a panic seized them, as also the 85th Regt., which suffered heavily also; whereas the 5th, that was not panic stricken, only lost about three men in all.

When people attacked have shewn great courage, the malady appeared to lose in some measure its intensity, and several cases I could enumerate would perhaps lead to this opinion.

J. Davy, a Frenchman by birth, but enlisted in the Royal Artillery about a year before the epidemic, was attacked in the night at Fort Adelaide, and carried to hospital in a state of collapse. On admission, he took an emetic; diligent frictions were commenced, and calomel in small doses administered every half hour, as also enemas of acetate of lead. He continued in a most dangerous state during three days, but never lost his courage, saying to those around him, "I am a little man, but have plenty of courage, and I don't mean to die yet." He appeared glad to find one who could speak his language, and gradually recovered without much consecutive fever, aided by enemas of arrow-root and brandy and broth, as he could not take much nourishment by the mouth.

The suppression of urine was constant, and at an early period in the disease; and some cases went on so slowly in their progress, that one might almost call them chronic cholera. The quantity of cholerine or diarrhœa among the troops was throughout considerable, as also among the population at large. Every third person had diarrhœa, or rather the first stage of cholera, once or twice during the epidemic; but they most of them had the assistance of a medical man, or some good remedy at hand at the outbreak of the malady, and to this cause may be attributed the smaller number of deaths than in the year 1854.

It appears to have been an error on the part of Mac Lachlan and others, that diarrhœa is invariably present, and leads to cholera when neglected. In some cases it does not exist at all, and I have even in some cases seen the vomiting commence first, shewing that it must be entirely a different disease to diarrhœa. The premonitory diarrhœa, so much talked of, is, I think, the commencement of the true cholera; and to say that during an epidemic all nourishment that may be likely to lead to diarrhœa should be avoided, is throwing aside any scientific view we may take of the malady. I do not mean to say that people should eat fruits and things liable to provoke diarrhœa, but to live as one usually does, taking perhaps a few more stimulants than ordinary, is, I think, the best safeguard, if indeed there be any. If the commencement of cholera is diarrhœa, I will suppose that there are two kinds: one not at all dangerous, although it may be obstinate and difficult to check, and if not checked is only an inconvenience; the other diarrhœa if not immediately checked runs into the second stage, that of true cholera, and vomiting and purging then hasten the sufferer

onwards to his end. This diarrhœa although light is of course very dangerous from the very commencement. It is in fact not diarrhœa but cholera in its first stage, and too often defies the efforts of medical science. Many cases I could enumerate in which the patient was struck down suddenly, as if stung by a venemous reptile, without any warning whatever.

During the epidemic each Sergeant kept in his possession a small box of pills, composed of opium and acetate of lead, to administer to any man suddenly taken ill in order that no time might be lost.

The troops suffered more than the population, and were not put in tents until the malady was almost past, after this the men were far more healthy. The military hospital was during the whole of the epidemic a perfect pest house, because the patients could not be isolated enough, and the cholera patients' linen was washed in the hospital bath and then hung up to dry in the hospital yard, against the remonstrances of more than one of us medical men, who suggested the propriety of burning it as well as the bedding. Finding so many men in hospital attacked by cholera from pure infection, hospital tents were pitched in the barrack square, a distance of a mile from the hospital, for the non-choleric patients, and this was very beneficial.

This epidemic, I remarked, struck down many of the very finest men, who were well conducted and not drunkards. On this point I can offer no opinion.

I think from past experience that all kinds of opiates in collapse are worth nothing, indeed that they are deleterious, and that enemas were as useful as the medicines given by the mouth. The acetate of lead I found useful, but when the disease had arrived at its intensity medicines were but too

often useless, and it pursued its course unchecked. Almost all the severe cases were fatal, and more so than in 1854.

Attention to the surface of the body after having endeavoured to drive out of the system this unknown poison by emetics, &c., and then to support it against the weakness brought on by the disease, by means of enemas of arrowroot, brandy, broth, &c., especially when the vomiting prevents them being giving by the mouth, appears to be the treatment the most rational and the most useful. I found spirit of camphor very useful at the commencement of the disease; and a medicine composed of equal parts of spirit of camphor, oil of turpentine and laudanum, with a few drops of oil of peppermint, produced the best effects. I gave it in half a glassful of hot brandy and water, then I put the patient to bed and covered him up well with blankets. Almost immediately a copious perspiration broke out and continued during some hours; meanwhile the patient often slept, and awoke much changed for the better. When the vomiting was very frequent I administered it in two or three smaller doses, in order to make the stomach retain it the more easily.

I found that a sinapism placed along the spine was more efficacious than one to the epigastrium; for the stomach, and intestines only play apparently a second part in the disease. Calomel alone was accompanied generally by good effects, but combined with opium it appeared unsuccessful. The cold douche was tried in some cases at the commencement of the epidemic but without any success, and the consecutive fever was always much more severe.

When the first emetic did not bring forth good results a second was generally administered, composed of two grains of Tartar emetic and 30 of Ipecacuanha, and the patient

made to drink at least 10 quarts of warm water. The consecutive fever of the cholera was very severe in this epidemic, and head symptoms commenced at an early period.

Very few men attacked by cholera wore flannel belts, and if the electrical theory be correct, silk would be of still greater service as a non conductor.

In the greater number of cases death took place by paralysis of the 8th pair of nerves pneumogastric or vagus, but by anastomosis the sympathetic nerve and the spinal accessory are implicated; for on entering the chest and turning round the subclavian artery, the pneumogastric sends branches which anastomose with the nerves of the heart which come from the sympathetic.

The pneumogastric nerve being paralyzed, as also the sympathetic and the spinal accessory (by the branch which joins the pneumogastric on leaving the brain), the stomach, the heart, the liver, the kidneys, the intestines (for the left pneumogastric anastomoses with the left hepatic plexus, and the renal plexus has its origin in the solar plexus of the sympathetic), are all at once deranged in their functions by paralysis of the nerves of which I speak; and the disappearance of the bile in the evacuations, the blue colour of the body, the suppression of urine, &c., are perhaps proofs sufficient of the paralysis entire or partial of these nerves; and one and all being attacked, the blow to the system is sudden and more severe than in other maladies. In administering remedies for the diarrhœa and vomiting we only attack the disease in an indirect manner, without being able to strike at the primary evil.

Attention to temperature has done almost all that is possible in this disease; and although I have seen many

hundred cases in France, in England, and in the Island of Mauritius, I cannot lay down any decided mode of treatment.

The suppression of urine does not invariably occur, for sometimes the sufferer passes it in great quantity, and pale in colour a very short time before death closes the scene, it is passed involuntarily and death is preceded by a heavy stupor; the same thing was remarked in the intermittent fever during the Walcheren expedition, just before death took place.

Cholera, when not fatal, has a hot stage and one of perspiration, as in intermittent fever; the patient then sleeps, and awaking finds himself much better.

In observing the quantity of electricity in the atmosphere during the epidemic, I remarked that although the quantity diminished so much at the commencement of the disease and finally did not exist at all, still when the disease diminished in severity the electricity did not augment in the same ratio, consequently I could not say whether it approached its end or not.

At the time of my departure the disease had spread to the country districts, but the few cases that occurred in town were still severe. I had not the opportunity of knowing whether it declared itself on board any vessel that left Mauritius at this period; but on board our vessel, which brought home invalids, we had a case of cholerine and several of diarrhœa five days after leaving the Port, as did H. M. sloop of war *Estafette*, five days after starting from Mauritius, during the epidemic of 1854, &c.

After fumigating diligently on two successive days, no further cases occurred on board our vessel.

The Island of Bourbon, as in 1854, escaped; a very strict

quarantine being kept up by order of Mr. Delisle the governor. This quarantine was observed during 42 days under sail, out of sight of the Island.

Since this last epidemic occurred, all the Medical men at Mauritius appear to have come to the conclusion that the disease is infectious. There is not the slightest doubt that the quarantine was much neglected, and that it was thought of when too late.

Here follows a table of observations during the epidemic, until the eve of my departure, when the mortality per diem had fallen to four.

Reading of an Electrometer of M. Gay Lussac, during part of the months of March and April, 1856, *at Port Louis, Mauritius.*

Date.	Number of Deaths by Cholera.		Separation of the straws of the Electrometer in deg.	Remarks.
	In Town.	In Barracks.		
March				First Soldier died 10th March.
11	5	0	10 °	The great quantity of Electricity from 11th to the 14th was caused by thick clouds cumulo strata charged with electricity
12	14	0	20 ·	
13	15	0	20 ·	
14	26	0	30 ·	
15	20	1	4 ·	
16	24	1	6 ·	
17	22	0	5 ·	
18	41	3	no observation	1 woman died
19	37	3		
20	35	1	4 ·	
21	38	1	4 ·	
22	38	2	3 ·	
23	37	2	3 ·	
24	72	2	no elect.	
25	83	2	1 ·	
26	96	2	no elect.	
27	125	2	2 ·	1 woman died
28	86	0	2 ·	
29	69	3	3 ·	
30	81	2	4 ·	
31	68	1	4 ·	
April 1	57	1	2 ·	
2	43	0	3 ·	
3	25	1	2 ·	
4	38	1	2 ·	
5	34	0	3 ·	
6	16	1	4 ·	
7	19	0	4 ·	
8	11	0	4 ·	
9	13	0	3 ·	
10	14	1	4 ·	
11	12	0	5 ·	
12	13	0	3 ·	
13	14	0	3 ·	
14	12	0	2 ·	
15	12	0	3 ·	
16	4	0	4 ·	
17	6	1	4 ·	

Here then is a short report of the epidemic of 1856. It broke out again after my departure, and carried off some more of the residents, and ended the 14th June, 1856.

H. B. Franklyn.

ANATOMICAL RESEARCHES

OF

THE FRENCH COMMITTEE

INTO

THE MALADIES OF THE EASTERN ARMY,

[*By order of the Emperor Napoleon III.*]

LITERALLY TRANSLATED FROM THE FRENCH OF J. D. THOLOZON,

BY

HENRY BOWLES FRANKLYN, M.D., &c.

Assistant Staff Surgeon.

CHICHESTER:

W. HAYLEY MASON, EAST STREET.

MDCCCLVI.

TO

DR. ANDREW SMITH,

DIRECTOR GENERAL OF THE MEDICAL DEPARTMENT

OF THE ARMY,

This Translation

IS MOST RESPECTFULLY OFFERED.

ANATOMICAL RESEARCHES, &c.

The results that I have the honour to communicate to the Academy, have been collected at Constantinople, in the Chief Military Hospital, during the month of December, 1854, and of January, February, and March, 1855. Charged with rather an important service of receiving directly the sick, who arrived from the Crimea in considerable numbers, I had the opportunity of examining and treating, during the first very severe winter that the Army had to pass before Sebastopol, about 1200 sick. In about one quarter of the cases, the affections were light and easily cured; the 900 other patients were severely ill. One part of these was able to be sent to the hospitals of the 2nd and 3rd line, after some days' treatment; one part remained under care, the others, to the number of 290, died in my wards.

The maladies which gave rise to this considerable mortality which occurred in all the hospitals of Constantinople and the Crimea, were Cholera, Dysentery, Scurvy and Typhus. Cholera, an accidental morbid influence, was felt throughout the armies, as I have endeavoured to point out since the outbreak of the War, by reason of the choleric and epidemic tendency which reigned at this period over a great portion of Western Europe. The Cholera is

not a *disease proper* to armies. It declares itself, however, often enough among large masses of men, as soon as the constitution epidemic or endemic assists its developement. Exactly what we see in India, Russia, Poland, and Algeria, was repeated in the East with a perfect similarity of character, and with the double resemblance—epidemiological and pathological. This uniformity of causes of progress and of symptoms forms one of the features, the most important in the history of the Cholera in armies.

It is otherwise with regard to dysentery, scurvy, and typhus. These maladies are born in armies, in overcrowded garrisons, in camps, and in besieged towns. They replace, under these circumstances, the morbid forms which shew themselves in time of peace in the ordinary conditions of military life. Thus phthisis, which with rapid steps in France, as in England, and Germany, is common in the army and is in the first rank among the causes of death, is found during a campaign to be in very diminished proportions.

Again, typhoid fever, very frequent in our hospitals, developes itself but rarely during active warfare. I will say as much of eruptive fevers, variolas, rugeolas, scarlatina, and of acute articular rheumatism. History and statistics give but little information on this subject, but they give every where, coupled with armies, dysentery, scurvy and typhus, and very rarely febrile exanthemata.

The three pathological types to which I call, for the present, the attention of the Academy, have been very little studied during our time. We have happily had but few occasions for studying them, since the wars at the commencement of this century. From this it resulted that history left a great deal much desired for of precision in the description of symptoms and lesions. In wishing to bring into this subject the strict method of modern pathology, I encountered a difficulty that I ought to submit to the Academy; because it concerns really clinical observations, Dysentery, scurvy, and typhus, such as we know them by ancient descriptions form morbid groups, totally distinct, the one from the other. When these affections present themselves thus isolated and in a simple form, it is very easy to recognize them, and any observer would not deceive himself therein. But let these maladies come

to combine and complicate themselves the one with the other, and sometimes all these at once to form, as it has been before observed so often in armies, compound maladies of mixed species of special types, then the pathological problem becomes complicated; dysentery presents the characters of scurvy, scurvy patients are delirious as in typhus, or else they succumb to dysenteric flux. Subjects attacked by typhus have dysentery and becomes scorbutic. Examples of these mixtures are not wanting. Almost all the severe cases are complicated. This is at least what I saw during the winter of 1854 and 1855, at Constantinople. When the characteristic symptoms of these affections are well drawn, it is possible to recognize each of them, and to determine in some measure the part more or less that it takes in the morbid state. But it is the exception! The more often in these admixtures of divers morbid influences, there are such anomalies that the proper signs of these morbid states disappear, and are replaced by signs of less importance. Thus in typhus the eruption, so well written of by W. Jenner, shews itself but rarely when this affection is complicated with dysentery. The continued fever which characterises it disappears also, and delirium continues sometimes most intense. At other times the patients have only headache, giddiness, buzzing in the ears, sleeplessness without febrile heats. This dysentery is one of those eminently contagious, and which engenders typhus. Thus in scurvy complicated with dysentery—the alteration of the gums is not present, the infiltrations of blood under the skin, and intermuscular and the hæmorrhagic colours of the skin do not exist. The peculiar scurvy pains, of which the character has been little treated of up to the present, the anemic appearance of the gums, the earthy colour of the skin, are the only symptoms by which one can recognize the scorbutic cachexia. At other times fever, and other symptoms of typhus, stop suddenly, and one sees scurvy appear in the gravest form. This is an example of change from one malady to another. The observer, who has not been warned of these phenomena, imagines that he has still to do with typhus. Generally the scurvy and typhus join; then there is fever. Œdema of the face, a jaundiced colour of the skin, a delirium more intense and more obstinate than in the ordinary typhus, severe gangrene of the mouth and the extremities. One frequently

sees also dysentery present typhus symptoms; and in like manner the typhus of scurvy offers some characters of dysentery.

These symptoms, which add themselves to all this, these mixed states, have need to be well understood, by the light of pathology and clinical analysis. If the varieties that I have indicated constitute so many new diseases; that is to say, if they are distinguished always by their uniform characters, one must multiply the pathological kinds; if they form, as I suppose, compound maladies, their study must be placed in that of general pathology; one must endeavour to know the character of these combinations, their influence on the general march of the disease, on the evolution of each symptom in particular, and to note with care the special reactions of the economy which can have origin in these cases. The difficulty of resolving these questions scientifically is more than one would be inclined to believe at first sight. This comes of the complete absence of the principles, and of precise information on compound maladies. I have endeavoured to reunite on this subject the elements of science, to serve as a base to the interpretation of facts that I have gathered in the East; and I ought to avow that it has not been possible for me to find formula in a complete manner. From the fault of rules, or admitted information on this question, I have examined the facts with the help alone of my anterior observations.

I have sought, in studying separately the simple cases of scurvy, dysentery, and of typhus, to unravel the most complex cases. I have arrived by analysis of a great number of observations at the opinion that I have just given; that the diseases observed at Constantinople, at the end of 1854, and at the commencement of 1855, were of a complex nature, in which diseases scurvy, dysentery, and typhus played each its part; and to which added itself also the influence of cholera. If one carries himself back now to the hygienic conditions in which the Army forcibly found itself at this period,—nourishment of an inferior quality, clothing insufficient, habitations mere tents, rain, snow, severe cold, watching and the excessive fatigues of siege works,—one will see that it is necessary to add to the principal morbid influences already indicated, the influences of hygienic circumstances so unfavourable as I have just enumerated. The observations

made in these conditions are naturally complex observations, which demand much experience to elucidate. I have collected them with the greatest care in the Hospital wards and the amphitheatre, where I passed from six to eight hours a day, during four months. I collected from the registers the principal symptons, and I drew the results from the autopsies which I made myself. The considerable materials thus brought together would need a developement too extended if I wished to give a complete account of them. I have thought that the necroscopic results observed in the exceptional circumstances, which bring to mind other facts of war, forming an epoch in history, would be of a nature to interest more particularly the Academy. The greater of past facts that I am going to speak of, have not been written that I am aware of; they treat of a part of the pathology of armies which is but little known,—of the Diseases of Armies during Winter Campaigns.

In 79 autopsies, 47 times the brain or its membranes presented the most important alterations. The lesions were thus divided:

First—In the pia mater 18 times, of which 15 times the œdema was simple, once sanguinolent, and twice the infiltration was purulent.

Secondly—In the vessels of the brain, as examined in 13 cases:

10 times anemia was present, 1 hyperemia, 2 capillary apoplexy.

Thirdly—In the cerebral substances, among 33:

6 softening well pronounced and general.

9 induration well pronounced.

10 times softening periventricular with ventricular dropsy.

2 induration about the ventricles in conjunction with dropsy of them.

4 times ventricular dropsy without softening or induration about these cavities.

1 softening near the 4th ventricle and isolated.

1 abscess of the brain.

These different lesions were sometimes combined the one with the other. Thus œdema of the pia mater and anemia of the brain were observed the oftenest together, with augmentation in the ventricular liquid. I should have many more alterations to speak of, if I held account of all the anatomical peculiarities in

the nervous centres that I encountered; I have only in these observations paid attention to the various lesions well defined, that their existence may be placed beyond doubt, and those which can be of importance as regards the interpretation of symptoms, and which might figure among the causes or results of the maladies. At this point one should demand to what morbid influence can we attribute the alterations of which we have just spoken. The reply may perhaps be drawn from the preceding considerations. Neither typhus, nor scurvy, nor dysentery, produce in simple cases the cerebral lesions I have just alluded to: otherwise authors who have written on these matters, would have made allusion to them, and in simple cases one could have observed their traces. But there are evidently (facts do not leave me in doubt as to this) dysenteries, scurvies, and typhus, which are accompanied by cerebral lesions, at least in analogous cases to those of which I speak.

Which of these morbid influences predispose the most to the alterations in the brain? On first consideration, one would imagine that typhus, which is accompanied always by perversion of the nervous system, is one of the causes determining cerebral lesions. But by looking well at pathological observations, one finds that delirium and the other nervous symptoms in typhus, as in typhoid fever, as also in eruptive fevers, is not the effect of palpable alterations of the nervous centre. One knows for instance that the most intense delirium in typhoid fever does not coincide with the most marked hyperemia of the brain.

I found in 1849, with one of my Preceptors, who sits in these ranks, that in the torpid stage of cholera there was, after death, much less injection of the brain and its membranes than when the intelligence remained. But besides this there are facts to consult. Hence comes clinical observations that I have gathered, that in many cases in which the alterations of the cerebral matter were well defined, there was neither delirium nor coma. These were men that had suffered for a long time with obstinate diarrhœa, emaciated and feeble. Other men in these deplorable conditions suffering delirium, and dying comatose, presented the like alterations in the brain. Finally, a third category shews patients with whom the disease had not been long present, who

have preserved their muscular force, and had headache, stupor, delirium, coma, and in the autopsies of whom one has not encountered any alteration of the cerebral substance. We can, it appears to me, conclude from these facts, that the most frequent and gravest alterations of the brain of which we have spoken,—the accumulation of serosity in the ventricles with softening and often destruction of a part of the neighbourhood of the ventricles, or of their induration in these parts, of anemia of the brain, of softening or induration of the white matter,—do not arise from typhus considered as a malady specifically febrile with acute and determined course.

Possibly there are relations far removed between typhus and the different states of the brain that I have just enumerated. The actual state of our knowledge of typhus does not permit us to affirm any thing absolute on the subject.

As the alterations of which I have just spoken are of capital importance, I shall publish after this work, the observations in which they are treated of, and with details. I shall content myself here with giving a general idea. Anemia has appeared to be the primordial, if not the essential, of softening and of induration of the brain. It acts on these two substances, but more especially on the white matter. The grey substance (cortical) had a greyish reflection and was semitransparent. The medullary substance was of a milk white, with a little vascular spotting, very clearly disseminated, very fine, and sometimes without anything worthy of note on cutting it. The dilatation of the ventricles was generally of the 4th and the lateral ones, sometimes, however, all the cavities were equally so. In some instances the dilatation has been considerable. Thus the 4th ventricle has often been found of double its ordinary capacity. Sometimes, also, the lateral ventricles had a much greater capacity than natural, every dimension of the cavity being augmented. More rarely this occurred in one ventricle alone, as the 4th or in a part of the lateral, as, for instance, the posterior or anterior or underpart was deranged. The serosity contained in the dilated cavities was pale without any yellowish colour. The softening or induration was generally more pronounced in the neighbourhood of the ventricles. The softening of the white substance around the ventricles was sometimes, such

that one detached easily with the forceps, or the handle of the scalpel, large flaps of ventricular membrane. Sometimes the trigone was in such a softened state that the fibres actually floated in the ventricular liquid, and the 5th ventricle was destroyed. Often the neighbourhood of the 4th ventricle, and especially the anterior part as far as the beak of the calamus, presented a gelatinous softening of more than a milimetre in thickness. The induration of the neighbourhood of the lateral and the 4th ventricle has been often met with.

The ventricular surface was hard, resistant, and presenting sometimes a granular aspect. The 4th ventricle presented induration in its neighbourhood more frequently than the lateral; and the periventricular induration, on the contrary, was more extended around the lateral ventricles in the thickness of the medullary substance, than in the protuberance, the bulb, and the neck like portion which surround the 4th ventricle. Often the white substance presented a remarkable consistence and tenacity, which made them worthy of comparison with brains preserved in nitric acid and water. The corpora striata and optic thalami neither participated in the induration nor in the softening.

The spinal marrow was only examined a few times, consequently one cannot have much idea of the alterations of this organ by the following facts :—

In five cases—twice the marrow presented alterations worthy of note,—once there was a diminution of the white substance,—once the white pillars of the marrow presented a remarkable state of hardness and of resistance to traction. They were separable by means of the fingers, which one moved backwards and forwards between them. In pressing with the fleshy part of the fingers, one did not easily break down these pillars. The lesions just spoken of arise from the same morbid process. It is the same pathological act, the same fault of nutrition which brings on these modifications of the cerebral matter. In fact all the alterations are seated principally around the ventricles. The ventricle which is the most frequently softened and dilated, is that which one generally finds also the oftener indurated. Besides clinical observations shew that induration is in connection with maladies of long duration, and the softening with morbid states of less chronic

character. I shall not endeavour to determine what is the nature of these divers alterations. I shall range them under a general and perhaps vague denomination, "Faults of Nutrition," indicating by that, that they are completely removed from Inflammations.

In all the cases the cerebral lesions were accompanied by notable alterations in the thoracic and abdominal viscera. The heart, the liver, the kidney, are the parenchymatous organs which the most frequently and the most particularly suffered. The description of the lesions which they presented will shew, I hope, that here as in the brain they are the faults of nutrition which predominate.

In the 79 autopsies, 69 times one or more of the following anatomical states were noted in the heart :—

Tubercular pericarditis—twice.

Hydropericarditis—once.

Valvular endocarditis—twice.

Consistent coagula and adhesions—twice.

Fluid blood—twice

Redness of the internal surface of the left ventricle—twice.

Ancient adhesions of the pericardium to the heart—twice.

Heart flabby—three times.

Heart hypertrophied—once.

The amount of frequency so reduced of these accidental alterations shews that they do not precisely agree with the reigning maladies. If these are exceptional morbid accidents found in some subjects,—if they do not agree with the general states that I search to characterize anatomically,—it is otherwise with the phenomena which remain for me to speak of.

The heart was decidedly reduced in bulk 26 times. The muscular tissue of the heart was discoloured and whitened 23 times. It was yellowish eight times. Atrophy was present with discoloration 18 times. Once discoloration accompanied the augmentation of fleshy tissue. Discoloration accompanied friability or

diminution in the consistence of the fibres of the left ventricle 9 times.

These alterations by their frequency and by their nature merit the attention of observers. The numerous weighing and measurements of the heart that I made in the East, show me clearly that in a considerable number of grave cases of which we have been speaking, the heart has often diminished in volume and in force and its fleshy fibres have undergone a discoloration, proof of a modification in the nutrition. I shall publish in detail the measurements that I have made on this subject; but I shall only mention to the Academy the figures obtained by the weighing.

31 times weighing of the heart noted in the observations which I analyse, gave for the average weight of this organ in man from 24 to 35 years of age, 215 grammes, or 9 oz. 13 pwts. 10 grains—or a little more that ½lb. avoirdupois. The most that it weighed was about 10½ to 11oz.: and the least about 4½oz.—125 grammes.

The liver presented (not taking into consideration some particular cases as twice hardened, once with calculus, twice with abcess, &c.) alterations which by their very elevated numbers and their coincidence with very grave lesions of the brain and heart, have a major importance. 29 times in the 79 autopsies we noted a striking reduction in the bulk of the liver. In comparing the weight of the livers in 27 observations, we obtained for the average of the divers weights 1655 grammes—2 lbs. 3 oz. 2 pwts.

The maximum weight was 2580 grammes—3lbs. 3oz. 12 pwts.; and the minimum about 810 grammes—1 lb. 1oz.

Four times the weight was almost 1100 grammes, and twelve times not quite 1300 grammes.

In the weighings which gave the minimum quantity the reduction in the bulk of the liver was so great, that it was impossible not to remark it. This atrophy, without any great change in the form of the organ, was observable in measuring in each direction, principally so in the left lobe and the sharp edge of the organ. The fibrous capsule of the liver which did not partake of this, presented wrinkles on its convex surface, it appeared thickened, whitened, and doubled on itself a little at its sharp edges. In most cases the the liver was of the natural colour, and neither anemic nor hyperemic.

Forty-eight times the kidneys presented lesions. The principal alterations were

14 times great diminution in the bulk aud weight of these organs.

11 times hyperemia.

6 times a yellow state with thickening of the cortical substance.

twice development of this substance with purulent infiltration.

3 times augmentation of bulk with softening.

twice simple hypertrophy of the cortical part.

5 times discoloration with friability.

twice granular degeneration.

I say nothing of these alterations from which importance may be deduced, like those of the brain, the heart and the liver, of the identity of the morbid process which at the commencement determines the augmentation of volume of the glandular substance with hyperemia or anemia, and afterwards the retraction of this substance, taking with it that also of the tubular substance, and thus determining marked atrophy of the kidneys.

I hasten to speak of an organ of which the diseases so frequent in our garrison hospitals, and under apparently the most sane conditions, disappear quickly among our camps during winter. At this time all the agents of hygiene appear to unite to act on the parenchyma, the most exposed by its functions to receive the impression of external air.

I wish to speak of the lungs.

21 times I observed lesions, pulmonic or pleural.

5 times tubercles.

Once scorbutic pleurisy.

Once purulent pleurisy.

Once simple pleurisy.

Once Œdema of the lung.

Thrice carnification.

5 times red hepatization.

4 times grey hepatization.

There were five in which the pulmonary lesion was marked during life by general severe symptoms of and accompanied by notable alterations in the gastro intestinal mucous membrane. There were three cases of this in the five of tubucle. The observations shew that the pulmonary lesions have been overcome in all these cases by general morbid states, and by the side of which they merely play a secondary part.

The alterations of the gastro intestinal mucus membrane, the most frequent of all the changes are, at the same time, those which merit the most attention as regards the origin or debut of the malady. In about two thirds of the subjects that I have examined, that is to say 7 or 800 out of 1200 sick, there was diarrhœa at the commencement of the morbid changes which led them to Hospital. In one third of these cases, the evacuations were bloody. Nearly 1100 sick among 1200 had more or less diarrhœa at the commencement of the disease. The practical autopsies explain these symptoms in the important anatomical results. The 79 necropsies give 63 times alterations of the large intestine, 42 times of the small, and 38 lesions of the stomach. The large intestines shewed 12 times old ulcers with indurated and blackish borders; 14 times recent ulcerations rather extended; 13 times smaller ulcerations. These ulcerations occupied the whole length of the intestine; but in almost all the cases they were more defined and of more ancient date in the rectum: 3 times the ulceration was present only in the sigmoid flexure and the rectum. In these lesions which characterize ulcerated dysentery, and of which the origin is manifestly in the alteration of the intestinal follicles, 4 times I noticed the dysentery which is accompanied by a considerable thickening of the submucous tissue with a throwing off of the altered epithelium. In all these cases, the alterations were principally at the end of the large intestine. 18 times the alterations were much less pronounced, they were the commencing changes of ulcerated dysentery, and the black spotting at the orifice and in the neighbourhood of the follicles.

In the small intestine, I met with 37 times an abnormal developement of the isolated follicles: always more marked towards the end of the ilium than in other parts of the intestinal canal. 31 times the mucous crypts augmented in bulk were yellowish:

5 times they had a blackish tint: once there was in the centre, and near the circumference, a little red spot. Peyers patches were altered seven times, but they only twice presented the changes proper to typhoid fever; 5 times they shewed many rubbed like places at the orifice of the small follicles that were neither tumified nor infiltrated with typhic matter.

I noted also twice bloody suffusions under the mucous membrane of the jejunum and ilium, principally in the folds of the valvulæ conniventes. Finally, 4 times the mucous membrane in the neighbourhood of the ileo cœcal valve presented a granular aspect, and little yellow and greenish concretions pseudomembranous, that are frequently met with in these dysenteries in the rectum, the colon, the cœcum, and the small intestine. Three times only the abnormal developement of the solitary follicles extended to the jejunum and duodenum. The stomach presented 15 times small linear ulcerations more numerous in the pyloric region than elsewhere; they were 3 to 4 milimetres in length, by 1 milimetre in breadth; having at their borders nothing but pale mucus, sometimes of a rose colour. These little ulcers were surrounded by a light black blush 5 times.

Once we could recognize cicatrized ulcerations: 8 times the gastric mucous membrane offered an ecchymotic spotting here and there of a reddish brown; once these spots were of a mammelated form. I have hardly the time to speak of these changes, and it is not necessary in order to give them importance. The mucous membrane of the stomach, of the small intestine, and of the large intestine was changed at least functionally at the commencement of the disease. The organic lesions took place afterwards by degrees, and following divers methods, that symptoms did not always warn you of; for with their alterations so multiplied and so grave, the reactions on the economy are often masked.

It remains in order to terminate that relating to the digestive mucous membrane, to speak of the alterations in the œsophagus. We found twice inflammation of this; once it was ulcerated.

I regret having only examined this part of the digestive mucous membrane in 15 autopsies.

The mucous membrane of the bladder that one finds rarely altered in fevers, in dysentery, and of which the lesions in scurvy

have not been treated of, presented in 45 cases in which it was examined, 8 times blood-like patches. They were situated in the mucous membrane and not in the submucous tissue. These grouped ecchymoses were from 2 to 5 milimetres in diameter; they were of a rose colour and dark red, sometimes only two or three. In certain cases the whole of the vesical mucous membrane was covered with them. I have not been able to see any relation between these blood-like extravasations and those which characterize scurvy. This state of the bladder probably corresponds with the symptoms of dysuria and with the subpubic pains so acute, which have been often observed in the Hospitals at the time when I gathered these observations. The lymphatic ganglions of the abdomen were only changed three times. Twice in the cases of typhoid fever, the mesenteric glands were augmented in bulk and softened. Once in a case of sub-acute dysentery, the mesocolic ganglions were swollen and congested.

The spleen showed more frequent changes. 24 times it was increased in size. 10 times it was increased in size, and at the same time very friable, once we found apoplectic traces. Once an abscess; but the increase of this organ in size was rarely considerable. Its dimensions and its softening were less than one observes in typhoid fever for instance.

The skin was manifestly altered in a great number of cases. It was dry, wrinkled, and discoloured. It had lost its small hairs. The orifices of the hair follicles of the lower extremities, and on the external side of the upper extremities, were sound, and blackish or reddish. I noticed a jaundiced aspect twice; ecthyma of the lower extremities, once; ecthyma perforating and gangrenous, twice; rupia, twice; ulceration of the cornea, once; anasarca, 3 times. 8 times there were scorbutic ecchymoses ancient or recent under the skin, between the muscles, or *in* them. 7 times only in 79 cases the gums presented scorbutic alterations characteristic. (Swelling or infiltration of blood under the periosteum.) Once, one of the clavicles was completely separated from the periosteum by a layer of coagulated blood of many milimetres in thickness; this bone was raised up easily like a sequestered piece. Twice, a great portion of the fibula was thus surrounded by extravasation of blood. Once the diaphesis of the femur was entirely separated

from the periosteum by coagulated blood of the thickness of a centimetre.

The muscles of the foot, and in some cases those of the leg, presented 5 times a state of complete discoloration: they had the appearance of macerated flesh, and quite whitened. These parts had preserved their consistence: they were only œdematous in one instance.

The fatty tissue of the plantar surface of the foot, of the palm of the hand, or that on which reposes the ligamentum teres, or else the vessicles of fat situated against the femur in the neighbourhood of the femero-tibial articulation, presented 27 times in the 79 autopsies curious alterations. With a normal state of the skin and aponeurosis we found fatty vessicles under the skin, strongly injected from a clear red to a very dark red. The yellow colour of the grease had disappeared under this injection, and even the ecchymotic state of the cellular envelopes of the vessicles. It is not a subcutaneous ecchymosis. It is a particular anatomical state of the fatty tissue, but very little known. The cellulo fibrous intervessicular tissue is normal and rather pale, and the vessicles present sometimes on their surface an ecchymotic and almost black spotting. The fat contained in the vessicles appears unchanged. This change exists in some cases at the same time in different regions indicated; oftentimes one only can find it in the planter surface of the foot and the articulation of the knee. It is always more defined in the planter part of the foot than in the palms of the hands. The fatty tissue the most altered is that of the external and internal borders of the foot. Sometimes the fatty vessicles of the pulpy part of the fingers or of the nails have presented this change, but in a less degree. In the foot and the hand the fat situated beneath the aponeurosis is not attacked. The fatty subcutaneous tissue, or that beneath the membranes, or of the splanchnic cavities, offers nothing analogous to these alterations. It has been impossible for me to find any relation between this state and scurvy, or typhus, or dysentery. It is a specific alteration not treated of, and of which the pathological value would require (in order to be precise) a greater quantity of observations.

Such are the numerous alterations more or less grave, but all

worthy of notice, which characterised anatomically the Diseases of the Eastern Army observed at Constantinople, during the winter of 1854 and 1855. I shall not touch again upon these changes. I wish merely to call to observation that the numbers, the variety, and the complexity of these changes prove that these maladies have been general, and that many and divers influences have acted simultaneously on the organism. I have enumerated Dysentery, Typhus, Scurvy, Cholera, Frost, and Bad Food. I ought, perhaps, to add to these causes, other morbid and hygienic influences. I do not wish here to touch on this question. I merely indicate to-day the necroscopic results, and I endeavour less to interpret them than to set forth the difficulty of the problem, and to prepare it for solution.

J. D. THOLOZON.

W. HAYLEY MASON, PRINTER, CHICHESTER.

98°. *VERSUS* 130°.

OR THE

INFANTRY SOLDIER IN THE TROPICS.

BY

JONES LAMPREY, A. B. M. B. T. C. D.,

MEMBER OF THE PARISIAN MEDICAL SOCIETY,

Assistant Surgeon

of

H. M.'s 15th Regiment.

COLOMBO:

PRINTED AT THE OBSERVER PRESS.

MDCCCLII.

RESPECTFULLY DEDICATED

TO

LIEUT.-GENERAL SIR HOWARD DOUGLAS, K.C.B.

Colonel of H. M.'s 15th Regiment.

PREFACE.

SEVERAL of my military friends having expressed a desire to obtain a copy of the record of the Thermometrical experiments I had recently been conducting, on the Military Uniform, with the view of ascertaining how far its material and make were capable of modifying the heat of a Tropical Climate, &c., I conceived the quickest way of gratifying their wishes would be to commit the matter of the following pages to type, and present each with a printed, instead of a manuscript copy,—and I do this the more gladly as it assures me of the interest they take in all matters affecting the health and comfort of the Soldier.

It was with the object of obtaining some insight into the causes of disease* occurring amongst European Troops serving in Ceylon, that I had been induced to commence these enquiries, which my position as Medical Officer in temporary charge of H. M.'s 15th Regiment afforded me the opportunity of making; and, as it was expected, the important result arrived at, after patient observation, and careful and accurate experiment, showed that the present Military Uniform, owing to the unsuitableness of its materials and make, far from moderating, materially assists the naturally injurious effects of a Tropical Climate upon a European Constitution, and tends moreover to promote as the sequel will show, the greatest evil a Soldier has to contend against—Intemperance—at once the fertile source of crime and disease. The reasons for arriving at this conclusion are

* Vide, table in the appendix where the great disproportion of disease and death, occurring in the Regiment during its service in Europe and Canada and in Ceylon is readily seen.

as obvious and satisfactory, as it is unreasonable to suppose, that the make and form of a Soldier's uniform, however well adapted for service in a country, where the temperature of the climate at times ranges as low as 30 degrees and its daily average is 54°., could at the same time without the slightest modification, be equally well adapted for Service in a tropical country, where the temperature of the Sun's rays frequently exceeds 130°. and the daily average temperature is 82°.

And if a *practical* proof, were at all necessary, showing how ill adapted is such a dress, particularly the Chaco, to the Soldier, whilst engaged in actual service in latitudes so near the Equator, it will suffice to refer to the list of casualties already reported in the beginning of the present campaign in Burmah,—wherein we find *Coup de Soleil* has cut short the career of many valuable officers and at the same time committed sad havoc amongst the ranks.

In reducing these observations on the Military uniform to some method, it may be necessary in the first place, before describing in detail those experiments that have been made to ascertain the effects of the Sun's rays on the several articles comprising the Soldier's dress,—to give a brief statement of the Thermometrical Phenomena observable in the climate of Colombo; and that the immediate consequences attending Military duties performed under such disadvantages may be the more plainly understood, a table will be added, showing the Temperature of the time of the day Military duties are performed at, viz.—Guard Mounting, Sentry, Patrols and Fatigues,—and including a description of the Uniform worn on such occasions;—The experiments will be then detailed—and the whole concluded with suggestions towards an improved method of dress, based on the properties and effects of solar heat.

In conclusion, I need not assert how much gratification it will afford me hereafter, if the result of the recent occupation of my leisure time, and thought, devoted to a pursuit of such vital importance to the Military serving in Ceylon, should be, the remedy of this most flagrant evil, which I have no hesitation in again saying is productive of much of the Intemperance—Debility—Sickness—and Death, to which Troops serving in this station are liable; moreover, I have no hesitation in saying also, that, the State, no less than the Soldier would be a gainer, by an improved method of dress, as the former must gain in economy in proportion as the latter derives advantage in a sanitary point of view.

In reference to the title page, it may be almost unnecessary to state that "98°" relates to the standard temperature of the human body and "130°." to the temperature induced by the heat of the Tropical Sun on the one hand, and by the tight fitting warm clothing on the other.

FORT,
Colombo, 1852.

PRELIMINARY OBSERVATIONS ON THE CLIMATE OF COLOMBO.

From the following tables it can be at once seen, that the chief Thermometrical characteristics of the Climate of Colombo, which is almost identical with that of the other important Military Stations where European Troops are quartered in Ceylon, except Kandy and Newera Ellia, are the unvarying and high standard it maintains throughout the year.

From the most reliable observations that have been made, the mean average daily temperature, the average daily maximum and minimum degrees of temperature together with the greatest and least daily variation throughout the year, may be quoted, and a tolerable idea of the Temperature of this Climate formed, thus

Mean average daily temperature.	Mean average daily Maximum & Minimum Temperature throughout the year.		Daily variation.	
			Greatest.	Least
	Maximum.	Minimum		
82°.	90°.	73°.	16°.	2·5

But as the deficiency of the means for obtaining accurate meteorological observations, was much felt in Ceylon, till within the last few months, when an Observatory was at length established at Colombo, all observations made hitherto will have to undergo a test for accuracy, which the want of instruments as perfect as those now in use, and

an organized system of observation, necessarily make them liable to, the detailed Thermometrical observations made at the Observatory under the Superintendence of the Officer of the Royal Engineers, from the period of its commencement to the present date, will afford a better and more accurate estimate of the Temperature of this climate, for which the reader is referred to table B in appendix.

Thermometrical Experiments on the Military Uniform.

In describing in detail, the various items entering into the dress of a soldier, but not noticing their equipment, with the object of showing how ill adapted they are both in make and materials, for service in a tropical climate, the Head Dress will be first remarked upon; then the Coatee, Shell Jacket, Trowsers, and Boots, in the order here enumerated.

Infantry Chaco.

The first observation, to be made on the Chaco, is the large black heat absorbing surface, that its wide crown, long cylindrical shape and its peak extending before and behind, presents to the sun; the second is that it affords no protection against the sun to that part of the head most requiring it, namely, immediately over the temples, a portion of the head, that is most susceptible of the worst consequences exposure to a tropical sun is productive of, namely, sunstroke—which be it observed is most carefully guarded against by the inhabitants of tropical countries, who wear large Turbands or some similar means of protecting the head.

Material.

The crown of the Chaco is made of a thick black *polished* material which absorbs heat more effectually than any similar substance of another colour, and what is worse, by reason of its being polished it prevents the disengagement of heat much more effectually than if it were rough on its surface.

The thick black felt of which the body of the cylinder is composed, is much better circumstanced as regards heat than the other portions, but still were it of a light colour, and had it a smaller surface of brass ornament, it would afford a difference of several degrees of temperature in favor of the wearer. The peaks in front and behind are of course liable to the same objections as the crown, being similarly circumstanced.

No. 1. *Experiment.*

Date, 23rd March, 1852.

Hour of the day, ¼ past 11 o'clock, A. M.

Thermometer in the shade 85.5°

Exposed a Chaco to the sun's rays and placed a Thermometer on the glazed top; in less than 3 minutes it rose to 110.° in 20 minutes, to 112.° in 30 minutes, to 112.°; a Thermometer placed inside the Chaco at the same time was observed to rise to 102.°, in 20 minutes 107.°, in 30 minutes 107.°.

No. 2. *Experiment.*

Placed a Thermometer inside a Chaco whilst worn by a soldier standing in the sun: in 7 minutes time the man began to perspire, and said "he feels it warm work"; after 10 minutes standing in this manner perspiration began to drop down his forehead, and he felt his "head as if it were opening," in a little time after he experienced a sensation of his head being "in hot water," on removing the Chaco and observing the Thermometer it was found to stand at 117°

No. 3. *Experiment.*

Date 15th April, 1852.

Hour of the day—½ past 2 o'clock P. M.

Temperature in the shade 87.°

Exposed a Chaco to the direct rays of the sun and placed a Thermometer on the glazed crown, after the lapse of a ¼ of an hour it was found to rise to 97.° A second

Thermometer placed inside the Chaco, after a ¼ of an hour had elapsed, stood at 112.° During the performance of this experiment a breeze sprung up, which prevented the heat accumulating on the surface of the Chaco.

No. 4. *Experiment.*

Date, 16th April, 1852.

Hour of the day, ½ to 12 o'clock, A. M.

Temperature in the shade 87 °

Placed a Thermometer on the outside of the glazed top of the Chaco, and exposed it to the sun's rays as in the former experiment, in a ½ of an hour observed it rise to 99.5 °; a Thermometer placed inside the Chaco rose to 114 °; a Thermometer placed underneath the peak, rose to 118.7 °

INFANTRY FORAGE CAP.

The shape of the Forage Cap is such, that it affords very little protection to the side of the head. The peak in front may be of service in screening the eyes from the suns ray's and it being made to fit closely to the head prevents an accumulation of heated atmosphere, which the cylindrical shape of the Chaco favors so much.

MATERIAL.

It is composed of thick Felt and the top is further rendered impervious to heat, owing to a thick piece of paste board being placed inside.

Placed a Thermometer inside a Forage Cap, but after remaining some time exposed to the sun the result was negative.

ARTILLERY CHACO.

Being larger in the crown than the Chaco, and its material and colour being the same, it is circumstanced much more unfavourably for the wearer.

No. 1. *Experiment.*

Date, 16th April, 1852.

Hour of the day, 12 o'clock, noon.

Temperature in the shade 87 °

Exposed an Artillery Chaco to the suns rays, and placed a Thermometer on the outside of the glazed top, and placed a second Thermometer inside the Chaco;—in a ½ of an hour's time, the results were as follows:—

1st Observation.

Inside—Ther: 99.

Outside—Ther: 99.

2nd Observation.

Inside—Ther: 108.

Outside—Ther: 100.

ARTILLERY FORAGE CAP.

Being made of cloth, and consequently of a thinner material than the felt of the Infantry forage cap, the result of the following experiment was not a negative one.

Experiment.

Exposed an Artillery Forage Cap to the rays of the sun with a Thermometer inside and outside.

1st Observation.

Inside—Ther: 96.

Outside—Ther: 108.

2nd Observation.

Inside—Ther: 100.

Outside—Ther: 112.

3rd Observation.

Inside—Ther: 104.

Outside—Ther: 115.

GENERAL OBSERVATIONS ON THESE EXPERIMENTS.

It will be observed that no matter how low the Temperature may have been, externally, arising from the cooling influence of the passing breeze, still owing to the mate-

rial and make of the Chaco, the amount of Temperature accumulated inside was very great. With regard to the Forage Cap, though it afforded very little protection to the side of the head, it was better adapted for preventing any accumulation of heat inside than the Chaco; owing not only to the thickness of the material, and the top being rough instead of smooth and polished as in the case of the Chaco, but also to there being no large space about the head. To this cause is owing the negative result of the experiment on the Infantry Forage Cap;—but owing to the fineness of the cloth of the Artillery Forage Cap, and its presenting a larger surface to the sun, the temperature inside was comparatively higher.

Infantry Coatee.

Made of thick strong woollen red cloth, and formed so as to fit the body and arms tightly, and not at all adapted to a free motion of the body without causing excessive perspiration, and great debility, when worn for any time, exposed to the influence of a tropical sun, or exalted degree of atmospheric temperature.

No. 1. *Experiment.*

Date, 15th April, 1852.
Hour of the day, 11 o'clock, A. M.
Thermometer in shade 87. °

Placed a Thermometer within a fold of the red cloth of which the Coatee and shell Jacket are made, and exposed it to the full influence of the sun's rays; in a ½ of an hour, it rose to 128 ° and in 10 minutes afterwards to 132. °

No. 2. *Experiment.*

Hour of the day, 12 o'clock.
Thermometer in shade 87 °
Repeated the experiment on the red cloth: result 117.5.

No. 3. *Experiment.*

Date, 23rd March, 1852.
Hour of the day, 12 o'clock noon.
Thermometer in the shade 85.5 °

Placed a Thermometer inside the breast part of a Coatee whilst worn by a man standing exposed to the full influence of the sun.

In 34 minutes, observed the Thermometer stand at 117 °. the man complained of his skin perspiring very freely and that his shirt felt as if sticking to his back, and lastly a sensation of sickness.

Royal Artillery Coatee.

Is composed of thick strong woollen cloth of dark blue colour, thickly lined with a woollen lining, formed so as to fit the body and arms tightly and not at all adapted to the free motion of the body, without causing excessive perspiration and great debility, as in the infantry Coatee, when worn for a time exposed to the influence of a tropical sun or exalted degree of atmospheric temperature.

No. 1. *Experiment.*

Date, 16th April, 1852.
Hour of the day, 12 o'clock, noon.
Temperature in the shade 87 °

Placed a Thermometer underneath the breast part of a Coatee, exposed to the full influence of the sun's rays.

1*st Observation.*

Made after the lapse of a ¼ of an hour, Thermometer 106 °, after the lapse of another ¼ of an hour, placed a Thermometer on the outside of the Coatee as well as inside.

2*nd Observation.*

Outside—112 °
Inside—114 °

3rd Observation.
Outside—114 °
Inside—116 °

4th Observation.
Outside—123. °
Inside—130. °

5th Observation.
Outside—123. °
Inside—135. °

The difference between the two Thermometers is partly owing to the action of the currents of cool air on the bulb of the outside Thermometer, which was exposed to the passing breeze as well as to the sun's rays.

White Shell Jacket

The White Shell Jacket, is composed of white cotton Drill made much in the shape of the ordinary Shell Jacket, and worn buttoned up, but fitting the body much looser and better adapted for free exercise.

Experiment.

Date, 15th April, 1852.
Hour of the day, 11 o'clock, A. M.
Thermometer in shade 88. °

Placed a Thermometer in the sleeve of a white Jacket and allowed it to remain exposed to the sun's rays for 10 minutes, it was found to reach 110 degrees; subsequent observations however, showed great variations in the height of the Thermometer, which was owing to the thinness of the material and the great readiness with which it allowed the cooling breeze to alter the temperature.

Infantry Trowsers.

Made of black woollen cloth of rather thick texture, made to fit tightly about the body, but somewhat loosely

about the legs, not very well adapted for quick active motion in a tropical country.

No. 1. Experiment.

Date, 15th April, 1852.
Hour of the day, 1 o'clock, P. M.
Thermometer in shade 88.25. °

Placed a Thermometer within a fold of the black cloth of which the Soldier's Trowsers is made and after the lapse of a ¼ of an hour, observed it rise to 132 degrees.

No. 2. Experiment.

Date, 16th April, 1852.
Hour of the day, 12 o'clock, noon.
Thermometer in shade 87. °

Placed a Thermometer as before; in a ¼ of an hour observed it rise to 130.4. °

Artillery Full Dress Cloth Trowsers.

Made of thick, strong, unyielding, dark, blue, woollen cloth, and made to fit the body and legs rather tightly, and ill adapted for free motion.

Experiment.

Date, April 16, 1852.
Hour of the day, 12 o'clock, noon.
Thermometer in shade 87. °

Placed a Thermometer in the fold of the Trowsers and exposed it to the sun's rays; on making the first observation after the lapse of a ¼ of an hour, the Thermometer was observed to be at 120.4. °

2nd Observation after another ¼ of an hour, 123.4

Artillery Light Trowsers.

Made of a much thinner texture, but of the same dark blue woollen material as the former, but its make is much looser, and more favourable to a freeer exercise of the lower extremities.

Experiment.

Date, 16th April, 1852.

Hour of the day, 12 o'clock, noon.

Thermometer in shade 87. °

Placed a Thermometer in the fold of the trowsers and exposed it to the sun's rays; first observation made after the lapse of a ½ of an hour, the Thermometer stood at 124.2 ° the second observation after the lapse of another ½ of an hour the Thermometer stood at 122.2. ° This experiment shows by the difference of 2 °, between the first and second observations, that a thinner material enabled the Thermometer, which was placed inside the Trowsers to be speedily acted upon by the passing breeze.

INFANTRY AMMUNITION BOOTS

Made of a thick and black strong leather, are well adapted for use in wet weather and at night, but owing to their black colour they cause very much inconvenience and suffering from heat, when exposed to the direct influence of the sun. An experiment was performed with a view of ascertaining the exact amount of temperature, by placing a Thermometer inside an ammunition boot and leaving it exposed to the direct influence of the sun's rays, but owing to the large space afforded by the inside of the boot, and the thick and unexposed sole, it was impossible without the lapse of a considerable time to raise the Thermometer above 110 °, but when it is worn on the foot it is otherwise, the black heat-absorbing surface of the boot soon raises the temperature to an almost unindurable height.

ARTILLERY BOOTS.

These are made differently from the infantry ones, having large tops much in the shape of Wellington Boots, and are not at all adapted for service in a tropical climate, being heavier and being circumstanced as regards heat the same as the Infantry ammunition boot.

The foregoing experiments were performed at the Observatory, lately established under the auspices of the Head of the Department of Royal Engineers; and the accurate Instruments, used there for Thermometrical Observations on the Climate, were employed in conducting each experiment here enumerated, which had the able assistance of the Superintendent of the Observatory, Lieut. SCHAW, of the Royal Engineers, which combined with my own observations, affords sufficient guarantee of accurate record, so essential in conducting experiments of this kind.

With the view of ascertaining the feelings Soldiers experience in the performance of their duties, clothed in the manner they are at present, a few enquiries were made, from whence it was ascertained, that men on duty, such as Guards, Patroles, Sentrys or Parades, suffer very much from wearing the woollen clothes they are now supplied with. At night especially, when on Sentry they prespire so profusely, that towards morning, their clothes, Shirt, Coatee and Trowsers, are all wet; the consequence is that when relieved, they feel very much exhausted and seek Beer or Arrack, or cold water to relieve their thirst and feeling of exhaustion. They suffer very severely, when Paraded for General Inspection in the Barrack Square in full Marching Order, as they are each half year, when they remain for about an hour, under the direct influence of a Tropical Sun, usually at 11 o'clock in the day, an hour at which the Sun's heat is almost at its maximum.—not only are the Coatees and Shirts completely saturated with perspiration but their belts also become wet, the consequence of which is, that immediately after the Inspection is over, and it is the same after any other active duty, the men rush into their Barrack room,—take off their accoutrements and wet clothes, and seek Cold Water, Arrack or Beer, to resuscitate themselves;—and though it may be a difficult matter to ascertain with accuracy, that such a practice, in this climate,

is productive of any acute inflammatory disease, it nevertheless must materially assist in producing debility, and general liability to attacks of illness,—moreover intemperance the great source of a Soldier's demoralization, and that which most effectually assists the naturally enervating influence of a Tropical climate, in giving rise to the worn out and exhausted *tropical appearance*, that the Soldier generally presents on his return home, after a long period of service in such Latitudes, in this manner receives its greatest impetus.

Suggestions for an improved method of Infantry dress.

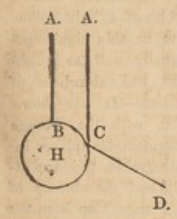
In suggesting what would be a better method of dressing European Troops serving in a Tropical Country, I do not pretend to any originality of design in recommending the adoption of the Helmet—a loose fitting Frock coat, and trowsers, or even white boots, instead of the uniform now in use, * but if any change is to be made the foregoing experiments, and allusion to the effects of Solar Heat in reference to the several articles experimented on—particularly its accumulation in the vacant space of the Chaco, must, on Philosophical principles at all events, serve as useful guides in any improvements that might be contemplated—Thus in selecting materials for a Military Uniform to be worn in the Tropics, the relation of its colour, as well as texture to Solar Heat must be borne in mind—and form also being subject to the influences of Heat, besides being capable of interfering with free muscular motion of the body, deserves as much consideration, as any precaution against rain.

Let the Head dress be first considered, in its relation to the foregoing observations—It was shown in the experiments on the chaco that the temperature in the large body of the Cylinder was much higher than the temperatnre externally,

* Vide: an article in the United Service Magazine September and October, 1851 by Lieut. Colonel E. Napier, entitled "Proposed alterations in our Military dress, arms, and equipments."

thus showing that large unoccupied spaces were favourable to the *accumulation* of Heat, at least such was the result of the experiments recorded. With this in view not much space should be allowed to intervene between the head and its external covering, but that there should be a small interval is obvious enough, as a means of ventilation.

A round globular shape would answer best, by presenting the smallest surface for absorption of Solar rays, this can be explained on Philosophical principles, thus Solar rays always proceeding in right and parallel lines—can only strike vertically upon one point of the surface of a convex body i. e. the point directly opposite the source from whence heat emanates—the other rays striking outside this point on the round surface, must strike it at an angle more or less acute, and consequently they will be immediately reflected: thus let A. A. be two vertical rays proceeding from the Sun, one strikes H. at B., the other at C., the point B. being vertically opposite to the Sun, any rays (A. B.) falling on it, will be absorbed,—whilst those striking H. at C., such as (A. C.) are reflected off in the direction of D.—now let H. be a flat surface of several inches in extent, such as the top of a chaco—all rays falling on it will be absorbed and none reflected—hence its greater heat.



The Head dress would require a peak before to protect the eyes from glare, and a projection over the ears to protect the temples, no less than a peak behind to prevent the rain from decending down the back—These requirements lead us at once to the shape of the Helmet of the ancient Roman and Greek warriors, who fought at and garrisoned, a station so far South in Africa as the first Cataract of the

Nile—besides many places in Asia, where solar heat was, at times, not inferior to what the British Army is now contending against, in their more Southern Conquests.

Let us suppose one of these Helmets now before us, how admirably is it not shaped for resisting heat?—no vacant space inside—therefore heat does not accumulate; plenty of shade for the eyes, temples, and back of the head, and a ready means for ventilation in the ornament at the top, therefore no sensation of "Hot water" or danger of *coup de soleil*,—its material and colour, were that of polished Brass or Steel or Iron. when worn by our ancestors in arms, with them, as it was an object that it should resist the arrow and stone cast by the sling, or the heavy Sword cut, it was strong and heavy, but as it is impossible to construct a wearable head dress strong enough to resist the missiles of modern warfare, it need not be made thick or heavy for us; it may be much lighter than that of the Romans or Greeks;—but it should be of a light colour and polished;—a felt base painted white or thin highly polished Steel or Brass, would answer equally well, as polished Metals are excellent reflectors and bad absorbers of Heat:—So much for a substitute for the chaco—It was shown in the foregoing list of experiments that with the Forage Cap now in use, no change in the Thermometer placed inside when exposed to the Sun, was observable, this was attributed to the thickness of the material and the absence of the vacant space, but still when the Forage Cap is on the head of the wearer it can be easily seen how badly protected are the temples, and back of the head. As it is an object that the material of which the forage cap is made should be soft and pliant to admit of being easily packed, a white cotton cover with a small projecting ridge at its lower margin, might make the cap now in use answer perhaps sufficiently well.

That an alteration in the form, colour, and material of the Coatee, is as necessary as in the case of the Head dress there

can no longer be any doubt, when reference is made to the foregoing experiments. In a climate where winter is excessively cold at times, warm clothing of thick and heavy woollen materials is absolutely necessary, but in a climate where the temperature is seldom so low as 74°, a looser, thinner, and consequently cooler style of dress ought to be substituted. With the dress now in use it could not be expected otherwise than that it should be productive of much exhaustion and debility to the wearer—on this account a light coloured, loose fitting Frock Coat, the material of which might be a thin woolen cloth, or Cotton, would be all that is desirable, but as the superiority of the Frock coat has been dwelt upon by able authorities long since—it only rests with me to support the recommendation on sanitary grounds. *

Of the Trowsers there is not much to be said, as the white cotton ones now in use answer very well for duty by day, being loose, thin, and light in material. A thinner cloth trowsers, of a light woollen material and grey colour, would be preferable at night and also serve for use in wet weather.

It has been shown how much men suffer from wearing black boots,—which amounts to absolute torture at times. It would afford great relief therefore if theywere made of untanned leather or coloured white with pipe clay. In the latter case there would be no absorption of heat;—with regard to their shape those of the Infantry appear to be the best.

With such an alteration in the Soldier's Uniform, as is here recommended, there would be little difficulty in parading,

* To give an idea of the impression that the tight fitting uniform of our Troops made upon the minds of the Chinese, during the war, it is stated, that the "Emperor was assured that the English Soldiers were buttoned up so tight, that, if once down they could never rise again"—an assurance not altogether undeserving of consideration however amusing it may be when the circumstances, under which it was given are taken into account.
Vide, "China, during the war and since the peace" by Sir John F. Davis, Bar., F. R. S.—1852.

standing Sentry, or performing the most arduous duty, he is ever called on to do, under the hottest Sun—in short he would be capable of performing his duty with comparative safety, whereas under present circumstances he is liable to great risk.

At night it would be desirable that the Soldier should have a warmer clothing than in the day time, his Jacket should be of a woollen material, but at the same time fitting loosely, and his Trowsers should be woollen also, but much lighter and thinner in texture than that in present use. This dress would serve till 6 o'clock A. M. when it could be changed for a light cotton one, which could give place, at Sun down, to the woolen dress, to be worn throughout the night.—Much should depend upon the state of the weather, as to whether cotton or woollen dress should be worn, as some days and nights are cloudy, rainy or comparatively cold even in this climate—His leather stock might also be dispensed with at night, much to his comfort.*

To conclude, it is my firm conviction, that not only would Intemperance and disease be greatly diminished by an improvement in the present material and make of the Soldier's Uniform, but his general health and greater efficiency would in the end be greatly promoted.

* The 15th Regiment are in the habit of wearing the Cloth Shell Jacket or Coatee, when on Sentry at night and dispensing with the Great Coat unless the weather be wet—Whereas the 37th Regiment use the Great Coat without shell Jacket or coatee.—Since the arrival of Major General Bainbrigg as Commander of the Forces in Ceylon, the men are relieved from wearing the Coatee, when on Sentry by day, or appearing in heavy marching order at Guard mounting once or twice a week;—instead of the Coatee, the white cotton shell jacket is substituted, much to the relief of the wearers. But the chaco the most unphilosophical of all head dresses, is still worn, though for a time it also had given place to the cooler forage cap.

This Table is to shew the degree in which contributed to the general amount of Sickness and Mo[rtality] during the period of 6 years and 2½ months, from 16th Ma[rch] to 31st March 1846 inclusive, in His Majesty's 15th Regi[ment].

Years ending 31st March	From 16th Jan. to 31st March 1846		184[5] & 52		Total.	
Average strength	628		[6]12*			
Admissions	305		[1]91		5526	
Deaths in Hospital	4		23		158	
Principal classes of Disease.	Admitted	Died.	Admitted	Died.	Admitted	Died.
Fevers	46	...	31[1]	4	838	10
Disease of Lungs	50	1	8[4]	5	561	26
do. Liver	...	...	1[1]	3	147	15
do. Stomach & Bowels	144	1	36[8]	8	1813	67
Cholera	3	2	3[5]	...	57	25
All other Diseases	62	...	35[7]	3	2110	15
Corresponding Total	305	4	116[6]	23	5526	158

* ...dy average.

standing Sentry, or performing the most arduous duty, he is ever called on to do, under the hottest Sun—in short he would be capable of performing his duty with comparative safety, whereas under present circumstances he is liable to great risk.

At night it would be desirable that the Soldier should have a warmer clothing than in the day time, his Jacket should be of a woollen material, but at the same time fitting loosely, and his Trowsers should be woollen also, but much lighter and thinner in texture than that in present use. This dress would serve till 6 o'clock A. M. when it could be changed for a light cotton one, which could give place, at Sun down, to the woolen dress, to be worn throughout the night.—Much should depend upon the state of the weather, as to whether cotton or woollen dress should be worn, as some days and nights are cloudy, rainy or comparatively cold even in this climate—His leather stock might also be dispensed with at night, much to his comfort.*

To conclude, it is my firm conviction, that not only would Intemperance and disease be greatly diminished by an improvement in the present material and make of the Soldier's Uniform, but his general health and greater efficiency would in the end be greatly promoted.

* The 15th Regiment are in the habit of wearing the Cloth Shell Jacket or Coatee, when on Sentry at night and dispensing with the Great Coat unless the weather be wet—Whereas the 37th Regiment use the Great Coat without shell Jacket or coatee.—Since the arrival of Major General Bainbrigg as Commander of the Forces in Ceylon, the men are relieved from wearing the Coatee, when on Sentry by day, or appearing in heavy marching order at Guard mounting once or twice a week;—instead of the Coatee, the white cotton shell jacket is substituted, much to the relief of the wearers. But the chaco the most unphilosophical of all head dresses, is still worn, though for a time it also had given place to the cooler forage cap.

APPENDIX A.

This Table is to shew the degree in which each of the principal classes of Disease has contributed to the general amount of Sickness and Mortality, not only for each year, but also for the period of 6 years and 2½ months, from 16th January 1846 to 31st March 1852 in Her Majesty's 15th Regiment of Foot serving in Ceylon.

Years ending 31st March	From 16th Jan. to 31st March 1846		1846 & 7		1847 & 8		1848 & 9		1849 & 50		1850 & 51		1851 & 52		Total.	
Average strength	628		614		580 7/12		586½		587⅓		614		609 5/12*			
Admissions.....	305		1166		338		781		712		723		1001		5526	
Deaths in Hospital.....	4		53		39		19		7		13		23		158	
Principal classes of Disease.	Admitted	Died.	Admitted	Died.	Admitted	Died.	Admitted	Died.	Admitted	Died.	Admitted	Died.	Admitted	Died.	Admitted	Died.
Fevers.....	46	...	311	1	64	1	60	...	93	3	66	1	198	4	838	10
Disease of Lungs	50	1	84	9	75	8	96	1	77	...	104	2	75	5	561	26
do. Liver	...	...	11	4	19	4	11	2	18	...	26	2	62	3	147	15
do. Stomach & Bowels..	144	1	368	15	433	22	279	13	163	3	169	5	257	8	1813	67
Cholera	3	2	35	21	17	2	...	...	...	...	1	...	1	...	57	25
All other Diseases	62	...	357	3	230	2	325	3	361	1	357	3	408	3	2110	15
Corresponding Total.....	305	4	1166	53	838	39	781	19	712	7	723	13	1001	23	5526	158

*Or 601 53/72 yearly average.

APPENDIX A.

The following comparative Statement will shew the difference between the results of the present period and those of the statistical accounts of former periods experienced by White Troops in Ceylon.

Classes of Disease.	RATES PER 1,000		RATES PER 601·8		PROPORTION OF DEATHS TO TREATED.	
	Statistical Report for 20 years.		for 6 years and 2½ months.		Statistical Report for 20 years.	For 6 years and 2½ months.
	Eng. and Canada.		Ceylon.			
	Admitted.	Died.	Admitted.	Died.		
Fevers	485	24.6	198.62	2.37	1 to 20	1 to 83 8/10
Disease of Lungs	70	4.1	132.96	6.16	1 to 17	1 to 21 15/26
—— of Liver	55	4.9	34.84	3.55	1 to 11	1 to 9 12/15
—— of Stomach and Bowels	358	24.2	429.72	15.88	1 to 15	1 to 27 4/67
Cholera	18	6.	13.51	5.92	1 to 3	1 to 2 7/25

A separate Table of Dysentery shewing the admission and proportion of Deaths during the above period, viz., from 16th January 1846 to 31st March 1852.

Years.	*Disease.*	*No of Admissions.*	*No of Deaths.*	*Proportion of Deaths to No. treated.*
From 16th January to 31st March 1846.	Dysenteria Acuta	5	1	1 to 5
	—— Chronica	1	...	...
1846 and 7	Dysenteria Acuta	70	14	1 to 5
	—— Chronica	7	...	...
1847 and 8	Dysenteria Acuta	82	9	1 to 9
	—— Chronica	16	6	1 to 3
1848 and 9	Dysenteria Acuta	49	7	1 to 7
	—— Chronica	16	...	...
1849 and 50	Dysenteria Acuta	41	...	...
	—— Chronica	24	2	1 to 12
1850 and 51	Dysenteria Acuta	45	2	1 to 22
	—— Chronica	8	...	...
1851 and 52	Dysenteria Acuta	41	6	1 to 6·8
	—— Chronica	14	1	1 to 14
General Total		419	48	

APPENDIX B.

Day of the Month.	April 1852.				May 1852.				June 1852.			
	Temperature.		Greatest in 24 Hours.	Lowest in 24 Hours	Temperature.		Maximum.	Minimum.	Temperature.		Maximum.	Minimum.
	9½ A. M.	3½ P. M.			9½ A. M.	3½ P. M.			9½ A. M.	3½ P. M.		
1	.....	86.5 °	.....	.....	82.1	84.5	.....	77.4	84.0	85.0 °	84.0 °	78.5 °
2	.....	88.5	87.5	76.5	.....	.....	84.0	.....	79.5	82.5	85.5	76.5
3	85.7	87.0	88 ,,	76.5	78.2	81.0	86.2	75.6	82.8	85.0	84.0	76.6
4	.....	.....	.....	.....	78.8	79.5	81.2	76.6	75.5	83.0	85.5	81.7
5	87.3	89.5	88.1	75.5	82.0	85.6	82.0	76.6	84.5	84.0	84.0	78.6
6	87.6	88.5	89.5	76.2	86.8	87.0	86.0	80.0	.....	.....	84.5	.....
7	84.7	88.4	87.4	76.5	87.8	81.1	87.5	80.0	74.5	82.0	.....	73.1
8	87.3	88.5	87.8	77.0	85.2	84.5	86.5	78.1	83.4	82.0	83.4	74.4
9	.....	90.0	.....	78.0	.....	.....	86.0	.....	84.5	84.2	84.5	81.0
10	88.2	88.8	89.0	77.0	85.0	83.1	.....	76.1	83.2	83.0	84.5	77.1
11	.....	.....	.....	.....	84.2	85.0	85.5	78.6	80.0	84.0	83.0	79.9
12	87.5	89.5	89.5	74.0	84.8	85.0	85.0	83.2	84.3	85.0	84.3	80.1
13	87.5	88.3	89.4	75.0	83.8	83.8	85.0	80.1	.....	.....	85.0	.....
14	.....	88.2	88.2	75.6	84.5	85.1	84.8	81.7	83.5	82.7	.....	78.6
15	86.5	87.5	88.1	73.0	84.5	85.0	85.2	78.5	81.7	.....	84.0	80.1
16	84.8	87.1	88.0	.....	.....	.....	85.5	.....	83.2	79.2	83.2	77.1
17	86.0	86.8	86.3	75.8	82.1	83.3	85.0	75.6	83.0	83.1	83.2	77.6
18	85.3	.....	86.3	.....	84.5	84.7	83.3	80.3	84.0	84.2	84.0	80.7
19	85.0	88.3	.....	76.0	83.3	84.0	86.0	80.1	84.5	84.0	85.0	81.0
20	88.1	89.0	89.0	76.4	82.5	83.8	84.5	.....	.....	83.0	84.5	.....
21	.....	89.5	89.5	78.6	82.0	81.0	86.2	80.1	83.0	83.0	86.5	80.5
22	.....	88.5	.....	.....	84.1	82.2	84.1	75.0	84.2	85.1	83.5	80.5
23	87.5	85.5	.....	... ..	.....	.....	85.1	.....	84.8	84.5	85.1	80.9
24	.....	88.5	88.5	75.0	82.8	84.8	.... .	77.0	83.3	85.0	85.0	80.6
25	.....	.....	.....	.....	85.2	86.3	.....	80.8	84.1	86.1	85.0	80.8
26	85.1	86.5	.....	75.5	85.0	82.8	86.3	82.2	83.5	84.3	86.1	80.6
27	84.9	87.5	.... .	74.8	82.2	82.5	85.0	80.6	.....	.....	84.5	.....
28	84.0	87.0	.....	74.0	81.3	82.0	84.0	77.6	84.1	84.6	.....	80.2
29	88.8	86.0	.....	74·5	83.5	85.5	84.0	78.4	84.2	85.5	86.1	80.7
30	83.0	84.5	86.5	73.8	.....	.....	84.0	.....	85.0	85.5	86.0	80.8
31	.....	.....	.....	.....	81.0	83.0	84.0	77.0				

Maxm. Temp: for the Mo 90	Maxm. Temp : for the Mo. 87.4	Maxm. Temp : for the Mo. 86.5
Minm. .....do. .....do. 73.8	Minm. .....do. .....do. 75.0	Minm ....do. ....do. 73.1
Mean Temperature 81.8	Mean .....do. .....do. 81.7	Mean. ....do. ....do. 81.6

APPENDIX C.

Table shewing the mode of dress worn in relation to the nature of the duty and the Temperature of the hour of the day it is performed at.

Temperature of the day observed during hourly observations.	Nature of the duty.	Dress worn on each occasion.
5 to 6 o'clock A. M. 80	*Sentry.* No duty. *Guard Mounting.*	When on Sentry the dress worn by day consisted of red cloth shell Jacket—white cotton Trowsers and Forage Cap. Sundays, Mondays and Thursdays excepted, when it consisted of Coatee, white Trowsers, and Chaco. Vide: note at foot of page 16. The dress worn by night consisted of red cloth shell Jacket, cloth Trowsers and Forage Cap. Sunday, Monday and Thursday nights excepted, when it consisted of Coatee, cloth Trowsers and Chaco. The dress worn at Church Parade on Sundays consisted of Coatee, white Trowsers and Chaco. The dress worn at morning and evening Regimental Drill and fatigue duty consists of white cotton shell Jacket and Trowsers with Forage Cap. The dress worn at Breakfast and Dinner is also white cotton:—Jackets open and no Stock. When in Barracks at no duty men go about in shirt sleeves.
6 to 7 do. do. 81	Set up Drill. *Sentry.*	
7 to 8 do. do. 81	Church on Sunday. *Sentry.*	
8 to 9 do. do. 82	Breakfast. *Sentry.*	
9 to 10 do. do. 83	*Sentry.*	
10 to 11 do. do. 83	Church Parade. Officers Inspection. *Sentry.*	
11 to 12 do. do. 84	*Sentry.*	
12 to 1 do. P. M. 84	*Sentry.*	
1 to 2 do. do. 84	Dinner. *Sentry.*	
2 to 3 do. do. 83	*Sentry.*	
3 to 4 do. do. 83	*Sentry.*	
4 to 5 do. do. 82	*Sentry.*	
5 to 6 do. do. 82	*Drill.* *Sentry.*	
6 to 7 do. do. 81		

On Sunday, Monday, and Thursday, Guard Mount in Chacos and Coatees, on Thursday with Knapsacks, the remaining days Padded Gr. Coats.

From 3 to 4 o'clock A. M. the Ther. is generally at its lowest.

BLACKWOOD'S

EDINBURGH MAGAZINE.

No. CCCCLXXIV. APRIL, 1855. Vol. LXXVII.

HOW TO DRESS HIM.

[Long before public attention was called to the subject by public calamity, most of those who had a familiar knowledge of the soldier, his wants and habits, must have been painfully conscious of the many defects in our military system. The following remarks were written with the intent of exposing one—the clothing iniquity. The completion of the design was interrupted by the commencement of war. The pen was thrown aside for the sword—other duties demanded my attention, and the project slumbered between the boards of a portfolio. The events which have since proved the truth of these remarks, have given additional interest and importance to the evils they denounce, and the changes they advocate: what was once expedient has now become a necessity. I have therefore sent them forth without altering their original prophetic character. They were written with an apprehension that our system would break down under trial, but with no anticipation that the evils it might produce would be so terrible. Dread realities have outstripped theory. Fearfully has the system been illustrated in the first campaign! Fearfully verified has been the remark, that bad clothing and a bad commissariat were ever more fatal to the British soldier than the enemies he met in battle! May the dread experiences he has furnished, and the many voices raised in his behalf, be not in vain.]

CHAPTER I.

How to dress him? Start not, shade of Mistress Glasse! no sacrilegious foot is treading o'er thine ashes. Let not those fierce moustaches which adorn thy face, O Alexis Soyer!—as depicted on the labels of sauce and relish—bristle up as at the approach of some invader of thy gastronome empire. No revolution is threatened to thy realm—no revolution in stews and stew-pans, spits and roasts. It is no hare, first to be caught, then paunched, seethed, and basted—no fat capon, to undergo a series of trussing and larding, that we would dress. The object of our dressing is beyond and above thine art—respected and respectable as it is—O venerable Glasse! O redoubted Soyer! It is a man—a man, too, of the class which has, perhaps, among all the vocations, won most honour and attracted most notice since the world's beginning. Yes; the soldier certainly stands prominent in the world's panorama. Princes have petted him—poets have rhapsodised him—historians flattered, beauty smiled upon him. In respect of the world's estimation he has nought to complain of. The world has used him well; but it has taken it out of him in the dressing. The

man whom the world has ever delighted to honour, the world has ever delighted in disfiguring and encumbering. It has seemed to say, "Go forth and fight. Come back victorious, and honours shall be showered upon you—feasts shall be spread for you—bright eyes shall flash on you—minstrels shall sing of you. Your name shall be in our mouths—your statue in our public haunts; but we must be allowed to panoply you according to our own will and our own fashion. We will decorate and distinguish you among citizens; but your garb must be after our own devices. You may wear the Waterloo medal on the breast, but there must be the Albert shako on the head." Such is the balance which has ever been struck. Each age has honoured the soldier—has either feared or caressed him; but each has, also, either dressed him like a clown, weighted him like a pack-horse, or straitened him like a maniac.

There have been lucid intervals when the world has had gleams of wisdom on this subject. Those intervals are most frequent in which he has dressed picturesquely to please the eye; rare enough those in which he has been equipped with a fitness for his work. Ever and anon some great soldier or practical warrior age has cast off the trammels of conventionality, and sent forth the soldier armed and arrayed for the development of his strength and courage in their fulness. But these have been rare—rare as the great men and the great ages who have swept away the other cobwebs which the world is for weaving betwixt their advents. What a gallery of caricatures would be the portraits of all the soldier costumes which man has originated! What a succession of all that is vile in invention, or useless in practice! How we of the nineteenth century;—we, the foremost in the files of time—should laugh at them! What Guys! How the practical man would point at the quilted jackets and the overlaid steel-plates; and yet, O enlightenment of this day! there is another figure to follow. It is that of a man with a hat on his head, hard and inflexible as iron, and gainly as an inverted stew-pan; with a coat of brick-dust colour, tight in the chest, short in the waist, and adorned with swallow tails; with a leather band round his neck; with little, narrow straps pressing on all his muscles and fettering his limbs; with coarse unbending trousers and shapeless boots. This man belongs to thee and thine age of practical wisdom; and perhaps coming generations may deem the last worse than the first. There certainly have been especial delusions, which the world has hugged with besotted fondness age after age; and this is one of them—this dressing of the soldier with regard to fancy, fashion, defence, appearance, anything rather than with regard to the work he has to do. The work he has to do and his means of doing it seem seldom to have formed elements in the art of dressing him. Sometimes the delusion has taken one shape, sometimes another. Now it shows itself in tricking out the soldier like a popinjay—now in encasing him like a tortoise. One or the other he has ever been doomed to be—a mass of feathers, frippery, and particolors, or a living form within a dead shell of iron, steel, or brass.

In the early developments of savage life, the first warrior race were, of necessity, confined to their skins, tunics, or even more simple adornment. Success or defeat, however, soon brought innovation. If swept back by the superior discipline of a more advanced people, they would, in their repeated struggles, mix up with their lessons of defeat an imitation of the garb, as well as of the arms and organisation of the conquerors. If victors, the barbaric eye and barbaric taste could not resist the show and pretence of ornamental or defensive panoply; and the men who had triumphed over some enervated race by their free unfettered strength and unencumbered energy, were soon eager to immure their vigour within iron casings, or to bedeck it with gewgaws. The Goth was readily caught by Prætorian splendour. The Norman harness soon glittered below the turban of the Moor.

Progress in military science, or martial glory, seems ever to have generated the idea that the soldier was to be made fire-proof, sword-proof, bullet-proof—to be turned into a little movable fortress. The principle of assault was sacrificed to that of defence. The power of movement, endurance, and effective action, was overlooked and overlaid by the study of protection.

Even the clear-headed Greek, who was always conscious of the effect of rapid movement, had great faith in defensive armour. The shield was more sacred to him than the sword. The soldier with him, as with us, was a costly material; and he thought to preserve and make the most of him by shielding his body. When campaigns were short, and the soldier's services seldom continuous, this idea was not so irrational; but in those who have a life-interest in him, it seems very madness to waste a third of his strength and energies in weight and cumber. Strange as this delusion was, still stranger is the tenacity with which nations have clung to the defensive form, after the defensive principle has been exploded. Gunpowder upset helmet, steel hat, and morion; but, as cumberers of the head and deadeners of the brain, they have still a representative in the modern shako.

So strong is the connection betwixt the human mind and this delusion, that even the most practical age has not had courage enough to cast it off; and so the poor soldier has gone down through all time masquerading in motley, or sweating out his strength and patience under his heavy burdens. Will it be otherwise in our day? Will it be the honour of our age to cast it off? We doubt—we fear not. This is a wondrous age for condemning, but not for executing. How many abuses have been haled forth to light; judged by public opinion, sentenced, and doomed to death; and yet they live. The way from the dock to the gibbet with them is long. They drag on from reprieve to reprieve, until the dread of annihilation becomes more and more shadowy, and they come forth, some like Agag, delicately, hoping the bitterness of death is past; others standing up bold and defiant, daring the world. And there is no one to hew them in pieces or tread them down. Among the many desperate culprits thus arraigned, the abuse of the soldier's apparel may seem a minor one. It affects not the welfare of the commonweal; has no general bearing, apparently, on the welfare of the people: but it may affect the future efficiency of our armies; it may turn the scale of a well-poised battle-field. It will, as it has done before, in coming struggles, break down many a stalwart frame, and bear down many a gallant heart. How many a fine fellow, whose strength would have been felt in the charge, has fallen back, crippled and footsore, to the hospital, from his heavy misshapen boot! How many a stout recruit, whose heart was with his comrades in the battle, has dropped down by the roadside, wayworn and exhausted, by the ill-poised knapsack and lumbering shako! Yet all these things are now—even now, when war is lowering darkly and heavily before us.

Of all abuses, it seems the easiest to be rid of. There are no vested interests to suffer—no opposition—no prejudices to be encountered, save those offered by clothiers, contractors, and superannuated buffsticks. The thing has been written about, talked about—opinions have been taken—committees have sat—a stroke of the pen alone seems enough to finish the matter; and yet, year after year, out come the old brick-dust coat, the infernal shako, and all the paraphernalia unaltered, unamended. Alas for our practical wisdom!—alas for our common sense!—when we are not equal to the petty task of dressing the soldier fitly for his work! What wonder is it that Chancery iniquities and charitable trusts hold their own, when such a petty abuse as this can laugh at our beard!

How, then, shall we dress him?

Does the past offer no suggestions? In its long roll of warrior races and war experiences can there be found no standard—no model? Has man been warring ever since the Fall, without discovering the best dress in which to fight? It would seem so. The history of military costume is wonderfully complete and continuous; it passes before us in almost perfect diaramic order. Each age has its own portraiture. Many are the warnings, few the lessons, portrayed therein.

One error runs through all, like the likeness in a gallery of family portraits.

The Arab exhibits before us the simple stage of military dress—little altered, little added to, since the primitive times. Light, loose, soft, and sun-repelling, it suited the man and the climate; and, as was shown when he appeared as conqueror and invader in after ages, it suited well with the light array and rapid movement which enabled him to sweep over nations like the whirlwind of his own desert. He represented the principle that a man's free strength was his best defence.

The walls of Thebes and Nineveh reveal to us how quickly man departed from this first stage. The old Egyptian had some sensible notions on the subject of the soldier's dress. We may laugh at the grotesqueness of the figures in his pictures, but some good hints may be gathered therefrom. He could not wholly resist the attraction of armour, but was wise enough in his generation to know that to burden or hamper the head of a man who has work to do, or toil to undergo, is to throw away half his strength and half his endurance; and that to cover the loins, and protect the seat of so many diseases from cold, chill, or wet, was a grand defensive principle. The Assyrian, again, rejoiced in chariots and horsemen. He delighted in coats-of-mail, iron helmets, large bossed shields, and revelled in the defensive absurdity as deeply as our old Normans themselves.

The Greek—the great hero type—the great author of strategy and tactics—the foot-soldier of antiquity—based his military policy on the maxim, that to preserve a citizen was a first principle of war; and that this was to be carried out by loading him with breastplate, backplate, helmet, and greaves. That this policy was fallacious we have no doubt now. Could it be tested by raising up all those who throughout time have been saved by the defensive principle, and those who have suffered from it, what a host of the halt, the maimed, and the blind, the crushed, the broken, and the sun-stricken, would there be on one side! How few, how very few, we fear, of the saved on the other!

The Roman, too—the man who was pre-eminently the soldier—who accepted the vocation as the destiny of his race—who was born, swaddled, and bred for war—even he, to whom war was a familiar duty and a daily thought, marred the perfection of his system by the self-same error.

From the times of the Republic to the days when Goth, Hun, and Vandal trod him out, the Roman soldier carried a weight which might have crushed a pack-horse. Dearly did he pay the penalty when, in the latter days, his heavily-armed legions were matched against northern vigour and elasticity.

It remained for the Norman to carry the system to the extreme of absurdity. He makes a noble figure, as depicted by romancists and troubadours, in his knightly panoply, with plumed casque, flowing scarf, and glittering shield; but the reality, as we see it in Grose's drawings and the set-up suits in old armouries, is rather grotesque than imposing. Though clothed from head to foot in hauberk, hood, breeches, sabatons, gauntlets, and sleeves of mail, his ingenuity was continually exercised in making impenetrability more impenetrable. Piece was added to piece until the man was lost beneath his armour, and became nothing more than a mechanical mass of metal set in motion on a certain point.

It is strange that the men who begot the noble idea of chivalry, and fostered it into birth, should have clothed it in an outward form so uncongenial and repellant. Strange indeed! that men who spoke of glory as the breath of their nostrils, should seek it, clad from head to heel in impenetrability!

Thus the system dragged on a protracted existence, living unto effeteness, and drawing on the manhood of Europe with it, until the examples of a few great soldier minds, the improvements in the use of gunpowder, and the development of infantry as the arm of war, made the world reject and cast it off for ever.

The Swiss, the fathers of European infantry, taught the first lesson, by showing that the free quick step, and the free strong arm, were better than hauberk or morion, and that the soldier's true defence lay in the free action of his own limbs rather than in plates of iron or links of metal. The Great Captain, who had seen the Swiss in the field, modelled his battalions after them.

Gustavus Adolphus, another maker and modeller of armies, preferred the strength and endurance of the soldier to his impenetrability, lightened his burdens, stripped off his swaddling bands, and then marched and worked him, as he had not been marched and worked for centuries.

The lessons of these great soldiers, and the sharper lessons of experience, woke up mankind at last, and separated them reluctantly from the idea they had clung to for centuries. The system of defensive armour died a natural death at last. It came to its end in England in the time of William the Third, and the Tower became then the limbo of departed steel-pots and cuirasses. There they are now for men to wonder at. The liberation of the foot-soldier from his outwork of metal was complete, but his brethren of the cavalry continue still to bear about with them the relics of the past. A buff coat succeeded, and thus, as old Grose says, when tolling its knell, "defensive armour terminated in the same material with which it began—the skins of animals." The delusion was so far over, and the world was rid of it. Having entombed the substance, however, we still cling to the shadow; having cast off the principle, we still hug the form. The soldier no longer marches under a hundredweight of metal, but he is still a victim to the binding, irritating pressure on head, body, and limbs. The buff-coat era, and the period which followed, seem to have formed a lucid interval in the nation's idea of dressing the soldier. The interval was short. A spirit of change was hovering over the soldier.

About mid-way in the eighteenth century, a great military reformer sprang up, who clothed men, drilled them, and fought battles with them, after a fashion, and according to principles which were never seen or heard of before. Straightway this man, Frederick of Prussia, became the model of soldier-making. The article was henceforth to be manufactured, cut, and fashioned after his pattern. It was eagerly welcomed in England, and being approved of, the system was adopted. It never occurred to its foster-fathers and nursing-mothers to raise the question, whether the Prussian might not have a native aptitude for being buckled in and puffed out—for being half choked, stiffened into a machine, and drilled to the minuteness of an inch, and the Englishman have an antipathy to the same; or whether the dress and system which suited men whose sphere of action lay within an even temperature, would be equally adapted for those who were to serve under every variety of climate and circumstance. Aptitude! adaptability! Nonsense! The system was Procrustean. The man must be fitted to his coat; the coat must suit anywhere and everywhere. Uniformity was the grand principle—the vitality of the system; so it was established; and the edict went forth that the British army was to be Germanised. The soldier was, accordingly, turned over to tailors, and barbers, and drill-sergeants, to work their wicked wills upon; put into a military crucible, and turned out according to pattern; buttoned up, and strapped down; pulled in at the waist, and padded out at the breast; clubbed, pigtailed, and pipeclayed, half throttled by a stock; his arms pinned to his side, and his feet turned out at an angle. The poor fellow, who was rather a swash buckler, a dashing rogue in his old loose coat and *dégagé* neckcloth, must surely have exclaimed, after his transformation, with the little woman in the story, "This is none of I."

Such as he was, he must go forth to mount guard on the scorching rock of Gibraltar, to fight under the burning sun of Hindostan, and thread the wildernesses of America; not a button was to be relaxed, not a drachm of pipe-clay omitted.

With the costume came a system of drill which, like its twin brother, was to be uniform, minute, and complex. How the soldier lived under both, and kept his senses, is past comprehending!

There were two classes to whom the system was a godsend. The men who had just brains and capacity enough to unravel the complexities of drill, and thread the maze of endless ma-

œuvres, but who could never hope to conceive the great thoughts, or comprehend the great principles, of soldiership, caught eagerly at the drill-book. How they could show their ingenuity! They could invent and convert; turn round into square, triangle into oblong—could move and remove, upset and construct figures of men, like the pieces in a Chinese puzzle, and do all with the precision of a stop-watch, and the accuracy of a pace-stick. They had found a sphere for their faculties, and the buffsticks were triumphant! There were others to whom drill was an Eleusinian mystery, but they could measure the distance betwixt buttons, define the set of a pig-tail, the breadth of a coat-tail—could tell the extent to which a stock could be tightened without producing suffocation. What eyes they had for these things! They were lynxes! Let not the desperate delinquent who dared to deviate one inch from the regulation, hope to escape them! They were somebodies now. They, too, had a vocation, and the "pipeclays" were as jubilant as their brethren the "buffsticks."

What petty tyranny grew up under this joint system. We believe the world has suffered more from its petty tyrants and petty tyrannies—has endured more of bitterness and heart-sickness under them, than from all the open oppression and wrong which has been flung upon it. Sure we are that the wearisomeness and worry of detail inflicted by "buffsticks" and "pipeclays" have goaded more soldiers to insubordination, driven them into debauchery, or thrown them into despair, than the most iron-handed despotism ever wielded by martinets.

Under such auspices the system flourished. Petted and fondled by big-wigs, it sunned itself on parades, spread out its glories at reviews, babbled at clubs, and chuckled over the marvellous genius which had made such a perfect machine. The time came, however, when this pretty game of soldiers was to be played on rougher ground. There was rebellion in America. The British soldier must quell it. Of course, 'twas mere moonshine this! The rebels could never stand the sight of the symmetrical array of such a well-buttoned, well-pigtailed army; or, if they did, the display of the most simple of the hundred-and-one manœuvres must awe them into submission. Strangely enough! they not only cared naught for these things, but even presumed to out-march, out-flank, and out-manœuvre the system! Yes: there were the English soldiers buttoned to exactitude—not a pigtail awry—trained to move over a given space in a given time, at a given pace and with a given measure—held in check by men in smock-frocks and blouses, who had never worn a stock or stepped to a pace-stick in their lives. This was incredible. Buffsticism was wonder-stricken. How could it be? The English soldier might have told,—the English soldier, who was eating out his heart with rage and vexation at being fired at from behind hedges by foes whom he was always pursuing and never catching; who would have given his right arm or the best years of his life for one hour's fight, hand to hand; but he seldom had the opportunity. How could it be? He would have pointed, perhaps, to the heavy baggage-trains which must follow his march; to the complicated movements of the system, which was compelled, like the crocodile, to move by certain lines, whilst the enemy went hither and thither as it willed him; to his own hampered, ligatured, swaddled body, and to the free limbs, the free step of his foe; to the clumsy weapon he carried, and to the smart rifle which was dealing such havoc around him; and might have thought that thus it was easy to see how it could be that a force, so hampered, so encumbered, so impeded by precision and fettered by rule, could not cope with the difficulties of such a country, defended, foot by foot, by men who had all the courage of their race, and fought with all the energy of their new life. Many such things he might have said, sadly and bitterly enough, perhaps; but he was never asked. 'Twas his part to go on suffering and toiling, and perhaps he felt a sullen, despondent relief, when the end came, disastrous and inglorious as it was.

Buffstickism played out the game consistently. It never yielded a button or a hair. Out-generaled and beaten, with two armies captured, and scarce ground enough left to move

the rest on, it gave up the game, and retired astonished, but not convinced—beaten, but not repentant. A colony was lost, and the prestige of our soldiership darkened. How could this be? Buffstickism could not account for it. It could not be the fault of the system. It must have been because some other individual Buffstick had not been intrusted with carrying it out.

After this, somehow, there grew up the idea among nations that the Englishman was not naturally fitted for a soldier; that the land was not his sphere of action; that his glory must be sought on the sea. This belief began, like a dark cloud, to creep over the British soldier himself. He, whose forefathers had fought at Cressy and Agincourt, who had done some tough work in the Civil Wars, and had beaten, under Marlborough, the best troops in the world—he not naturally a soldier! He thought it could scarcely be, and yet it seemed so. A dark time was looming before the British army; a great man and a great opportunity could alone avert it. The hour and the man came.

A British army landed, under Arthur Wellesley, in Mondego, on the 5th of August 1808. It was the dawn of the old glory.

A strange inauguration scene took place then, as related by Portuguese peasants, who witnessed the disembarkation. It has almost too much of the ludicrous to be associated with an event so solemn in its consequences, and grand in its results, as that landing; but it is *apropos*.

Before the army advanced there was a general halt, and an order went forth for the instant demolition of the pigtails. The order was ruthlessly obeyed; the pigtails were forthwith struck off, and strewn along the ground. The army marched on. The peasants picked up the relics—so the story goes—and made them into ropes for their water-wheels, which proved so durable that they are in use to this day. If this story had reached the clubs, what dismay and consternation would there have been among the Buffsticks! What dire prognostics would they have uttered for an army fighting without pigtails! What contempt would they have felt for a General who could commit such sacrilege! An army shorn of its pigtails would be like Samson shorn of his locks, and would fall an easy prey to the Philistines. Spite of all, the English soldier soon showed that the old blood ran in his veins; that, under good leadership, there was nothing he dared not, nothing he could not do. The old prestige shone forth again. The feats of "that astonishing infantry" illustrated a grand revival. The tale of glory was grand—the tale of suffering sad enough; the tale of Gazettes made our hearts proud—the tale of the hospitals was little known; the tale of the thousands who filled them, the thousands who had sunk down on the march, or broken up in garrisons.

Bad clothing and a bad commissariat were more fatal than a battle-field. The nation could spare, though it mourned over, those who fell winning victories; but it could ill spare those who groaned out their lives, or left their strength, in hospitals, because the authorities at home could not attend to such trifles as clothing and feeding.

The great Captain did his utmost against the system. He struck down some abuses, modified others; but it was hydra-headed, and he could cut off only one at a time. He remodelled the commissariat, swept away the complicities of manœuvre, and did somewhat towards re-dressing the soldier; but it was little, and in all essentials the British soldier is as inefficiently clad as when he landed in the Peninsula. The war over, the great Captain seemed to consider his functions had ceased. A word from him, and the army would have been clad on new principles; but he never spake it. Some conscientious scruple kept him silent. His captains thought as he thought, and respected what he respected. They had also the natural prejudice in favour of things associated with their victories. Men are very apt to think the machinery with which they have done great things is the best with which they could have been done. When the new musket was introduced, veterans shook their heads, and said "they had seen fine things done with old Brown Bess."

The prejudices of the past, helped by the indifference of the present,

have kept us in the error of our ways. Those who have seen battles won in the scrimped coatee and hard-bound hat, think the same things may be done again, little wotting of the sacrifice of health, the expenditure of material, caused by such apparently trivial means. Those who have no past see a number of stalwart, smart fellows, marching about in our garrisons, and are satisfied. The many who are intrusted with carrying out the system are content to make the best of it, without offering remonstrance or suggestion. Those who could suggest—the practical men—who have tested and tried everything, are unfortunately seldom referred to.

Oh! there is nothing like the Englishman! he has always done his work, and will do it again! Such is the self-sufficient remark with which suggestions of amendment are met. It is true there is nothing like him; but he has never attained his great excellence until the end of a campaign. At its commencement, an English general must contend as much with the accumulated abuses of an imperfect system as with the enemy. He must make his army as well as fight with it—must be a reformer ere he can be a conqueror.

Our neighbours make peace ever a state of preparation for war. They employ a lull in refitting, remodelling, and reorganising—in correcting details, and experimentalising on improvements. We, again, make peace a state of stagnation, of relapse. War once over, we cast it and its requirements from our thoughts. Let things be! they are well enough; they will do for the present, and be amended when the necessity arises.

The reforms in internal economy, and the administrative progress which properly belong to a time of peace, are deferred until war renders them imperative, and are then carried out amid the exigencies of a campaign. Thus it is that a British army never enters on war, except under the disadvantages of a defective organisation and obsolete system.

Our next essay in arms will be by the side of those who were our foes in the last struggle.

The English general who then commands British troops, will find himself at the head of men whom the world cannot match; but he will also find that, in respect of equipment, clothing, and general organisation, his force will be a century behind his allies. He will keep his old reputation in the battle-field; but it must be with toil and suffering that the heavily-armed, heavily-clad, and half-breathed British soldier will keep pace in march or manœuvre with the lightly-equipped and well-trained chasseur. Dress him as rationally, arm him as rationally, exercise him as sensibly, organise him as fitly, and he will hold his own with Chasseur or Zouave.

CHAPTER II.

How shall we dress him? First, let us lay down some principles on which it would seem rational that the system of military dress should be based. These principles seem simple and self-evident. 1st, That the soldier's dress should be suited to his work, and the greatest development of his strength and endurance; 2dly, That it should be capable of affording the utmost possible protection from heat, cold, wet, &c.; 3dly, That it should have a certain adaptability for all circumstances and all climates; 4thly, That it should be comfortable, as far as it could be so consistently with the other requisites.

Does the present dress fulfil these principles? Let us begin with the shako. No word can be raised in favour of its taste. Can anything be said of its utility or comfort? It may have passive supporters, but no friends. It is needless to say aught of its self-evident ugliness. It must have been chosen for its power of disfigurement; perhaps purposely to diminish the attraction of the British soldier. Put it on the head of a man beautiful as an Apollo, and you place him at once on a level with any bystanding John Smith, who may have been left to his own choice of a head-dress. The grenadier cap and Highland bonnet, though more becoming, are almost as objectionable and senseless.

Is it suited to the soldier's work? Such head-dress should be light, soft, incapable of pressure or irritation, of undue action on brain or circulation; but this has a hard, stiff rim, which binds with a rigorous cordon all the delicate parts, vessels, and nerves of the head. How heavy it is, too! and the weight unequally toppled over the forehead! Can any man be supposed to command his strength or depend on his endurance with his brow aching, his nerves twitching, and his head fretted up to fever heat? As for protection—ye gods! how it protects! The ears and sides of the face are left to the tender mercies of wind, rain, sun, or frost, driving hail or drifting sand; but the head—it cares for that? Yes! on the top there is a sun-trap—a cover of hard, black, highly-glazed leather—which attracts most surely a concentration of heat; and in order that none of the collected radiance may be wasted, there is a leather peak poked out in front, to convey slanting rays on nose and cheek-bones. To make the protection complete there is another little bit of leather thrust out behind, to collect the rain, and conduct a little drain down the back.

Adaptability it has none. It is about as adaptable as a coal-scuttle or a wig-block. It admits not of shifting or easement. The soldier cannot wear it on the guard-bed, or when he smokes his pipe under a tree after a day's march, or when he lies down on his bivouac. It cannot be made less cumbrous in Caffraria, less oppressive in Hindostan, or more protective in Canada. It must always be what it is—a monstrous anomaly of felt, brass, and leather. The design of such a thing, especially for a man who was to march, stand, eat, drink, sleep, live in it, was certainly one of the world's phantasies—the retention of it one of its delusions.

Comfort! the word is irony in association with the shako. If the soldier were asked what had been the great embarrassment of his life, he would say—the shako.

For old Brown Bess he has a sort of rough affection. They have journeyed together many a day; he has carried her many a weary mile, and spent some hours in rubbing up her old sides. They have had their ups and downs, their rubs and their bickerings; but there is a comradeship between them. Even the old brick-dust coatee he looks on with a sort of pride. It is his cloth—the garb of his class—the badge which separates him from the citizen. The knapsack is occasionally denounced, but it is not always galling and fretting him. But towards the shako he has a fierce inveteracy. He speaks of it as that —— shako. There is no sociability in it. It is a care, a trouble, an impertinence. It is always in the way or out of the way; always pinching, worrying, tormenting him. It is always astray, and the plague of his life. In a transport it is a daily care, on the march an encumbrance, in the battle a dead-weight, on the bivouac a nuisance.

We have seen the soldier after a long servitude take a sorrowful farewell of Brown Bess; look regretfully on the red rag he had worn so long; then turn round, strip the shako of its ornaments, and give it an indignant kick of dismissal.

As if combustion of the brain and compression of the head were not enough for one poor devil, the system has ingeniously devised for his neck a ligature of leather, thick, hard, and inflexible as iron. Thus it catches all the veins and respiratory vessels in the narrowest compass, and fetters them with a wicked ferocity.

Having thrown an overplus of blood on the already oppressed head, obstructed the breathing, and excoriated the neck, it says to the soldier, "March on, my fine fellow, some hundreds of miles over bad roads, and then you will fight a battle; you have strength and pluck enough for it." So he has, and he does it; but he does it in toil and suffering. Give him fair play, and he will do it manfully and cheerfully. "But the stock protects!" It might, perhaps, blunt a sabre-stroke, and it keeps off the rain. It may; but it is a fact equally problematical as the falling sky.

We know, however, what it really does do. It keeps in the heat, it frets the skin, and it checks the free current of air to the lungs. Does any man who has hard work to do, and is left to his own devices for doing it, ever bind up his neck as a prelimi-

nary? The navvy lays his throat open and bare—so does the porter, so the sailor. The sportsman who has a long day on the moors before him ties his neck as loosely as possible. Why, then, should the soldier be bandaged contrary to the experience and usage of workmen?

Next comes the body garb—the red coat—the source of so much pride, and the cause of so much attraction. It is a showy garment enough, and we would not change its colour, or take from its attraction; for the soldier should be a smart fellow always. We would, however, alter its shape, style, and quality materially, for in none of these points does it answer the requisitions of a soldier's clothing. It is tight everywhere—tight in the arms, tight in the waist, and tight across the chest; and tightness is not favourable to the development of muscular strength. The result is, that in ordinary movements the limbs are cramped and straitened—that in extraordinary ones the cloth gives way. The amount of protection it affords is a mere mockery. The garment ends where protection should begin. It barely reaches the waist; consequently the loins, hips, stomach, and all the parts which most crave warmth and protection, are left exposed. Nor, from its inferior quality, does it offer much protection elsewhere. The wind riddles through its loose texture; the rain penetrates easily, and the cloth shrinks and shrivels up with the wet. Its coarseness and tightness make it oppressive and stuffy in warm weather; in cold, it imparts no warmth. Nor can it, as it is, be made more adaptable to cold or heat. Comfort there can be none in such a garment; and we find that the soldier is ever ready to change it for his shirt-sleeves or greatcoat, according to circumstance.

Then there are the pantaloons, well enough in pattern, but vile in material; so thick and unyielding that they give no free play to the limbs; so coarse that they would fret the skin into sores after continuous contact, especially where sand or dust are being driven about the legs,—they cannot add to the efficiency, protection, or comfort of the soldier. Those issued in summer as substitutes for the white trousers are better, and with a little attention, and a little more expense, might be well adapted for general service.

We have thus come to the other extremity—the shoes; but we must defer the discussion of this item until our scheme be propounded, as it will scarcely admit of division. On reviewing the soldier's clothing, one thing strikes us especially; viz., that the system has been constructed on principles the very reverse of those which the other classes who have hard work to do have intuitively adopted as suitable to their vocations. None of the labourers, artisans, workers, herdsmen, muleteers—none of the men who have long journeys to undertake, and long exposure to undergo, ever thought of weighting the head, binding the neck, and swathing the body in tight-fitting garments. The mower or reaper, when preparing for extra toil, throws off the hat, and folds a kerchief round his head. The Gallego wears a loose baggy cap; so does the herdsman of the sierras. The Sicilian boatmen and Greek peasants have similar head-dresses. The Moor and Murcian turn the hoods of their cloaks over their faces. All the world over, brawny, sunburnt throats, freely exposed, are ever seen in association with labour or exertion. The smock-frock, blouse, capote, tunic, burnouse, have no affinity with the coatee.

If the projectors of the system ever condescended to observe the instinct and habits of the world's working men, they must have despised, for they utterly repudiated them. Perhaps they thought that the soldier's vocation was so different, so much above the others, that assimilation was impossible; but they might have seen that toil, endurance, and exposure were elements of all; and that the same principles which so well suited the working men, might be capable of adaptation to the fighting ones. They might have trimmed, laced, and bedizened to their hearts' content, and yet retained the first great principle, that the soldier's dress should be suited to his work.

But they were above this. They seemed to say to the soldier, "Now, my fine fellow, we expect harder toil from you than the labourer's, more

endurance than the water-carrier's; more exposure than the herdsman's. These all dress themselves lightly and loosely for their work, but we will do better things for you. We will put a nice heavy hat on your head; a good, stiff, tight stock round your neck; we will button, strap, and buckle up your body in every possible way, and then on you go, my brave boy. Their dress may be according to the light of nature, yours has emanated from the light of our wisdom. We have judged. We are infallible."

Let us imagine the soldier attired according to the dictates of this supreme wisdom, sent forth on his work. Let us follow him through the vicissitudes of a campaign, and see how the dress is suited to the exigencies and circumstances of it. We can choose no fitter field for the picture than that on which his fathers fought. We will suppose him following their footsteps in the Peninsula.

The miseries of the transport are over; his daily care has been rewarded by the preservation of the shako in all its integrity; Brown Bess is all right; his belts have just had a taste of salt water, and his pouch has escaped with a few scratches. Behold him now seated in the boat, ready for landing, with all his comrades packed thick and tight as they can stow. Perhaps he is kept some hours in this position, cramped, numbed, and jammed to the very pitch of constraint, with the wind driving the spray in his face, and the sun beating down on his head. Meanwhile, the shako, the stock, the innumerable straps and the water-bottle, must be a mighty comfort to him. 'Tis only for a short time, however: he nears the shore; there is a slight surf on the beach; he is told to watch the waves and jump. Jump! you might as well tell a cart-horse to clear a five-barred gate with the cart at his tail. He is a springy fellow enough, but how can he jump with a weight toppling over his head, another hanging back from his shoulders, the water-bottle banging against his hips, and with his limbs numbed and cramped by long sitting and strap pressure. Some try, and come down on their noses—the shako, of course, tumbling off. The majority hold the muskets above their heads; step boldly into the surf and wade on shore. He is on *terra firma* now. His heart is full of pluck; he is ready for anything and everthing—any danger, any difficulty, any enemy.

Again there is a weary halting. Again the sun's rays flash on shako top and peak. But he gets leave to fall out a bit, perhaps gets a comforting whiff and loosens his knapsack: but the shako is unrelaxing: if he takes it off, his head remains exposed to the sun; if he keeps it on, he has to bear an ever-increasing vexation. On he marches at last. The road is before him, what cares he for a march? He has travelled often enough in England. But what roads!—he never saw such before. The parish country cross-cuts by which, when a bumpkin, he has taken to the village ale-house, or taken horses to the smithy, were nothing to these. Rough, uneven, and meandering, with a pit here and a bank there, and sharp-pointed stones everywhere, they begin to try his springiness. The shako bears down upon him with the accumulated weight of a long day. The ill-made boot, so coarse that it will not play to his step, begins to gall, press, and fret him. The air is sultry. Oh for a free throat to catch the little breeze there is! He takes off the stock perhaps, and is partly relieved. But what would he give now for a little more room across the chest! What for a little more freedom about the shoulders! What for the power to shift the position of his knapsack or the set of his shako! It cannot be, however; his things are fixed, fast, and unaccommodating—they stick to him like a plaster. There is a halt for the night, and he proceeds to improvise a supper, and make himself comfortable. This is pleasant work for him. Though not so clever at it as the French, he likes a little cooking, but does it at his ease, with shirt-sleeves turned up, with open throat, and pipe in his mouth. Look at him by the bivouac fire, in the tight coat and ever-during shako, toasting a bit of pork on his ramrod. What an uncomfortable, incongruous presence he has! His tormenting regimentals spoil his skill as a cook, and his relish for the bit of supper. He has his smoke and his yarn, and turns in. He is quartered

in a Portuguese village—rough quarters enough! He cares little for that; he has roughed it often in hay-lofts and under hedges, when out for a lark, and can accommodate himself to the circumstances; but how to accommodate the dress—that's the question. He can sleep on the stone-step or the plank soundly enough, if he could dispose of his uncompromising garments; but they are most antagonistic to ease of position or repose of any kind. He puts down the shako, not without dread of not finding it when wanted; but the impounded body and fettered limbs admit of nothing but a fitful, unrefreshing sleep. In the morn he is up and on the march. There are the bad roads, the heat and the dust again; and again his accoutrements irritate, oppress, and deaden him, making his difficulties more difficult, and his strength less plastic. Next day, perhaps, the rain falls downright and heavy, as it often does in those climes at the spring-time, and he is soon wet to the skin. No dress would prevent the wetting, but a different material, by keeping him warmer, would render him more comfortable under it: as it is, he has small comfort indeed. The coat shrivels up, and brings a shiver in every wrinkle. The trousers, thickly clotted with mud, hang like lead on his legs; and the wet skirt, clinging round his loins, chills him through bone and marrow. The boots, wet and dried a dozen times, get hard as iron, and can scarcely be got on or off. Thus he goes on, alternately contending with heat and wet, without having any efficient protection against either. He struggles manfully, however, against all ills, though he may think, perhaps, as he sees a comrade drop by the road-side, or the wan, stricken faces of others as they are carried in carts to the hospitals, that he and they might have endured more and suffered less had they been dressed somewhat after their old work-a-day fashion. Never mind! The fighting begins after a while, and all is forgotten; yet how often then does his heart burst almost with mortification. He is in the light companies, and finds himself opposed perchance to the first skirmishers in the world. Feeling himself fully equal in agility, and more than equal in strength, he finds his natural advantages counterbalanced by their lightness of equipment, and their experience of the work as it is done on rough ground. His bottom tells at last, and he drives them back; but it is at a double cost of strength and endurance. He has toiled where he might have bounded—has fagged where he might have leaped like a roebuck.

The combat comes—his blood is up—his heart fills with the rush of battle, and he feels, nor weight, nor pressure, but both must tell. Pluck may keep the body up, but the vigour oozes out.

Think you not that the men who, to gain a certain position, made those terrible rushes we read of in the Peninsular War, and they who stood in the deadly squares at Waterloo, would have done their brave deeds at tenfold less cost of stamina and patience, had they been equipped according to a system of reason and experience?

Thus we have followed the soldier throughout his career, from the barrack-room to the battle-field, and found, or think we have found, the system wanting in all respects and on all occasions.

The German system fell on the British army like a ban, and has followed it like a curse, hampering its courage, and checking the development of its soldiership.

It is impossible to imagine for what motive the dress is retained. *Cui bono?* Is it for the sake of prestige? That prestige must be weak enough which hangs on the cut of a coat or the pattern of a shako. Is it in deference to national prejudices? The nation has no sympathy with swallow-tailed coats or iron-bound hats. No man who has the liberty of choice ever thinks of putting them, or anything like them, on head or body. Does the soldier cling to the dress of other days? In this respect he is very much of a utilitarian, and would gladly strip off the swallow-tail in exchange for some other sensible garment, and give three cheers as he threw the abominated shako in the air. Why then is it retained? We cannot tell, except that it is ever hard to battle against prejudice drawn up on the vantage-ground of authority.

How then shall we dress him? First, what is this thing which we would dress? "A machine," says the system. "A man," say we, "of as goodly material as the world can produce." How shall we dress him? "Fit him to his clothing," says the system, "without respect to comfort, convenience, or expediency." "Study," say we, "his idiosyncrasy, his habits, his physique, and former mode of life, and modify his dress somewhat in conformity with them. We would make the rustic a soldier, not the man a machine—would modify, not re-create. We are not of those who think that the superiority of our infantry has arisen from the system of drill, dress, and discipline. We believe it to result from the peculiar physical and moral constitution of our men, to the full development of which drill, dress, and discipline should be made subordinate and conducive.

We are dealing now only with the soldier's physique—the physique as dependent on dress for its temperament and free action. The physique which we have to develop is that of a strong, hardy, animal nature, transmitted through generations of lusty sires, hardened by incessant labour and exposure, exercised by games and athletic sports, and fed by solid diet. This physique appears before us represented by a man, who as compared with other nations, is a broad-shouldered, large-limbed, large-framed fellow, rather heavy, ungainly, and unwieldy, but in reality possessing an infinity of vigour and elasticity.

This man, used all his life to put forth his strength freely and impulsively, must, as a soldier, be subject to some constraint, but it should be no more than is necessary for system and uniformity. His strength is the strength of burliness and bottom, which requires above all things freedom of movement; the necessary constraint should therefore be as little repressive as possible of the action of body and limb.

How shall we dress him? Let us take the bull by the horns, and at once attack the main difficulty—the head-dress. Surely this must be a test of choice rather than ingenuity. The inventions of the past must help us here. Man cannot have lived so long in the world without having devised, either as workman or soldier, some suitable covering for the head! Let us see. The generations of the helmet are before us, multiplex and multiform, horned, crested, spiked; of hide and brass; of steel and of leather. We pass them by—grand and martial as they look. We are thankful for the picturesqueness they lend to picture, story, and legend; but our consciences will not permit us to encase the soldier's head in anything so cumbrous and unadaptable. What think you of the turban—light, soft, and snowy? Well enough for the clime, and the men who wear it. It has not, however, the requisites to become the model head-piece for a man of all climes and all work, like the English soldier. Lo! the days of the Civil War and Queen Anne's time revive before us, and we see here the dashing Cavalier, with his hat slouched and plumed; there the Puritan with his, steeple-crowned and broad-brimmed; and here the soldier of Marlborough's time with his, cocked and three-cornered. Shall we pause here? One lingering look, and no more. We must confess a penchant for this genus. In fact, during the revolutionary era, we met a soldier of Charles Albert's army who wore a hat which struck our fancy hugely. It was of the sort known afterwards as "Garibaldi," made of soft felt, light and elastic, slightly peaked and slightly slouched. There was a broad band round the rim, with a cock's feather in it. It had a melodramatic look on the Italian; but we long thought of its capability, until we felt that its affinity to the shako must for ever doom the hat. Place it in what form you like on the soldier's head, Buffsticks and tailors would seize on it, leather-bind and iron-clamp it so, that the last error would be worse than the first. No; whatever head-piece we select, it must be one which these evil spirits cannot work their wicked wills upon. Then there is the shako. Avaunt! The sight makes us shudder. "Granted that this old bell-topped, narrow-rimmed thing is bad enough; but surely the Albert

modification, with its tapering top, double peak, and beautiful ventilator must please." "Out upon it! We will have none of it." Then this, which is to be the semi-chasseur-voltigeur-Anglo-Franco-Germanico novelty—surely that will please fastidiousness itself. See how symmetrically it graduates from the back to the crown. How beautifully the peak cocks up in the air! how jauntily it rests right on the forehead! How delightfully it leaves the back of the head, cool and exposed! Surely invention can no further go. Away with it! Away with it! We repudiate the whole race.

Up on the hills among shepherds, hunters, and herdsmen—down in the plains with delvers, ploughmen, and miners, workers of all grades—across the steppes and the desert with wild riders and camel-drivers must we go to find the thing we want, for martial tradition has failed us. There are the turban, the fez, the sombrero, the fur cap, the bagged cap, the steeple-crowned hat, the hooded burnouse—and all these multiplied again in their infinite varieties, flit before us. All good in their individual use, their native localities; but none capable of such general adaptation as we need.

Let us, however, come nearer home. We are across the Border, and are standing in the Lothians. Ah! there is a fellow with something on his head that may give us a hint at last. It is the Lowland bonnet—a blue flat cap, made of an elastic woollen texture, resting lightly yet firmly on the head, without pressing on any particular nerve, and so flexible that it may be pulled in any direction, for warmth, shade, or protection, without any injury to the original shape. See! that fellow is crossing the furrows; the sun is in his eyes, and he straightway pulls the bonnet over his brows: he turns, and the wind bites him on the right cheek and ear; again he laps the bonnet over the right side, and walks on defiant; he stands still, and a slight touch readjusts the head-dress.

What! put that coarse ugly thing on the soldier's head? says the system. Stop, my critic! We pledge ourselves to the form and general capabilities—not to the details of ornament or material. If we are not mistaken, this cap may become a very smart affair. Let us frisk across the mountains of Biscay, and there see it in its glory on the head of the Basque peasant-soldier. In the great civil war it was worn by the light Basque troops on both sides, who were distinguished as "white caps" and "red caps," and right well they looked and moved in it. With them it is much finer in texture and material than the Lowland bonnet, and is ornamented on the top with a gold or silver button, and tassel depending therefrom. It sits, however, in the same style, and is equally, if not more elastic. We would have, then, something between the Lowland bonnet and the Basque cap—not quite so fine as the one, and more so than the other. It might be ornamented according to rank—gold button and tassel for the officer, silver for the non-commissioned, and silk or fine worsted twist for the private. It might be of any colour, —white, red, blue, or rifle green—according to the station or regiment; and it might have a bugle, or grenade, or regimental badge in front, with the addition of the eagle's feather to make it smart and martial, for we would have the soldier a showy fellow after all; and right sure are we that the broad Saxon visage would look better under this covering, than when squeezed into a shako, or buried in a helmet.

So much for the picturesque. Now let us see how it answers the requirements of utility. Is it suited to the soldier's work, and the greatest development of his strength and endurance? Light, soft, and bearing no encumbrance of weight or pressure, it leaves the man free to walk, to sit, to run. It offers no impediment to exertion; brings no strain on endurance; sits easily yet firmly on the head; irritates no nerve; chokes no vein, and leaves the head and brain cool by permitting the free escape of extra heat. Does it afford sufficient protection from heat, cold, &c.? Covering the whole head, it may be drawn at will (as we have shown) over any part where an attack is threatened, and, if need be, pulled well down over brow and ears without peril to shape or symmetry. It will turn a good sun-stroke; and if

fortified by the common appliances of kerchief or linen, it would have the repelling power of a turban. Cold it would defy—wet would be its worst enemy, but even that could effect little lodgment, and the elastic material would admit of frequent wringing and drying. Is it adaptable? Surely such a material would be capable of being made lighter for one clime—thicker for another—more protective from heat or cold, as the case may be. It admits of many accessories too. It might in the East or West Indies have a curtain pendent from behind, in extreme necessity, to fence off heat—or a light fold of linen bound round the edge, just as the Syrian or Arab does with the fez. It would also admit of the greatcoat being furnished with a hood to be thrown over it—burnouse fashion. Is it comfortable? Ask any man who has tramped the moors in it, and then sat down to have a quiet pipe or cigar on the hill-side. I can see before me now a group dressed in it at the halt or bivouac; some wearing it jauntily on one side; some cocking it a little; some facetiously placing it top downwards—all coolly making it a nightcap, as each fell off to sleep, without remorse and without compunction. Such a head-dress would, we are sure, answer every purpose, and with a little taste and trouble be made most military and becoming.

We go downwards to the neck. It would be like kicking a dead dog to condemn the stock. It is already doomed. The wearing of it has become optional, and no man in his senses would think twice about casting it off. Covering the neck is more a question of neatness than protection. All the classes from which the soldier is chosen keep their throats almost bare, and it was never known that they were peculiarly subject to any disease in consequence. The sailor is most resolute in throwing the collar down, and yet we never hear of his suffering, nor see anything unseemly in his brown, brawny throat. Neatness might be satisfied by a black kerchief loosely tied, or a scarf with falling ends, such as we see in the pictures of the foot-soldiers of Marlborough or William III. Either of these would be more costly than the stock; but is it not a truer economy to spend a little more money in giving the soldier a thing he can wear with comfort and convenience, than a cheap abomination which half throttles and chokes him, and which he throws away at the first chance? It might be made, too, so far adaptable that the kerchief might be worn in the warmer, the scarf at home or in the colder countries; or the scarf might be made of different materials, according to circumstances.

Suggestions as to a substitute for the coatee have been partially anticipated by the introduction of the red tunic. It is an improvement, certainly, though retaining many of the faults of style and material. The objection of want of protection for the loins and thighs has been fully met, and the good effects of the broad skirts will soon be felt. Like its predecessor, however, it is too tight, and gives too little freedom to chest and arms. It will be only after a long struggle that the system will give up its long-cherished delusion of close-fitting garments. A wrinkle on a soldier's coat would in its eyes be a crime, looseness an enormity; and yet a soldier never can or will be properly dressed until he has fair and sufficient room for the development of his strength. The tunic is, however, a good idea, though no novelty, for it has existed in the British army before in much more perfect type. The foot-soldiers of Marlborough's day are represented as dressed in a tunic, much handsomer and more shapely in cut than this. It hangs loosely on the man; is longer in the waist; sits easily over the hips, and was capable of being worn open at the breast: altogether it has a dashing manly style, as seen in the pictures. The material of the present tunic is, as usual, abominable. Coarse and of loose texture, thick and stiff, it would shrink up and harden with the wet, rot and blacken with the perspiration, and grow threadbare wherever a strap presses; and fret whatever part of the body it fits tightly upon. This new tunic answers one requirement—protection—and that only partially; in all other respects it is deficient. It is too tight for the soldier's work; too tight for the

greatest development of his strength and endurance; too tight and coarse for comfort. Its adaptability, too, could only be effected by upsetting a fixed principle of the system—uniformity. Can these defects be remedied? Easily. Let the coat be made of one of those beautiful materials, tweed or beaver, so common in these days; which, being soft, light, and elastic, impart warmth, whilst they tax endurance by no extra weight or restricted respiration. Let it be loose in the sleeves, loose across the chest, loose at the waist and over the hip. In this last particular the new tunic sins especially. The pressure bears on one part, and that a very sensitive one. The thick seam of the skirt presses on the hip, so does the waist-belt, so does the pouch. No! let the coat descend lightly and loosely, much after the fashion of a gentleman's walking surtout; and though this would involve the risk of more wrinkles, surely the time has passed by when the efficiency and comfort of a soldier's clothing should be sacrificed to the eye, by plastering his coat upon him. Let the lapels, too, be so fashioned that they might be thrown back on occasion, thus affording incalculable relief to the man. This general looseness, too, would allow a waistcoat of woollen, or of chamois leather, to be worn underneath in cold weather. This might constitute part of the kit, and, when required, be put on under, or attached as lining to the coat. The new tunic is also too plain. It should be more ornamented. The soldier should be a smart showy fellow. It flatters his little vanities to be fine, strengthens his love of caste, and reconciles him to many of the rubs and restraints which the service inflicts on him. Hence we descend to the pants. There is no objection to their shape. The material, however, is the very worst; the effects of its bad qualities we have described elsewhere. Let this be altered. Let the trousers be made of the soft fabrics mentioned above, which, in addition to other virtues, have that of not chilling the limbs when wet. Let them also be a trifle wider.

Come we now to the other extremity, the foot. Last, but not least—second only in importance to covering the head—is shoeing the foot. Considering the class from which the soldier springs, the coarse shoes he wears from infancy, the hard work he does in them, and the rough ground he labours over, it must always be a matter of wonder to see how many men, even in a short march, break down from sores, and galls, and blisters in the feet. In a long one, how many ills may be traced to such a beginning! How many of the diseases begin in a local sore, which, aggravated by constant irritation, spreads at last into general ailment! We are convinced that one-half of this suffering, and one-fifth of the breaks-down, might be spared by the issue of a better boot. The present one, made by contract, and called in derision the ammunition boot, is about the most shapeless, useless, comfortless thing that can be seen. It is clumsy, but there is no strength in its clumsiness; with a very little hard wear, it literally drops from the feet, and the leather is so spongy that wet soaks through and through it. The seams, too, are so clumsy that an iron rod might be as well run along and across the foot—hence arises a goodly crop of bunions, bladders, galls, and the other ills which are such curses to the pedestrian. How easily may this be cured — and without that bugbear cost! The soldier pays for his own boots, and there is nothing he grudges less than such outlay. He cares not for a shilling or two, so that his poor feet be well cased. Give him the option of buying the ammunition boot at 6s., or of paying 9s. for a better kind, and he will not long hesitate.

No better pattern for a new boot can be found than in that worn by modern sportsmen,—not the heavy thick thing, furnished with heel-plate and toe-plate, and a galaxy of broad nails weighing some pounds, which our grandsires patronised—but the rational buttoned or laced-up boot, now so much in vogue for walking or shooting; with a good double sole, not too thick; upper leather of the soft, impenetrable calf-skin, or of the still softer kind where it is fastened over the instep. Such an article would cost little more than the soldier now pays, if made in numbers and by contract, and would last so much longer, and admit of so much more repair, that it would prove most economical in the end. Such a boot can scarcely chafe the foot, and in it the most tender parts, heel, instep, and ball of the foot, would be least subject to pressure. Trust not the contract, however, to boards, or the ammunition atrocity would soon be repeated. Let the pattern be supplied to lieutenant-colonels commanding regiments, and let them be authorised to make contracts in the town or district where they are stationed; then let regimental officers and men do the rest; they will take care that the article supplied be of the right quality and kind.

It may be expected that we should now enter on a disquisition about knapsacks, straps, pouches, and other like topics. We can say little more than has been said on these matters, and think little more is to be done. It has always been a pet theory of buffsticks and pipeclays to reduce the weight of the knapsack, and when by some ingenious contrivance this has been effected to the amount of some ounces, they chuckle as though a great military reform had been achieved. Blind guides! ye begin at the wrong end; you take off a few ounces, and leave the strength burdened with the pressure of a cwt. from unnecessary restraints and ligatures. Give him the free use of his limbs, and the soldier would laugh at a few ounces, or even pounds! It is true that the present knapsack is very unwieldy, and might be improved in many respects. It might be shaped more like a regular pack, made of some waterproof material; the straps might be decreased in number, made elastic, and fastened to the waist-belt like the chasseur's; the weight might be better poised, and made more shifting; but these changes can only be obtained in defiance of the dread law—uniformity. What would the system say to it? We do not, however, believe that the total weight a soldier carries can be much diminished without detriment to his efficiency or comfort, nor do we think it is at all too great a demand on his strength. The French soldier is not so large or so strong a man, and yet he carries as much, if not more, and moves along springily under it. In addition to his kit, he has always a tin pan, or part of a tent, or a bill-hook, to bear; but he has not to contend with tight coats or stiff stocks.

There are one or two more things on which we would bestow a passing notice ere we wind up. There is the great-coat, the soldier's chief comfort, the garment his heart clings most fondly to, from being perhaps the only one which is loose or affords general protection. He has certainly a partiality for it, and will wear it whenever he has an excuse. Why not make it worthy of his preference? It is supposed to last nine years, and bear therein the brunt of guard and bivouac. At present it is a very shabby affair both in shape and material. Why not make it of good and durable stuff, somewhat resembling the quality used by officers; have it a little looser, a little shorter, and give it a hood which might be thrown over the head (if the bonnet be adopted—with the shako this would of course be an impossibility) on exposed posts or in inclement weather? Next, there is the havresack, in which the soldier is supposed to stow away three or six days' provision. It is a most ingenious contrivance to perplex and tantalise him. The straps are so short that, when filled, the havresack hangs a little under his arm, and the opening is so small that it is with the greatest difficulty he can get anything in or out. The bulk, too, interferes with his movements, and jostles his other weights. Made of duck or coarse linen, it is easily penetrable by sun or rain. If the weather be warm, the poor fellow, at the end of a march, finds his biscuit and bacon melted into a mass of crumbs and grease; if wet, his bread is soaked into a sop, and the best part of his supper gone. Lengthen and broaden the strap, and widen the opening; let the material be waterproof, with a linen lining, and let there be compartments for biscuit and bacon, and then the soldier may carry his food with ease, and eat it in comfort. There is one more atrocity we must have a fling at—the canteen. Of all the wondrous devices the system has given birth to, this is the most wondrous. How such a thing was first devised is a problem! how it was ever endured for a day, much less repeated year after year, in this practical age, by a nation always engaged in some war, and often on the eve of great ones, must

be ever a mystery! Let the uninitiated know that the said canteen is a round wooden bottle for carrying water, shaped flat at the sides, and hooped round the edges with iron, which bumps playfully against the hips at every movement. Should it be water-tight, which is almost a miracle, the water is certain to get a taint from the wood, and to become lukewarm with the slightest heat. The French have a neat tin canteen, not unlike a sportsman's pocket-pistol, only larger. It is hollowed out on the side next the body; is slung loosely round the shoulders by a thick cord; is never in the way; keeps the water cool, and can easily be lifted to the mouth for a draught. These and all other reforms must, however, be impracticable whilst the present clothing system lasts. Contract manufacturers and contract tailors would soon nullify any improvement in shape or material. Wretched, indeed, is the system which commits the clothing of the army to the lowest contract, and sets some antediluvian old gentlemen, who know little and care less about the matter, and are facetiously termed "a board," to cackle, doze, and choke over the performance of it. It is a system unjust to the army, and unworthy of a great nation. The evil can only be remedied by intrusting the supervision and control of clothing contracts to men who have an interest in the wear and appearance of the articles supplied. Let the clothing and accoutrements when made be sent to regimental headquarters, and there let regimental officers, whose credit will be involved in the look of their men, and who may be supposed to have some sympathy for their comfort, sit in judgment upon them, to test quality and make by regulation pattern. Contractors would soon find they had a different set of men to deal with, and would cease their tricks. "But these alterations would involve great cost," says the system. Doubtless! The question, however, is, whether the soldier shall be clothed at the lowest possible price, or with a fitness for his work, and a due regard to his comfort and protection. If the latter, then there must be cost. We believe, however, that the sum now allowed for the purpose, if fairly appropriated—if not suffered to dribble into the pockets of clothing colonels, and contract manufacturers, and contract tailors—would amply suffice to send forth the British army as the best clad body of soldiers in the world.

This contract system has been the curse of our army. From it have arisen bad boots, useless hand-barrows, pickaxes, and spades, bad clothing and putrid meats; from these, again, spring foot-sore soldiers, slow work, fevers, full hospitals, and protracted sieges. Down with it! down with it to the ground!

Here, then, we end. We have answered the question, How to dress him? by dressing him from top to toe, rationally and becomingly, we think. We have based our scheme on these fixed principles, that a soldier should be dressed with a fitness for his work; with a due regard for his health and comfort; with a view to the adaptability of his costume to all climates and circumstances.

Whether we have succeeded or not, judge ye. If we have failed, we have failed in detail, for sure we are the principles are sound and true. Then let another try, and we wish him good speed. But remember, brother mine! whoever you be that undertake the task, to undertake it seriously. It is no light deed. Remember that you are dressing a comrade by whose side you may march, by whose side you may stand in the field of battle; and let no idle crotchet, no vain fancy, tempt you to forget that the sole duty, the sole purpose of your task, should be to study his comfort and efficiency.

Whoever does it, it must be done, and that speedily. The soldier demands it as a right, and surely 'tis no great thing he asks, to be sent forth on his hard and perilous work with his strength unencumbered, and his body protected from the ills his arm cannot reach, or his spirit repel; to be sent forth bearing not about him obstacles more distressing than mountain path, or rugged valley—wearing not about him foes more formidable, and often more fatal, than the bullets and bayonets of the enemy.

He asks to have his strong arm free to strike, and his strong heart free to endure. Grant him this, and he will go forth—not a truer or braver man, for that he cannot be; but he will go forth more contented and more grateful; he will go forth to prove by long-enduring service that he is too precious a thing to be weighed in the balance with sodden shoes, rotten cloth, German and effete systems; he will go forth to show that the English soldier is a man worth all care, all cost,—a man beyond all price.

CHAPTER III.

Since the above was written the terrible proof has come. The system has been tested by the exigencies of war, and our forebodings have been too surely verified. England has been now some months at war. She entered on it reliant and expectant, and rightly so. The nation had arisen in its might, strong and undivided. There was no faction, no discontent, no struggle betwixt classes, to cripple its strength or embitter its spirit. Except the few carping spirits of the Manchester party, there was one heart, one thought, throughout the land. The country was prosperous—its resources vast—almost unbounded. Money, sympathy, and material, were in abundance. Never did a people enter on a struggle with such undivided will, such a generous spirit. England was confident then—confident in its strength, confident in its union. She looked on the gallant array of her soldiers as they went forth to the war; she looked on their stalwart frames and their firm manly faces, and thought such men might defy the world in arms; she knew not, and she reckoned not, of the causes which should make their strength weakness, and their valour a vain thing. Thus England began the war: whence comes it, then, that her glory is now trailing in the dust, her might melting like snow? Have her resources failed, or her soldiers degenerated? All these have more than fulfilled expectation. Whence came disaster, then? was it the fault of men or systems? From both, we answer unhesitatingly—but the men were most culpable. The system was bad—bad as could be, but it never could have caused such disaster had there been able men to wield the might and sustain the honour of England. Let us see what share of blame attaches to each. The system was old, useless, effete. Its capital vices were, the antiquity of the machine, a penurious economy; a multiplicity of, and want of unity in, departments; complexity of details; the rigidity of official routine; the abuse of patronage. Driven on by the relentless vigorous will of one man, it had jumbled, and jolted, and creaked, after many break-downs and stoppages, through the Peninsular War; after that it sank into a torpid repose, retaining just vitality and movement enough to administer respectably to our home and colonial necessities. Occasionally it was brushed up, painted, and greased, to make an appearance; and John Bull, deceived thereby, actually thought it was rather a respectable machine, which had done good service, and would do it again. The time came. There was war, and we had to bring forth the old system; there was nothing else to fall back upon. All our war experiences and appliances were octogenarian. Our generals were old, our system was older. It was worse than at the end of the war. Time had increased its defects—age and desuetude had brought on decrepitude. During the long years of peace, no serious effort had been made to bring on the system, *pari passu* with the science and energy which were working such miracles in our social state, which had had no existence in the war administration. Peninsular men administered the departments; Peninsular prejudices guarded jealously against reform or innovation. Our storehouses were filled (with the exception of a few very late improvements in ordnance and musketry) with *materiel* manufactured either for the last war, or after the patterns then used. Some departments were defunct, others had sunk into a dozy state of routine. In fact, everything was at a dead lock. Thus was it that England exhibited to the world the extraordinary spectacle of a nation standing in the foremost files of civilisation, surrounded by the most wondrous appliances of art and science, and entering on a gigantic

struggle, with an obsolete war-system half a century old. Our great military rivals—one now our ally, the other our enemy—had been wiser in their generation. They, especially the former, had sedulously applied all the discoveries and inventions of science, and had zealously used the intervals of peace, and the experiences of their petty wars, in perfecting the organisation of their system,—in giving to it consolidation, elasticity, and strength. Many of these defects were inherent in the system; many were produced or aggravated by the pernicious economy which has been busy for many years in paring, and clipping, and reducing our system to the lowest ebb of vitality. The odium of this has been thrown on the country. It was the work of faction rather than of the country. The people asked for a moderate expenditure, and the different Governments met the demand by concentrating all their economic forces on the army and navy establishments. It was to conciliate faction, rather than to satisfy a popular cry, that the evil was wrought. The pressure was from within rather than from without. There has arisen lately in the House a body of few and audacious men, whose souls are in their cotton-bales, whose homes are in their counting-houses, whose nationality follows the best markets; these men clamoured madly for the reduction of our army and navy; they would have swept them away altogether, and left us without soldiers or sailors. These men, though few, were strong, inasmuch as they often held the balance of parties: to conciliate them, to win them over to prop their sinking strength, or swell their feeble majorities, Whig ministries again and again drew the life-blood of the nation, sacrificing the best interests of the country to the purposes of party.

The mischief, however, would not have been so great had the economy been well directed; but the reforms, being adopted rather from necessity than conviction, were ill-judged and ill-timed, and aimed oftener at sound parts than corrupt ones. It was easier to lop off a limb than probe a sore. Thus was our system crippled in its best limbs, whilst the disease of the body was left untouched and uncured.

The want of unity in departments was another crying evil, and cause of weakness. All great military nations have recognised the necessity of undivided authority in time of danger or emergency. What gave such energy to the legions of Rome and the armies of Napoleon, save the supreme will of a dictator? And is it not the absolute power of an autocrat which has lately given such ascendancy to the forces of Russia?

Our military constitution is a confederation of petty states, all having separate chiefs and laws, and a sort of petty independence, being bound together only by a somewhat loose principle of co-operation. Such a constitution could not afford the strength and union necessary for a grand or sudden effort. The petty jealousies and cross purposes of divided authority would be ever fatal to vigour or promptitude of action.

During peace there may be safety in a multitude of counsellors; but there must be one head, one hand, to govern a crisis. From the multiplicity of departments arose the complexity of details and rigidity of routine which have caused so much disorder, and been among the primary causes of disaster. Each little imperium had its formalities and its etiquette, which were maintained with all the pertinacity of a German state. Let us die rather than abandon our routine! Departments vied with each other in accumulating forms and formalities, until the evil ran so high that the executive part of the army was overpowered by the bureaucracy. Would that it had ended here. In war it ended in starvation and death. "Give us medicine for the sick—stoves to keep them from dying of cold." "We must have the requisition properly signed and approved." "Give us food—clothing for our men." "The order must come through the proper channel. Let men die—let them rot—let them hunger—thirst—perish from starvation—shiver with cold—grow sore from lameness!—what is it to us? Routine must be maintained." So spake the system—and so men died by hundreds. Is it not a thought to stir the blood within us, that England's bravest sons have been offered up wholesale to the requirements of official form? Is it not a thought to humble and shame us, that a set of petty officials should have power to set their absurdities against the life-blood of England?

Last in the catalogue of vices comes Patronage. Like many of the others, it was scarcely perceptible in peace. The peculiar construction of our army made this little known or felt; but war is the great test of military systems, and it has demonstrated patronage as one of the evils we deplore. Our nobles, like the Roman patricians, and perhaps like them alone, have ever enhanced their position by gallantry in the field, and intrepidity in time of peril. Eagerly and readily they leave luxury, state, pleasure, homes, to go forth to fight or die bravely by dozens, as at Inkermann, in the foremost ranks. But this gallantry covers a multitude of sins. There are other things required of officers besides gallantry. In most of these, it must be confessed, they are wanting. It is not from want of capacity or will, as some would assume, but from lack of stimulant, and from peculiarity of position. They do not enter the army as a permanent profession. In peace they adopt it as a pastime—in war as an enterprise. It is not the vocation of a life. Whilst in it they are not dependent on merit or attainment for advancement, and always look forward to some era when they purpose to abandon it, and return to the old pursuits. Consequently they have no sympathy with minute details—no stimulus to master the more abstruse studies or the higher duties. It is only the man who becomes once and for ever a soldier who will do this—who will accept all parts of his vocation. But such a man must have a hope—an incentive in his career. For such a man there is no place in the British army; or if there be, it is darkness and despair. His skill, his zeal, his constancy, will be to him as dead-weights; they will not advance him one step. There is need for all classes—room for all—but there must be place for all. If you would have highly-educated, highly-instructed soldiers, proficient and ready at all points, like the French officers, you must adopt the French system; you must let it be known that the best man may get the best place. Then good men and true enough will come forth, and among them, we doubt not, many of the aristocracy.

Such was our system when the trial came. War was declared, not suddenly, but after long deliberation. There was a long interval for preparation. To our foes and allies it was a godsend. They employed it well, and the crisis found them ready. To the indolence and indifference of our officials it was nothing; they scorned and neglected it. Now was the time to investigate thoroughly the resources, not only of the service, but of the country, and see how the one could be applied to the other. This was beyond red-tapism; it was not the routine: so war came, and found us as unready in all the essentials of preparation as though the question of peace and war had never been mooted. The routine was followed; we fell back on Peninsular men, Peninsular rules, and Peninsular stores—all good in their day; but they had been superseded now by newer things and more vigorous men. The men of the age are the men to meet its wants. An army was to be sent forth worthy of our fame and our might. The order was given. The Horse Guards performed its function among the departments well. It produced before the eyes of England a body of soldiers (thanks to our regimental system) well equipped, well drilled according to the system, well disciplined, and better armed than any troops had ever been before. The cheeks of Englishmen must have glowed, and their hearts leapt with pride, as they saw the gallant array of stalwart men and the glittering ranks of proud horsemen marching onwards to maintain the old glory and add to the old fame. All knew how these men would fight. Did any among the admiring cheering crowds think how these men were to be fed, clothed, and covered? I trow not. Yet the meanest among them thought as much on the subject as officials. The Horse Guards did its part well; what of the other departments? The Commissariat was reduced to the lowest ebb. It had neither officers, organisation, or means. Could these be renewed in time? Experience proves they

could not. The waggon-train was defunct. The ordnance turned out a fine body of artillery, but there its work ended. Its stores were of the worst and oldest kind. There were tents of the time of the Peninsula, intrenching tools that a navvy would have laughed at, worn-out carts and antiquated material of many kinds. But there was routine everywhere—God save us, there was no lack of that. A most superficial glance might have shown that there was no hope in the departments. They were too old and effete to be revivified; they must be created anew. Everything was out of joint. Where there was not chaos, there was vacuity; where there was not antiquity, there was emptiness. It was evident, then, that though we had a fine lot of fighting men, we were utterly deficient in the means and appliances of providing for them according to the wants and exigencies of a campaign. This was certainly a dilemma for men administering the affairs of a nation on the threshold of war. Was there no remedy? Did the country afford no resources external to the profession? Was there no alternative but to fall back on the worn-out system? Any man living, with his eyes open, in this nineteenth century, might have seen that the age was peculiarly adapted to meet the requirements of the crisis and the shortcomings of our military system. During the time in which our army and its departments were suffering under the pressure of a false economy, there had sprung up a labour power more vast and various than had ever been known before — a spirit of enterprise and speculation, which knew nor check nor limit—a manufacturing ability, which laughed at time or quantity. A Chatham would have seized on these at once. Lesser men might have done it. It could scarcely be expected of the least. The country offered everything that was needed. The Government might have dispensed with departments altogether, used them on a limited scale, or waited until they had received new being and organisation. The traffic of the age had produced especially a class of men, migratory, hardy, and restless, who, wandering from one scene of labour to another, had few ties of place or kindred. These men, inured to toil, and used to contend with the difficulties of a country—accustomed, too, to rude sort of organisation—would have been invaluable as road-makers and pioneers. The plan of the navvies has been adopted now; why not at first? Had the Government expressed its want, how long would it have been ere a body of able men, with a civil officer at their head, would have been ready for any service?—and so on. How long would a demand for warehousemen and wharfingers, to transhipp and house the stores of an army, have been announced in the City, or in Liverpool, ere there would have been volunteers enow? How long would our manufacturing firms have been in supplying any quantity or quality of clothing, tents, &c., or our trading men in collecting medicine, wine, &c., necessary for the sick? Would there have not been tenders by the hundred for undertaking the draught and transport work for any time or any distance? Has not a firm volunteered now to furnish meals, ready cooked to our soldiers at any distance from the coast, at the cost of 3s. 3d. a-day per man? Does this firm stand alone in enterprise and patriotism? All these things might have been prepared ere our soldiers were ready. These resources were at hand, but our rulers were too blind to see, too indolent to avail themselves of them. Had they been resorted to, how much of disaster and disgrace might have been spared. Our generals, without anxiety for their communications, commissariat, or transport, might have bestowed all their attention on the discipline and tactics of the army. The soldiers would have marched and fought, with the assurance of finding, when all was over, their camp ready, their supper cooked, their blankets at hand, and of having a change of clothing when the season required it. The cavalry would have found forage for their chargers, and would not have known the mortification of seeing the noble animals which had carried them through a charge, dying from starvation or cold, or degraded to the work of beasts of burden. This, with the past fresh in our memory, seems a Utopian view, yet we have a faith

that it may be realised. We speak not more of the past than for the future. We believe that, in all our military operations, it would be better to trust to the general resources of the country, and the vitality of commercial enterprise, than to depend on departments, which must become inefficient from disuse, or the reductions inevitable in time of peace. These departments might be kept up at a certain standard, just sufficient to meet the immediate wants of an army in the field, whilst the external supplies and distant stores would be intrusted to the civil branches. It is evident that our soldier is too costly a thing to be used for aught besides fighting. We raise him with too much difficulty, and train him at too great cost, to make a pack-horse or a road-maker of him. Our sappers, also, are too few for more than their professional duties. Let all, then, be left to the work for which they are trained, and for other purposes let us seize on the means which civilisation has placed at our disposal. The plan would be costly, says the system. Grant it. But is it better to pay in money or in blood? to have an item in the estimates, or a tale of sick, dying, and dead, such as has of late rent our hearts in twain? We believe, however, that it would be more economical than the blundering bungling methods practised by Government. The other difficulties might have been more easily overcome. A strong Ministry would at once have cut the Gordian knot of the departments—have invested the commander-in-chief with a dictatorship which would have enabled him to override the obstacles, formalities, obstructions, and absurdities of office, which would have rendered the executive, whether it existed in the general or colonel of a regiment, paramount. Had such been the case, how different the story! Suppose an order given to a regimental colonel, to march his men to Balaklava, and bring them newly clothed, without heeding any impediment, how long would it have been ere they had returned, each man with a warm suit on? Where there's a will there's a way, even amid the disorder and anarchy of Balaklava; and our word for it, regimental officers would have found it.

In the matter of patronage, Ministers, too, have been acting under an infatuation destructive even to their *protegés*. It was said, happily enough, in some print or periodical, that they had insisted on putting round men into square holes, square men into round ones. And so they have. We had few tried men to choose from. Our Caffre and Indian campaigns afforded some; yet these were set aside, with the exception of one or two brigadiers or generals of division. Where were the men most wanted—the men who had experience in the conveyance and transport of baggage and camp equipage, so essential to the march of an Indian army? Were there none such? We suppose not; for in the places where they should have stood were thrust men who had spent all their lives in the Guards, or on the staff, and had no knowledge or conception of the duties appertaining to adjutant-general and quartermaster-general, with all the long following of deputy and assistant ditto. Far be from us a wish to exclude our aristocrats from sharing the dangers and honours of our battle-fields, but we would have them in fitting places—with their regiments, or as aides-de-camp. It was unfair to them, and unjust to the country, to place them in positions for which they had no experience or aptitude, and thus expose them to an undeserved odium.

How long shall The System live—how long? The public voice has doomed it; but evils live long in England after condemnation. We are a people loth to slay. Die it must. Its life is the death of England's glory. Our honour demands the sacrifice. Our soldiers look imploring from their sick-beds and their shelterless tents—point to the heights of Alma, and of Inkermann, and say, Shall we receive such things at your hands? Will no one stand between the living and the dead, and save us? Shall we stay our hands until some worse thing befall us—until more terrible lessons are written on death-beds, in hospitals, and in the ghastly mounds which strew the plains where our soldiers have stood in the pride of victory?

PSYCHOLOGICAL INQUIRIES.

By this time everybody has read Sir Benjamin Brodie's interesting little volume. Everybody, at least, should read it. There are no professional terms to embarrass, and no crabbed style to repel, the reader. It might lie with as much propriety and fitness upon a lady's table as on the student's desk. It can weary no one, it will instruct most, it will suggest something to all.

No introduction to the reader's notice of it is now necessary on our part; neither do we feel disposed to enter into minute or captious criticism. We hold that such men as Sir Benjamin Brodie do a great service to the public by enunciating in a simple manner their own conclusions upon subjects which interest us all, and on which they have had some peculiar opportunities of forming an opinion. When they do this with good faith, it would be both unjust and impolitic to encounter them with the same critical requisitions which it would be fair and necessary to make, in the case of one whose main business in life had been the composition of a treatise on philosophy. Our purpose, therefore, is, to pass on at once to some few remarks on the subjects themselves which this agreeable volume treats of, and which it has, in part, suggested.

What sort of instrument is it which in the brain is committed over to the mind? Such is the question we should put; and we will endeavour to contribute something towards framing the fitting answer. Speaking of the brain from a psychological point of view, it is impossible to avoid expressions which, taken apart and interpreted literally, would trench upon the sole prerogatives of the mind. When we describe an organ or a nerve as the "seat of consciousness,"—or of sensation, which is one form of consciousness,—we might, if literally interpreted, be supposed to assign to the physical organisation *psychical* properties which belong (in man) to that spirit which has taken up its residence, and manifests its high activities in the body. But, in fact, when we speak of the nerve being the seat of sensation, we are not, at that moment, viewing it with relation to the mind, but comparing it with other parts of the vital organism. Compared with a bone or a blood-vessel, it is the seat of sensation. The author before us occasionally uses this very form of expression, and, if we mistake not, has, in one place, designated the brain as "the sole seat of consciousness;" yet no one could be more precise and emphatic in his strict maintenance of the dualism of mind and body.

"*Crites.* Ergates regards the brain, properly so called, as the physical organ by means of which alone (to use his own expression) the one indivisible percipient and thinking being, which each of us feels himself to be, maintains its communication with the external material world."

When, therefore, we shall have occasion to speak of the brain, or some portion of it, as the organ of memory —or the nerve, together with some other portion of the brain, as the seat of sensation—we claim to be interpreted in strict accordance and consistency with the passage we have just quoted.

And, first of all, we have to make an observation, simple enough, and which will wear to many the air of a truism, and which yet, in our subsequent inquiries, will be found to be of considerable importance. The contents of the human consciousness may be divided into two great classes—Thoughts and Sensations. So far as the brain is the organ of thought (and we agree with Sir Benjamin Brodie in regarding it as essential to the exercise of memory), it is a special or complete organ, and may be described as the sole seat of memory. But in relation to sensation the case is very different. Here it only forms a part of the organ. The nerve, with its ganglion, is the organ

Psychological Inquiries: in a Series of Essays intended to Illustrate the Mutual Relations of the Physical Organisation and the Mental Faculties.

they obtund the external senses and lessen their acuteness in removing and transmitting impressions; they arrest, or greatly modify, the processes of nutrition and disintegration of tissues, and consequently diminish the number and force of the reports of cœnesthesis; and they necessarily and consequently moderate and modify those molecular and other changes in the nervous matter of the brain with which psychical action, whether under the name of sensation, or the noblest sentiment, or a dream, is associated. The most celebrated psychical remedies, again, for sleeplessness may be classed as monotonous, monoideaous, or repetetive; and may be epitomized as consisting in the withdrawal of all impressions save those that can be conveyed singly, in succession, or rhythmically. From Boerhaave's dropping of water, to the Abracadabra of the secret-mongers, and the discovery of Mr. Gardener, they are involved in Cullen's anticipatory dogma, that "if the mind is attached to a single sensation, it is brought very near the state of the total absence of impressions."*

All physical morbid conditions are attended by distressing dreams, but it would be rash to affirm that they are invariably characteristic either of the nature of the affection, or of the place affected. It has been observed that patients labouring under disease of the heart think and dream of falling from heights and precipices; under hydrothorax, of drowning; under dropsy, of allaying thirst; under fever, of fires; under cancer, of sorrow and suffering and local injury; and cases have occurred in which frequently recurring dreams of such kinds have led to the suspicion of the existence of disease when other evidence was wanting. That such correspondence, if it exists, must depend upon one of three causes, the quality of the blood circulating in the brain, the impressions conveyed to the brain through the nervous system, and upon the condition of the brain itself, is obvious. That condition must be influenced by increased or diminished density; by the state of the membranes and the bloodvessels, and by a thousand other circumstances which, apart from remote changes or blood diseases, induce unhealthy dreams. An atheromatous state of the arteries, for example, as well as alterations in the structure of the ear, is accompanied by delusions or dreams, in which sound, voices, footfalls, thunder, the gallop of horses, play a conspicuous part. Similar effects are observed in choreamania and melancholia, where anæmia is the most marked pathological state. It is interesting that in the former disease the waking mentalization and the hypnogogic phantasmata are connected with great want of attention and irregularity of thought, as if in keeping with the muscular agitation and restlessness,—

* Binns. *The Anatomy of Sleep*, p. 358.

whereas the dream of complete sleep, when the muscular system is at rest, is calm and placid. Maury has observed that there is often entire oblivion of dreams, during the continuance of which there was great muscular activity and loquacity; but in many cases night-talking and crying are signs of irritation and horror. They may accompany the night seizures of Marshall Hall. Occasionally they are so dreadful and so dreaded that the sufferer endeavours to escape by preventing sleep. It is at this point that dreams may pass into hallucinations. The mind has given way first during dream when discipline and control were removed, and the fact of its overturn has been noted by the patient;—and it has happened that the dreams which prevailed during insanity have reappeared after the re-establishment of health.

Art. II. — THE HEALTH OF THE ARMY, PROSPECTIVE AND RETROSPECTIVE.

The War-Office and the Horse-Guards may justly take credit to themselves for the prompt and effective manner in which they have reinforced the garrison of Canada. The need was urgent, the season unpropitious; and supposing the Atlantic, when most storm-ridden, safely traversed, there were still to be contended with the grave obstacles which the early Canadian winter would interpose between the ports of debarkation and the posts of danger. Yet, notwithstanding these serious impediments, 15,000 men were thrown into the colony in a singularly short space of time, with all that was needful for their efficiency in artillery and stores, all that was necessary for their proper care in health or in sickness. We confess that, at the first, we felt far from assured that the sanitary efficiency of the soldier would meet with such care from the powers that be as would be at all comparable to its importance, or to the care which would be devoted to his military efficiency. The New Code of Medical Regulations, although founded on the terrible experience of the Crimean campaign, did not set our mind altogether at ease. The marvellous state of health of the troops engaged in the late Chinese war—a state largely due to the sanitary measures adopted in accordance with the requirements of the New Code, and so remarkable, that during the war, the *mortality*, exclusive of those killed in action or who died of their wounds, did not reach 4 (3·8) per cent. among the Europeans, and was below 3 (2·7) per cent. among the natives of India; while the mean sick among the former did

not average 5 (4·6) per cent., and among the latter was but a fraction above 3 (3·1) per cent.*—even this success failed to give us confidence. The success, indeed, proved one thing to demonstration—the admirable capability of the Medical Department to do its work most thoroughly, now that it was no longer trammelled by that meaningless, aimless routine which had played so baneful a part in the disastrous winter of 1854-55. Certainly there was the consolatory thought that the men under whose direction the medical arrangements for the Chinese war had been carried to so successful a conclusion, had still the control of the medical affairs of the army: Dr. Gibson was still Director-General, the heads of his Staff were still the same. We had no doubt, in fact, that the Medical Department would do its work as well in Canada as in China, if it were not interfered with. And here doubt stept in. The pressure upon the War Department was urgent; the chief question appeared to be to throw into Canada the largest number of troops in the shortest space of time; the people were part of ourselves; they lacked nothing except trained soldiers and military stores. Would the old leaven of military prejudice come to the surface again, and the Medical Department be once more rendered comparatively helpless, by its requirements being made to give way to the more apparent military—that is to say, fighting efficiency of the troops?

We doubted. Whether it was the unfortunate march of the Guards to Guildford in the past summer which rendered us suspicious—a march which told of thoughtlessness or indifference among officers high in the service, and who had even not lacked experience in the field: whether it was that a report of stores being hurried pell-mell into one of the transports destined for Canada, awoke a fear that the Ordnance storekeepers had not yet acquired vulgar (sad to say), but straightforward and very necessary business habits, and revived the painful remembrance of that horrible time when, before Sebastopol, the doctors' hands were

---

* At a meeting of the Epidemiological Society, April 1st, 1861, the Director-General of the Army Medical Department made the following statement of the health of the troops engaged in the Chinese war from the 1st May to 11th Nov., 1860:—

	No.	Deaths.	Mean sick.
Europeans . .	9169	224	418
Natives of India	4920	79	156·

	Europeans.	Natives of India.
Ratio per 1000 of strength constantly sick	46·09	31·71
Annual ratio of deaths per 1000 of strength	45·3	29·45
Deaths exclusive of those killed in action or who died of their wounds	38·43	27·96

tied, his help made unavailing, by the need of necessary medicaments and supplies, which, although in ships at anchor in the harbour of Balaklava, could not be got at or found, being hidden away among, or inaccessibly buried beneath, heavier, and for the time immovable, stores—stowed away, indeed, pell-mell. Nay, in the seeming indifference which led to a repetition of this unbusinesslike and discreditable want of care and order in sending stores on board the transport, we were reminded of that still more horrible time when, while our men, in the camps before Sebastopol, were languishing for a more varied diet; while they were becoming tainted, and subsequently when they were decimated, with scurvy; while the horrors of the awful winter of 1854-55 were aggravated for want of food more fitted for their wretched state; while they were tantalized in their misery by the green coffee served out to them, vast cargoes of rice, potatoes (preserved and dried), peas, Scotch barley, &c., and thousands of pounds of lime-juice and tea, were lying at Balaklava, unknown to the Commander-in-Chief and commanding officers generally, but known to the Commissariat, and to the officers of this department only. Whether it was the assertion that, notwithstanding the experience of the Crimea, no long boots for the soldiers were kept in store, and that France had helped us out of a difficulty occasioned by their sudden want for Canada, led us to fear that Army Sanitary Reform was not yet altogether sound at the core; whether it was that certain rheumatic pains, reliques of vigils, starvation, and exposure in the Sebastopol campaign, and which had crippled our sinister leg, had induced a tendency to carp at anything or everything connected with military movements; or whether it was that the gallant band of men hastening o'er the storm-tossed Atlantic to the deep snows and ice-locked boundary line of Canada, recalled so vividly as to enfeeble the remembrance of much that has happened since, the bitter memory of the tempest-vexed Euxine and the desolate heights and plains of the Chersonese, at that time when—

> Praying breath rose white in air,
> Eyes were set in a stern stare,
> Hands were stretcht for help that came not as they sank in silence low;
> Our grand, our gracious dead,
> Who lay down in their death-bed,
> With their winding-sheet and wreath of winter snow;

—whether it was one or all of these considerations which led us to doubt, we know not, but we doubted, and, happily, without just cause.

It is now known that no pains were spared to provide for the

care of the men destined for Canada, whether sick or well; and there is good ground for the belief that the sanitary condition of the force in British America will redound as greatly to the honour of the Army Medical Department as the sanitary condition of the troops who passed through the Chinese War. The excellent requirements of the New Code of Medical Regulations it would appear have been carried out to the letter; the food and clothing of the troops have received fitting attention,—the daily ration of fresh meat having been increased, according to the direction of the home authorities, to one pound and a quarter, and instructions given to augment it to one pound and a half if needful; and each soldier has been provided with the following extra articles of clothing: two pairs of woollen drawers, two pairs of worsted stockings, two merino under-vests, one chamois-leather waistcoat, one Jersey, one pair of seal-skin mits, one seal-skin cap with ear-muffler, one sheep-skin overcoat, and one pair of Canadian boots; also one pair of fur and buffalo robes for the sleigh. Further, every care was taken for the welfare of the men over the route they traversed on landing. Huts, properly warmed and ventilated, were prepared for shelter and repose at intervals of thirty miles, and arrangements made for serving out hot coffee or spirits and water with the meals. Provision was also made for the sick, and the medical officers placed upon their guard as to the diseases most to be apprehended among the troops. So efficient, indeed, were all the arrangements made, that it is understood the ratio of sick to strength throughout both the sea and the land passage has not exceeded two per cent.

This is as it should be, and affords another striking illustration how greatly the forces of the nation may be economized, when the sanitary condition of the soldier is regulated by the teachings of both reason and experience. The military efficiency of an army is in fact mainly, and in the long run, entirely, dependent upon its sanitary condition. But neither the Government, nor the military authorities, nor Parliament, nor the people, would give due heed to this oft-iterated truth,* until it was driven closely home by the events of the Crimean war. In like manner, our civil population had persistently turned a deaf ear to the doctrine, that the wealth and prosperity of a nation were intimately linked to the health-condition of its people, until they were frightened into attention and belief by recurring pestilential outbreaks of cholera.

---

* "—— Thy chief anxiety," said Cambyses to Cyrus, speaking of the management of an army, "should be to provide for health; for thou oughtest to take care to prevent the army from falling into sickness at all." Cambyses laughed when his son told him that his military tutor had taught him only military tactics, and never mentioned "the domestic affairs of the army."—*Cyropædia, lib.* 1.

The Crimean war constitutes the great epoch of sanitary reform, or rather revolution, in the army. This war will ever be as memorable for its sanitary as its military results. Commencing with a mortality among the troops, mainly occasioned by disease, which exceeded even that caused by the devastations of the most malignant pestilence in a civil population, it ended with a death-rate less than *half* that which existed in the army when stationed at home. The paradox was a strange one, but the one extreme served but to clench the truths to be gathered from the other. Throughout the seven months from October 1st, 1854, to April 30th, 1855, when the men were harassed by work altogether disproportioned to their strength, and by broken rest; when they were subjected to all the evils arising from insufficient clothing and shelter, and scanty and unwholesome food, in the wet and tempestuous wintry season, the rate of mortality rose in the army in the East to 600 per 1000 per annum. In January, 1855, the mortality ranged even to no less than 1,173½ per 1000 per annum; but in November and December, 1855, when supplies had long been regular and abundant, the food wholesome, and the camps subjected to stringent sanitary supervision and regulations, the death-rate per 1000 had fallen to 44 and 33; from January to May, 1856, to 12½; and in May the mortality fell even so low as 8 per 1000—the annual average of deaths, in the same proportion of men, in the Line, at home, being 18·7, and among the Guards 20·4.

The grief, the indignation, the alarm which swept over the country when the disastrous condition of our gallant troops in the winter of 1854-55 became known, happily compelled the Government to institute searching and immediate inquiries into the causes which had led to the horrible hardships that threatened at one time to annihilate the army in the field. Happily also these inquiries brought clearly and indisputably to light the sad fact, that these hardships were not the unavoidable contingencies of a winter campaign in a country far separated from needful supplies, but that they were the natural, but exaggerated, reflex of the ordinary state of things—of the ordinary government and management of the army at home.

The feelings indignantly revolt even now, when we recall to mind the thoughtlessness, the indifference, the ignorance, the wilfulness which played so prominent a part in bringing about the disasters of that terrible winter; which were responsible for the perpetuation of a senseless routine that set at nought the teachings of both reason and experience; and which effectually manacled the many able, and willing, and anxious hands in the service who would otherwise have helped most effectually.

In estimating the indifference and wilful blindness which led to the disasters in the Crimea, it is not to be forgotten that the salvation of the army was ultimately effected by measures neither new nor unfamiliar in military annals.

The experience of previous wars, as abundantly recorded in the writings of Sir John Pringle, Sir James McGrigor, Dr. Hennan, Mr. Guthrie, and others, had taught all those great truths respecting the welfare of an army in the field, which had to be re-learned from the terrible lesson before Sebastopol. But although these truths were familiar to military medical men, and had often been brought home to the Horse-Guards and the Executive by calamities in camp and in hospital, they were never permitted to have that weight with the authorities (particularly the military authorities) which would have led to their sound practical application. Hence the expedition to the Crimea, in all that related to the sanitary care of the troops, was scarcely better provided for than the first expedition to the Peninsula, half a century ago.

Again, it was no new fact to find troops in better health during a campaign than when stationed at home. The annual ratio of mortality per 1000 among the Guards who served in Canada from 1838 to 1842, amounted to 14·5; while at home in the ten years 1837—1846, the death-rate among the Foot Guards was no less than 20·4. The mortality among the Infantry of the Line serving in Canada during the insurrection, differed, moreover, but a fraction from that experienced among the same class of troops at home.

Further, the importance, nay, the necessity, of an accurate knowledge of the sanitary condition of the army in the maintenance of its efficiency, had been most fully shown from time to time. Five statistical reports on the health of the army at home and abroad, were presented to the Government, at irregular intervals, from 1838 to 1853 inclusive. Two illustrations will suffice to indicate the important results which followed from the facts made known in, and the suggestions adopted from, these reports. During the twenty years prior to 1838, the annual mortality among the troops in Jamaica had averaged 140 per 1000 of the strength; this ratio has been reduced so much, that within the last four or five years the mortality has only averaged 30 per 1000. In like manner the mortality among the troops in Ceylon, which aforetime averaged 75 per 1000, has been reduced to 38 per 1000.

The sanitary teachings of peace, however, failed, equally with those of war, in inducing the Government and the War-Office to give that systematic and just attention to the subject which was demanded by its importance, until the awful calamity of 1854-55 came upon us.

The most momentous result of the Russian war was undoubtedly the Royal Commission appointed to inquire into the regulations affecting the sanitary condition of the army; and which brought

clearly to light the fact, that the disasters in the Crimea were a natural sequence of our then military administration.

It was certainly somewhat astounding to learn, as we then did (although not for the first time by those who were familiar with existing army statistics), that the mortality in the army was double that found among civilians at army ages. Such, however, was the fact, as the following figures show:

Rates of Mortality per 1000 per annum.

Effective men of all ages of the Army at home:	
Total	17·5
Household Cavalry	11·0
Dragoon Guards and Dragoons	13·3
Foot Guards	20·4
Infantry of the Line	18·7
Population of England and Wales—army ages:	
Town and country population	9·2
Country alone	7·7
One of the unhealthiest towns—army ages:	
Manchester	12·4

Rates of Mortality per 1000 men of the Army at home, and of the English civil Male population, at corresponding quinquennial periods, as stated by the Registrar-General.

Ages, 20 to 25—Civilians	8·4
„ „ Soldiers	17·0
„ 25 to 30—Civilians	9·2
„ „ Soldiers	18·3
„ 30 to 35—Civilians	10·2
„ „ Soldiers	18·4
„ 35 to 40—Civilians	11·6
„ „ Soldiers	19·3

"From this," the Report of the Commission observes, "it appears that if the army at home were as healthy as the population from which it is drawn, soldiers would die at one half the rate at which they die now."

Such a result was pretty nigh incomprehensible when it was considered that the soldiers were picked men, and that they were seemingly removed from all those disadvantages which affect the health of the labouring classes in ordinary life. Further examination, however, showed that this anomalous result was to be assigned to two categories of causes, to wit, (1) want of exercise and suitable employment among the troops; and (2) crowding and insufficient ventilation, and nuisances arising from latrines and defective sewerage in barracks.

To the want of due exercise might justly be attributed some portion of the insanitary condition of the army, consistently with

what had been observed of the influence of the same cause in civil life. Moreover, it was reasonable to conclude that the different rates of mortality observed in the Cavalry of the Line (13·6 per annum), and in the Infantry of the Line (17·9), might be assigned in some measure to the greater amount and variety of exercise undergone by the former. The trooper, in fact, passes more time out of doors than the foot soldier, his duties being partly on horseback and partly on foot; and the need of grooming his horse, as well as his sword exercise, call into action a different set of muscles to those used in marching and in infantry drill, and require more varied action. "Indeed, all the attitudes of the foot soldier on parade, at drill, and on the march, are singularly monotonous and constrained, and it is rare to see an infantry soldier whose figure is as fully developed or as well set up as that of a cavalry soldier."* The low rate of mortality in the navy (8·8 on the home-station), in which the men, though necessarily berthed in a very confined space, undergo an immense amount of exercise, calling the greatest variety of muscle into play, and pass a large proportion both day and night in the open air, appears to favour the opinion above expressed.

But while assigning just weight to the influence of insufficient exercise in depressing the health of the army, it was unquestionable that the great, the most efficient, cause of its insanitary condition, was the foulness of the soldiers' residences, and the vitiated state of the atmosphere in which the men were compelled to pass the greater portion of their life. The predominance of pulmonary affections among the causes of death in the army was highly significant, as bearing upon the influence of a foul atmosphere upon the health of the men. While in civil life, at army ages, the deaths by pulmonary diseases were 6·3 per 1000, in the Cavalry they amounted to 7·3, in the Infantry of the Line to 10·2, and in the Guards to 13·8; and of the entire number of deaths from all causes in the army, diseases of the lungs constituted no less than 53·9 per cent. in the Cavalry, 57·27 per cent. in the Infantry, and 67·68 per cent. in the Guards.

It could not be alleged that, as is frequently the case in civil life, the clothing, the food, and the nature of the occupation itself were of such a character in the army as to be predisposing causes of the excessive mortality of the soldier from pulmonary disease. Now, if it could be shown that the soldier in barracks breathes a vitiated and polluted atmosphere, it would follow that of the four causes chiefly predisposing to pulmonary affections, namely, insufficient clothing, insufficient and unwholesome food, nature of occupation, and foul atmosphere, the last is the one to which the excessive liability of the soldier to this class of diseases

* *Report*, p. xiv.

must be assigned. Many of the maladies included under the general head of chest and tubercular diseases cannot, however, be attributed directly to breathing a vitiated atmosphere. But, excluding inflammation of the lungs and pleura, acute catarrh, and some other diseases which may have no obvious connexion with the purity or impurity of the atmosphere, it was found that consumption, chronic catarrh,* spitting of blood, asthma, and difficulty of breathing, alone occasioned a mortality of 12·5 per 1000 mean strength in the Guards and 8·9 in the Infantry of the Line.

The extent to which our soldiers were exposed to a vitiated and polluted atmosphere was made sufficiently manifest in the evidence laid before the Commission on the Sanitary State of Barracks. From this it appeared that the dormitories or barrack-rooms were very confined; that although the minimum cubic space allowed to each soldier by regulation was only 450 feet, in the majority of cases this minimum was not attained; that the regulated space of one foot between the beds was also practically unattained,—yet it was certain that the amount of interval allowed between the beds is of more consequence, so far as health is concerned, than the mere amount of cubic space given above by the altitude of the room; that owing to the ordinary construction of the buildings, barrack-rooms rarely have windows at opposite sides or ends of the room, and there are, consequently, very insufficient means of ventilation; that where ventilators existed, "they were frequently stopped up by the men themselves, who come from a class very little persuaded of the advantages of ventilation, and whom poverty has accustomed, from their youth up, to look to the exclusion of the external air, in the absence of fuel, as the best mode of securing warmth;" that "barrack-rooms are occasionally found in the basement of the building, approached by descending steps from the natural surface level, the tops of the windows, which open on one side only of the rooms, being little, if at all, above such surface level; and in low rooms thus situated men may be found lodged in beds so closely ranged that the side of one touches the side of the other;" that the result was, "that the soldier sleeps in a fetid and unwholesome atmosphere, the habitual breathing of which, though producing, for the most part, no distinct immediate effects, probably lays the seeds of that pulmonary disease which is so fatal in the British Army:" of this atmosphere "abundant evidence, though of a most disgusting nature," was laid before the Commission; that, finally, the latrines, cesspools, and drains were most defective, and that to this source "is probably to be attributed much of the excess of

* Most of the deaths so recorded were in reality consumption.—See *Statistical Report of Army*, 1853, p. 20.

mortality by fever which the army statistics show over that arising from the same class of diseases in civil life; their respective rates being: Deaths by fever in civil population in towns, 1·2 per 1000; in the Cavalry, 1·4; in the Guards, 2·4; in the Infantry, 2·5; and in the Artillery, 1·9,—for the ten years ending 31st March, 1857."

Very shortly after the Commission on the Sanitary Regulations of the Army had closed its sittings, a Commission was appointed to inquire into the Sanitary Condition and Improvement of Barracks and Hospitals. The Report of this Commission, published in the course of the past year, confirms, in every respect, the conclusions of the first-named Commission on the sanitary state of barracks. The Barrack and Hospital Commission was authorized to direct the immediate execution of such works as might appear to it to be necessary for the ventilation, warming, lighting, draining, and sewering of, and the securing a sufficient supply of good water for, both barracks and hospitals, provided the cost of the works did not exceed 100*l.* for each hospital or barrack where such improvements were needed. But the Report states that this sum was "found to be totally inadequate even for the execution of the most urgent sanitary works," since, "although large sums of money have from time to time been spent on these barracks and hospitals, a very small proportion of it appears to have been devoted to sanitary purposes. So far, indeed," it is added, "as concerns the health of the troops, almost every barrack and hospital we have visited can be considered in no other light than as never having been completed;" and the funds required for the necessary improvements have consequently exceeded in amount what could have been anticipated when the Commission entered upon its work. (p. 10.)

A few illustrations from this Report may be cited with advantage:—

As might have been anticipated from the death-rates already quoted, the sanitary condition and construction of the Guards' barracks in town were found to be most defective. The interior of the buildings presented a majority of the evils already referred to, not, perhaps, more conspicuously than in many other barracks; but we refer to them for the sake of an additional, and most striking example of the comparative health of troops in barracks and in camp.

The Guards are, perhaps, more continuously barracked in town districts than any other part of the army, and if we compare their mortality in the London barracks, and also the relative proportion of admissions from diseases of the zymotic class, with the death-rate and sickness at Aldershott and Shorncliffe, we find the following results:—

	Deaths per 1000 per annum.	Admissions per 1000 per annum.		
		Fevers.	Diarrhœa.	Total.
Guards—1847-54. . . .	15·24	51·86	61·32	113·18
Aldershott (3 years ending Shorncliffe (Dec. 31, 1859)	4·7	37·5	17·5	55·0

From these figures it would appear that while the Guards were in camp the amount of sickness was reduced one-half, the mortality two-thirds. To estimate the value of these results it is needful to bear in mind that the number of men barracked in town districts in the United Kingdom amounts to upwards of 25,000. Hence, among other suggestions, the Commission recommends that, whenever military requirements will permit it, barracks should be placed in the open country, or in the open suburbs of towns.

The defects of barrack construction were found to be multifarious, and appear to have arisen from the simple fact that buildings were designed (with few exceptions) without any reference to the health of the inmates, but with the object of getting as many men as possible housed in the smallest space.

Although the minimum cubic space allowed to each soldier in permanent barracks, by the old regulations, was 450 feet, the Commission ascertained that no less than 1335 men, equal to one regiment and a half, were living and sleeping in rooms with less than 250 cubic feet per man; 15,195 with less than 350 feet; and 34,882 with less than 400. Moreover, 65,271 men had less than 500 cubic feet per man, and of the whole force, 76,813 men, only 4656 had sleeping room exceeding 550 cubic feet each, and of these only 2003 had an allowance of 600 cubic feet per man. The present regulations provide that the minimum cubic space per man shall be 600 feet. The overcrowding of barracks may be further estimated by the fact, that the deficiency of barrack accommodation, at different stations in Great Britain and Ireland, varies from 21·6 per cent. (Woolwich) to 43·4 per cent. (Chatham).

The Report further shows that there was "a total want of any proper systematic method of ventilation," and that the gravest defects also existed, with few exceptions, in the arrangements for warming and cleansing, in the water supply, drainage, cook-houses, ablution-rooms, wash-houses, guard-rooms, &c.

The chief results of the Commission on the Sanitary Regulations and State of the Army are aptly summed up in a letter of the late lamented Lord Herbert, prefixed to the New Code of Medical Regulations for the Army. He writes:—

"The Report of the Royal Commission has shown the high rate of mortality from disease existing among the troops at all times, but more especially during war—the defective condition of military hospitals—*the absence of any means by which the improvements recently introduced for the protection of health, in civil life, can be rendered available in Barracks, Camps, and Hospitals* [the chief clue to, and chief connecting link between, the sanitary disasters in the Crimea and the high rate of mortality among the troops at home],—and the great loss of life arising from these defects during the late war with Russia.

"The existing regulations," Lord Herbert continues, "appeared to us by no means sufficient to prevent the recurrence of such losses of life and efficiency in the army. On some most important points they are altogether silent.

"The duties to be performed are not sufficiently defined, nor are the responsibilities clearly placed on those charged with specific duties; and, even should a medical officer discern his duty and perform it, there is no necessary connexion between any recommendations he may make, and their being carried into effect.

"To obviate these evils as far as practicable, the Royal Commission recommended two fundamental changes in the Army Medical Department; and unless they be carried out, any attempt at improving the existing regulations will be of little avail. One of these changes is the remodelling of the department; the other is, the organization of a practical Army Medical School."

These changes have now been happily effected. Heretofore it rested with the Director-General to fulfil *all* the requirements, administrative and scientific, of his department. A task manifestly beyond at least the physical capabilities of any one man. There was no one attached to the department specially conversant with army hygiène or sanitary science; no office in which the Army Medical Statistics—the very basis of all scientific procedure and the gauge of sickness or health of the troops—could be reduced; no means of rendering available for the public service the large amount of information and experience on Army diseases which is constantly being accumulated in the Department. Under the recommendations of the Royal Commission the Director-General's Office has been subdivided into three distinct branches, medical, sanitary, and statistical, each under a separate head, who should work the routine details of his department. To the heads of these branches are referred questions connected with the medical and sanitary duties and statistics of the army, and the chiefs of the three branches constitute a consultative council to assist the Director-General with their advice on subjects coming within their respective branches,—the whole proceedings of the department, nevertheless, going on through the Director-General, and under his direction, as the sole responsible administrative head.

The Army Medical School is now in full operation, and in it

the Army Medical Man, at the outset of his career, receives a very necessary specific training in the special sanitary and medical duties he is required to perform, in accordance with the New Code of Regulations for his guidance. These regulations, in addition to the modifications in the Medical Department, already referred to, remedy more or less effectually the defects previously existing in the hospital and sanitary administration of the army,—much prominence being given to Army hygiène, "because," as Lord Herbert remarks, in the letter already referred to, "it must now be considered as a matter of primary importance to the public interests that every resource of modern science should be called into requisition for preserving the health and physical efficiency of the Army."

To give effectiveness to the whole sanitary administration of the Army, the New Regulations require that periodical statistical and sanitary returns (weekly, monthly, quarterly, and annual) shall be sent by medical officers to the Director-General. These returns will keep the Director-General accurately acquainted with the health of the troops in all parts of the world, and a summary of their results will henceforth be accessible to the public in the Report on the Health of the Army, which the Director-General is now required to present annually to the Secretary of State for War, and which is laid before Parliament.

The first Annual Report of the Director-General* was presented to Parliament in the course of the last Session, and from it we obtain a most hopeful idea of the prospective sanitary welfare of the soldier. This will be made evident by the following table, showing the rate of mortality (corrected according to the proportion of men serving at different periods of life) among the troops serving in the United Kingdom in 1859, in comparison with the mortality of the ten years 1837-46 :—

	Annual Ratio per 1000.	
	1859.	1837-46.
Household Cavalry	4·27	10·39
Dragoon Guards and Dragoons	7·94	12·08
Military Train	7·09	
Foot Guards	8·59	18·72
Infantry Regiments	7·58	17·06
Depôt Battalions	12·26	
Civil Population in Healthy Districts	7·23	

This table, as Dr. Balfour, the able head of the statistical branch of the Army Medical Department, justly observes, "shows a remarkable and most satisfactory reduction in the amount of mortality in all classes of troops; indeed, except in the Depôt

* *Army Medical Department.—Statistical, Sanitary, and Medical Reports for the year 1859*, p. 438.

Battalions, it is little above that of the civil population in the healthiest districts of England." He adds :—

"The Foot Guards can scarcely be held as on an equality in a sanitary point of view with the inhabitants of such districts, being quartered chiefly in London, and with some of their barracks in the most densely populated quarters; but even among them the mortality is lower than among the male population at the same ages throughout England and Wales. In the case of the Household Cavalry the numbers are so limited that the proportion might be expected to fluctuate considerably; but in the others the marked decrease can hardly be deemed accidental. It cannot be attributed to the contingency of an unusually healthy season, for the mortality of the civil population, in 1859, did not differ materially from the average of former years. Nor has it arisen from a greater proportion of men being discharged as invalids, for, as will hereafter be shown, the number thus disposed of was, except in the Foot Guards, under the previous average. It may, perhaps, have been in some degree the effect of selection, as so much larger a proportion of the force than formerly consisted of men recently enlisted, and who may not have been exposed for a sufficient length of time to the deteriorating influences which affect a soldier, to have materially suffered in health from them. It will, therefore, be interesting to observe, whether under improved sanitary conditions this diminished rate of mortality can be in future maintained." (p. 7.)

Much probably of the great reduction of mortality in 1859 may have been the result of sanitary improvements, which had, even up to that time, been introduced into barracks and hospitals,* and which are still being carried out, more especially in respect to ventilation, drainage, food and cooking, according to the suggestions of the two Royal Commissions of 1857. In the course of 1859, the new system of ventilation introduced by the Barrack and Hospital Commission had been extended to the principal barracks and military hospitals of the United Kingdom; much had been done to amend latrines, urinals, and sewerage, and great improvements had been effected in the means of cooking. But it was not until after the publication of the New Code of Regulations in October, 1859, that the special sanitary duties of medical officers, instituted by the Regulations, were entered upon. Moreover, the funds disposable for sanitary improvements are limited, and, as a consequence, some little time must elapse before the whole of the suggestions of the Barrack Commission can be carried into operation. Hence it is reasonable to hope that when the sani-

* "There are numerous circumstances which have led to this reduction; but I believe that a considerable portion of it is due to the sanitary improvements consequent upon the statistical results which were brought out by our investigation" (referring to the Royal Commission on the Sanitary Condition of the Army in 1857, of which Dr. Balfour was Secretary).—*Dr. Balfour on the Vital Statistics of the Army. Report of International Statistical Congress*, 1860, p. 363.

tary measures now in progress of execution have been perfected, and the sanitary regulations of the New Code have been some time fully in action, the health of the Army will reach a still higher pitch than it did in 1859.

The subjoined table, compiled from the Statistical Report for 1859, shows the annual ratio of sickness and death in the principal military stations in 1859 and certain previous years:—

	Ratio per 1000.			
	1859.		1837–46.	
	Sickness.	Death.	Sickness.	Death.
Gibraltar	949	7·18	939	13·58
Malta	1214	19·02	1120	16·77
Ionian Islands	881	11·75	1138·7	17·94
Bermuda	537	13·95	1334	33·8
Nova Scotia and New Brunswick	557·8	7·22	900·3	16·0
Canada	545	10·42	981·7	17·42
Newfoundland	1350·1	4·8	781	11·54
Windward and Leeward Command:				
White Troops	1128	19·75	1936	69·54
Black Troops	1012·7	16·66	768	32·16
			1817–36.	
Jamaica:				range from
White Troops	1335	14·42		61 to 307
			1840–49.	
Black Troops	1281	30·95	834	29·86
			1817–36.	
Bahamas*	832	40·3	1070	40·1
			1822–36.	
Honduras*	850·8	6·2	881	30.
Western Africa†:			1819–36.	
Sierra Leone	542	14·02	812	30·1
Gambia	653	25·4		
Gold Coast	581	25·06		
			1837–46.	
St. Helena	802	12·90	943	16·62
Cape of Good Hope	967	12·22	945	16·54‡
Mauritius	1237	16·04	909·6	22·38
Ceylon:				
White Troops	1693·3	35·06	1444·2	41·74
Black Troops	774·4	10·19	1010·9	26·71
Australia	661·5	10·1		
			1844–56.	
Tasmania	416·1	15·	726	11·87
New Zealand	636·4	4·5	529	12·8
China:				
White Troops	2783·2	59·35		
Native Troops	2783·2	41·93		

* Black troops chiefly. † Black troops.

‡ Exclusive of killed in action. If the losses of the 59th Regt., broken down from disease in China, and sent to the Cape for change of climate, be added to the ratio of sickness and death for 1859, the figures amount to 1·077 and 14·57.

It is gratifying to learn from these figures that the reduction of mortality and increased health of the Army in 1859 was not confined to England only, but extended also to the majority of foreign stations. Where, moreover, an excess of sickness and mortality was noted, and where, indeed, there was an exaggeration of some one disease, it was chiefly in connexion with manifest and remediable sanitary defects, such as over-crowding and foul and noxious effluvia, to which the troops were exposed. Thus, an increase of fevers at Gibraltar is assigned to over-crowding of barracks; and prevalence of fever at Malta is attributed also to the same cause, as well as to the quality of the water in the tanks in the dry season, and local defects in certain barracks, including imperfect sewerage, or exposure to sewage air.

Rightly to appreciate the nature of the sanitary measures now in progress of execution or suggested for the welfare of the Army, it is necessary to turn to the Report of the Barrack and Hospital Commission. This Report, and the Report of the Sanitary Commission despatched to the Army in the Crimea, should be in the hands, or placed within reach of every Army medical officer, as two of the most complete, practical, and instructive studies of camp, barrack, and hospital hygiène existing. The Report of the Barrack Commission has, however, a much wider interest than that which arises from its special subject alone. For the Report deals with and throws light upon many important questions of common interest to all who are concerned in the Public Health.

To the solution of one of these questions only can we devote space, but this single illustration will suffice to show the great interest and importance of the Report.

One of the most difficult problems presented to the consideration of the Commission was the ventilation of barracks. The problem requiring to be solved is thus stated:—

"*In a building consisting of a number of rooms, generally entered from a common passage or staircase, sometimes directly from the outer air, and each having an open fireplace, which it is essential in every instance to retain, how to supply at all seasons and temperatures, and by day and night, each room by itself, and independently of every other room, with a sufficiency of air to keep the room healthy, and at the same time to prevent the temperature from falling below what is required for the comfort of the men. To do this with the least possible interference with the structure of the rooms, on a plan not easily deranged, and at a minimum cost?*"

The construction of the buildings and the retention of an open fireplace set aside the possibility of adopting satisfactorily

any artificial system of ventilation in use, whether by propulsion or extraction—the former objection preventing the application of any of these systems on a uniform principle, the latter being incompatible with artificial ventilation. Certainly, air might be driven into a room with a fire in the grate, but then the advantages of the artificial method are lost, and the room can be ventilated much better without it. Again,

"The open fireplace is, if possible, less adapted for rooms ventilated by extraction than for rooms ventilated by propulsion. The chimney, with its fire, is in itself a powerful extracting shaft; but if the extracting shaft acted as it ought, with a predominating power, it would draw the smoke down all the chimneys. If, on the other hand, the chimney-draught were the strongest, air would be drawn down the extraction shaft."

The retention of the fireplace and the construction of the buildings were also fatal objections to the adoption of Watson's, Mackinnel's, or Muir's self-acting ventilators.* The double action of these ventilators is destroyed, and they become incast shafts only, by the action of a fireplace with fire in it; and the same result follows from the opening of doors or windows. They are chiefly adapted, indeed, for single rooms standing apart, such as churches, chapels, schools, libraries, &c., warmed by stoves, and where the doors are shut for hours at a time. Mr. Watson's plan was adapted, under his own supervision, to one of the blocks of houses at the Wellington Barracks, containing twelve rooms.

"He introduced," the Report states, "his ventilator at the top of the staircase which passes up the middle of the house, and inserted louvers in the partition wall between the staircase and each of the twelve barrack-rooms. It was anticipated that an air current would descend through one division of the tube into the staircase, would pass thence through one set of louvers into each barrack-room, would return by the other set of louvers into the staircase, and pass up through the second division of his ventilator, and so escape. On examining the operation of the apparatus, however, it was found that the current in both divisions of the ventilator passed down into the staircase through both sets of louvers into the rooms, and thence up the chimneys, so that there was no up-current in the ventilator at all." (p. 70.)

Dr. Arnott's Chimney Valve and Sherrington's Ventilator (an inlet for fresh air placed close to the ceiling of the room) were found economical and efficient ventilating agents in rooms not occupied by several people, such as non-commissioned officers' rooms, and were recommended to be adopted under these circumstances by the Commission, but neither plan of ventilation is fitted for rooms in which a number of persons live together.

None of the plans of ventilation investigated or submitted to the Commission meeting the requirements of the problem to be solved, the Commission set itself to study the question practically.

And first, it was endeavoured to be ascertained approximately what was the amount of fresh air required per man. Existing estimates of this amount were very various. Chemistry teaches us that at least 200 cubic feet of air per hour is required to dilute the carbonic acid and water given off from the body to the same standard as they exist in the atmosphere.

"But," says the Report, "chemistry takes no cognizance of those aerial poisons eliminated from the skin and lungs, and which in stagnant air have been diluted to the extent stated. Indeed, the object to be served by ventilation is primarily the dilution and removal of these poisonous exhalations, and if this be secured the carbonic acid and water will be removed at the same time.

"Few persons," the Report adds, "are, perhaps, aware that an ordinary barrack fireplace removes a much larger amount of air than is required merely to dilute the carbonic acid and water to a healthy standard. The quantity varies, of course, with the section, height, and temperature of the chimney-flue, and also with the force and direction of the wind. The extremes may be practically assumed at from 6000 cubic feet per hour up to ten times that amount. A twelve-man room, affording 500 cubic feet per man, would on the lowest estimate have 500 cubic feet of air per man per hour supplied to it by the chimney-draught alone; that is to say, the firegrate will ensure a ventilation above twice as great as will fulfil the requirements of chemistry; and yet it has been ascertained by sufficient experience that rooms so ventilated are both offensive and unwholesome." (p. 72.)

This result is, no doubt, partly, if not chiefly, attributable to the fact that the chimney-draught is supplied mainly from the lower stratum of air in the room, the upper portion of the room

* These ingenious ventilators require fixed conditions for their perfect action. Alter these conditions, and they become wholly outlet or wholly inlet. "The condition essential to their operation," says the Report, "is that the room to which they are applied be closed, and in a closed room their action is singular. If a number of people be crowded into a room with the fireplace, doors, and windows shut, and if a tube of an apparently sufficient area to afford ventilation for the inmates be carried from the ceiling of the room above the roof of the building, there will be an irregular effort at effecting an interchange between the air of the room and the outside air. The outer air will descend, and the inner air will ascend in fitful, variable, irregular currents, and the room will be badly ventilated, if ventilated at all. But singularly enough, no sooner is the tube divided longitudinally from top to bottom by means of any division, however thin, than its action becomes immediately changed, a current of air descends into the room continuously on one side of the partition, and a current of foul air ascends from the room continuously on the other side of the partition. One-half the tube supplies fresh air to the inmates of the room, and the other half removes foul air, so that if the size be properly adjusted, the air in the room is kept sweet." (p. 69.)

forming, as it were, a reservoir of foul air situated above the ventilating power.

"The sense of smell," the Report continues, "affording the chief indication of the healthiness or unhealthiness of a room atmosphere, and differing as the delicacy of this sense does in different individuals, it is not perhaps possible to arrive at an absolute standard of ventilation; but in order to obtain some practical estimate of the quantity of air required to ensure this amount, we had air shafts, having certain definite sections, carried from the corners of the ceilings of twelve barrack-rooms in the Wellington Barracks, up through the roof, so arranged that the apertures might be contracted, and the quantity of air passing up each shaft measured by a delicate anemometer constructed by Naumann, of Paris, for the express object. The measurements were taken at different periods, during several months, between two and five o'clock in the morning. The requisite observations of temperature without and within the rooms, and of the hygrometric state of the air, were also taken, and the sensible state of the room atmosphere was observed at the same time. From these observations, as well as from others which we have been enabled to make, we are of opinion that an estimate on which we based our first improvement in ventilation, is sufficiently near the truth for practical purposes. It is as follows:—that in a barrack-room containing a number of men, at 600 cubic feet per man, the whole air of the room should be renewed at least twice in the hour. In other words, that each man should have in round numbers 1200 cubic feet of fresh air supplied to him per hour. Even this amount may not be sufficient to preserve a barrack-room entirely free of odour at all times and all seasons; but the difficulties of a thorough solution of a problem, where the conditions are so variable, have led us to adopt this as our unit of ventilation, while in the ventilating plans we have carried out, it is always possible to increase the amount without difficulty. After our plans had been for some time in operation, we were glad to learn, from a report on the warming and ventilation of dwellings, made to the General Board of Health, by Messrs. Fairbairn, Glaisher, and Wheatstone, that a similar unit, namely, from 15 to 20 cubic feet per man per minute, had been arrived at by these gentlemen. But while adopting this unit, we hold it at the same time to be an indispensable condition, that each man should have the amount of space, 600 cubic feet, recommended by the Royal Commission.

"But to ventilate a barrack-room, it is not only necessary to supply this amount of air, but to supply it at different seasons, during hot weather, during cold weather, and during what may be considered as the temperate days and nights of the year. During mild weather the problem is one of comparative facility. During warm weather, especially if the weather be at the same time moist, nothing short of open windows will keep a room comfortable in which a number of people sleep. This, indeed, is generally done by the soldiers for their own comfort. During cold weather, however, it is essentially necessary to provide for warming part of the admitted air." (p. 72.)

To meet the requirements not met by windows, the Commission determined to adopt a system of ventilation by which each barrack-room should be kept independent of every other room in this respect, and to depend for the movement of the air in the rooms "upon the fireplace and upon the element of the difference of temperature between the air outside and the air within."

The Commission recommends, therefore, that in each room a shaft of certain given dimensions, and having a sectional area adjusted to its length and to the number of inmates in the room (or when the number of occupants is governed by the cubic space, as it is to be hoped will henceforth be the case), to the cubic contents of the room, shall be carried from an angle of the ceiling three or four feet above the roof of the building. "The velocity of the air in the shaft, and hence its ventilating power, will depend, 1st, on the difference of temperature between the inner and outer air; 2nd, on the length of the shaft; 3rd, on the amount of friction in the shaft; and 4th, on the freedom, or otherwise, with which the air to supply the shaft enters the room." Shafts with a sectional area of one inch to every 50 cubic feet of room space are recommended for the top floor of a barrack; of one inch to every 55 cubic feet of room space for the floor next below; and one inch to 60 cubic feet of room space for the still lower floor, if the barrack consists of three stories.

"The velocity in these shafts," the Report states, "is dependent, of course, on the difference of temperature between the air in the room and the air without, on the amount of movement in the outer atmosphere, and other circumstances. When the temperature is nearly equal, as, for instance, when the windows are open, there is very little upward draught, except as the result of movements in the atmosphere without, but when windows are open the room is being ventilated without the shaft. At other times the current is energetic. From a number of observations made with Naumann's anemometer, we have found that in rooms in the Wellington Barracks, with a cubic capacity of 7920 feet, a quantity of air equivalent to from 8000 to 9000 cubic feet per hour passes up the shafts. Each shaft would, therefore, remove from the room about 600 cubic feet per man per hour, if the rooms were occupied by 13 men each, which is the largest number they ought to contain. We have thus obtained outlets for foul air capable of removing 600 cubic feet of air per man per hour; we have already seen that the chimney removes about the same quantity, and thus the amount of 1200 cubic feet is obtained. The amount of air varies so much that it is necessary to provide regulating valves, not under the control of the men, for the inlets; but these valves should never admit of being completely closed." (p. 73.)

The foul-air shafts already introduced into barracks have been made of three-quarter-inch deal, very smooth inside, and rebated

and grooved together at the angles, but it would be better to have the shafts constructed of glazed pipe built in the wall, or to have smooth cement sides. The shafts require to be louvered at the summit to keep out wind and rain; it is requisite also to place inverted louvres at the lower end, to cast occasional down-draughts up to the ceiling.

If, however, a room has no other means of ventilation than a foul-air shaft and chimney-flue, the fireplace will supply itself at the expense of a down-draught through the shaft. It is necessary then to provide proper inlets for air, to supply both the fire and ventilating shaft. The nature, position, and dimensions of these inlets constitute the next question with which the Commission deals. Inlets situated near the floor are productive of great discomfort, by reducing the temperature of the lower stratum of air and causing cold currents. As a consequence they are almost invariably tampered with, to the great and often serious detriment of the ventilation of a room. The Commission ascertained by actual experiment, that air admitted near the ceiling of the room soon ceased to be detected as a distinct current, and that at a short distance from the inlet it had mingled with the general mass of the air and had disappeared. It was decided then "for practical reasons, fully sustained by the results of experiment," that inlets for air are best placed close to the ceiling. The form of inlet recommended and adopted is that of iron or perforated air-bricks of different sectional areas—1 square inch being allowed for every 60 cubic feet of contents of room, or 1 square inch to every 120 cubic feet if warm air is admitted round the fire-grate. Two inlets are recommended for barrack-rooms of ordinary size, one to be placed on each of the opposite sides of the room, but not opposite each other, or both on the same side if the rooms be back-to-back. In larger rooms the number of inlets is to be increased.

In order to prevent draughts, as far as practicable, the inlets should be covered by a wooden cornice several times their length, and sloping upwards to the ceiling at an angle of 45°. The upper side of the cornice is to be formed of perforated zinc with holes of $\frac{1}{8}$ to $\frac{1}{4}$ of an inch diameter. The front of the cornice opposite the inlet should be of wood, to break still further the force of the current. The area of perforated zinc, through which the air passes into the room, is from six to eight times the area of the inlet from the outer air. The accompanying diagrams (Figs. 1 and 2) show the elevation of the ventilating cornice over the inlet, and a section of the inlet.

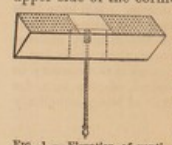


FIG. 1.—Elevation of ventilating cornice over inlet.

Several separate small inlets terminating externally in an ordinary air-brick, internally in louvres sloping up to the ceiling, and capable of being closed at pleasure, would be better in new buildings; or Sherringham's ventilator would be applicable.

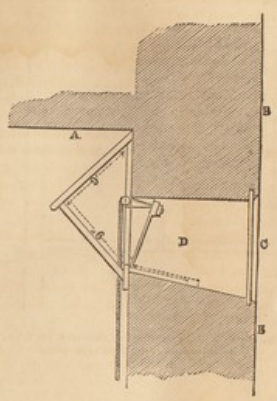


FIG. 2.—Section of inlet, showing the perforated zinc cover within the room, and the arrangement for closing the inlet with a valve and cord working on pivots fixed to its lower edge, and so adjusted that, by being weighted on its upper edge, it will fall down and leave the inlet open when not purposely raised and held up by a cord to close it. The valve should fit very loosely, so as to leave, when closed, at least from half an inch to one inch between it and the sides and bottom of the inlet hole. The valve to be made of zinc or galvanized iron. A, ceiling; B, external wall; C, iron grating; D, valve.

The relative position and arrangement adopted for the outlet shafts and inlets are shown in the following diagrams (Figs. 3 and 4). It is important that the shafts and inlets should be placed as far from each other as possible, in order to secure the most thorough diffusion of the inflowing fresh air.

The large amount of air passing through a barrack-room in winter, with this plan of ventilation in action, would keep the room at a comparatively low temperature, unless some simple method could be adopted for warming a portion, at least, of the air admitted. To meet this requirement the Commission has suggested and carried out the following ingenious expedient,

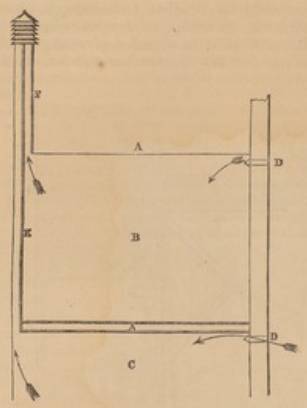


Fig 3.—A, line of ceiling; B, upper room; C, lower room; D, inlet; E, shaft from lower room; F, shaft from upper room.

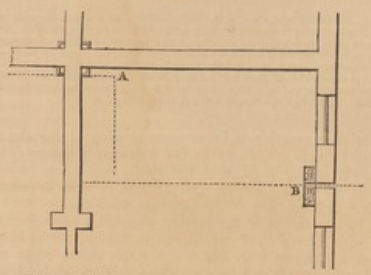


Fig. 4.—Half plan of a barrack-room. A, outlet shaft; B, inlet.

effected by remodelling the fire-grates used in barracks. The new grates recommended are constructed as follows:—

"The grate is intended to be placed as forward into the room as possible; the part in which the fire is contained is of fire-brick, the bottom being partly solid, to check the consumption of fuel. A supply of air is admitted from behind the grate, and thrown upon the top of the fire to assist in preventing smoke; the sides are splayed, so as to throw the heat, by radiation, as much as possible into the room; the opening into the chimney has no *register*; a chamber is placed behind the grate, into which air is brought from the outer atmosphere, and warmed by the large heating surface of the back of the grate, increased by flanges, and after being heated to a temperature of from 56° to 70° Fahrenheit, the air passes into the room by a shaft cut out of the wall, which terminates in a louvered opening above the reach of the men. The chamber is made as large as possible."

Fig. 5 shows the arrangement of the remodelled grate in section; and Fig. 6 shows the entire arrangement for ventilating and warming a barrack-room in the Wellington Barracks.

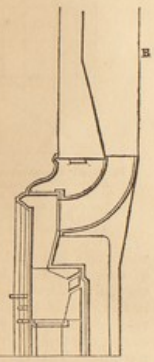


Fig. 5.—Section of remodelled fire-grate.

Such is a brief outline of the plan of ventilation suggested by the Commission, and adopted for barrack-rooms. It is simple but most promising, and is capable of wide adaptation. The Commission, it must be added, recommend that all passages, staircases, and corridors should be ventilated by shafts and perforated panes, independently of rooms. It is not to be forgotten, moreover, that "no ventilating arrangement, however perfect, can be considered as self-acting under every variety of condition," hence an intelligent, and in barracks and hospitals responsible, supervision is at all times necessary.

We would willingly have devoted more space to the many interesting and important suggestions and recommendations contained in the Report of the Barrack and Hospital Commission, but the foregoing illustration of their character must suffice. It is gratifying to find that, thanks to the urgent representations of the Commission, the establishment of a school at Aldershott, for the practical instruction of regimental and hospital cooks, has been sanctioned by the Minister-at-War. No reform was more

urgently needed in the Army. It is gratifying also to know that, while the physical welfare of the soldier is being thus attended to, the improvement of his *morale* is not altogether overlooked. The most important step to this latter end, although approved of and supported by the War Office, is, however, a private experiment. We refer to the formation of the Soldiers' Institute at Chatham. This is intended to be the "Soldiers' Clubhouse,

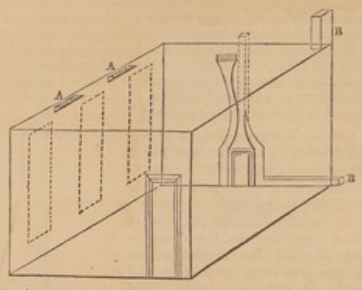


FIG. 6.—Arrangement for ventilating and warming a barrack-room in the Wellington Barracks. A A, fresh-air inlets; B (*lower*), inlet for air to be warmed in the space behind the fire grate, which air, after being warmed, passes up the flue in the wall and is admitted into the room through the louvered opening near the ceiling. The position of the chimney-flue is shown by the dotted outline; B (*upper*), the outlet foul-air shaft.

where he will meet his comrades, smoke his pipe, drink his cup of coffee, and take his ease generally, just as his officers do at the United Service or the Army and Navy."* In the Institute, in fact, he will have all the advantages of an excellent library, reading and coffee rooms, bowling and skittle alleys and five-courts, and ultimately, it is hoped, a gymnasium, without needless restraint. The rooms are brilliantly decorated, and the building is one of the handsomest in Chatham. A large share of the government of the Institute will be conducted by non-commissioned officers and privates; and it is reasonably hoped that the care which has been devoted to the arrangements for the comfort, and in providing for the most favoured amusements of the troops, will, in some degree, wean them from the low dancing-saloons and vile dram-shops which abound in the town.

* *Times*, Nov. 22, 1861.

tony Wood from Gascoigne's 'Theological Dictionary,' which was written before the discovery of America: "Johannnem de Gaunt pudendis suis miserum in modum ulceribus exesis occubuisse."* Gascoigne regarded this death as the vengeance of God on a prince of loose habits who favoured Wycliffe. But the story is at best a link in the chain of evidence which seems to prove that the fearful scourge of the sixteenth century had been known to doctors long before it broke out among Columbus's companions, or in the French army, and existed, possibly, as an alternative form, with leprosy in men of dissolute lives, just as scrofula and phthisis often alternate. Anyhow it is clear that a wide field is open in this department alone to any careful writer.

We regret to have found nothing in Dr. Meryon's book that can entitle it to take the place of a manual. The interest of the subject and the portions that treat of discoveries in anatomy are redeeming features, but we are sorry to say that we see no reason why it should displace Sprengel, in spite of his length and deficiencies.

REVIEW XI.

Statistical, Sanitary, and Medical Reports of the Army Medical Department for the Year 1859. ('Parliamentary Paper,' 1861, pp. 438.)

FEW among us will take up this book without thinking of that good man and wise statesman to whom its publication is chiefly owing. This is not the place to review Lord Herbert's political life, or even to chronicle what we owe to one whom Providence enriched with almost everything man can desire, and who worthily used those beneficent gifts. When it was ordered that he who exalted even his great place, and made more illustrious even his far descent, by personal qualities of the highest order and by motives most pure and noble, should be removed from among us, we felt this could only be because the work was accomplished for which he was so richly endowed. On looking back at Lord Herbert's career, we fancy we can in fact perceive the complete circle of a finished work. At his first entrance on political life, it might have been supposed his career would have been in almost any channel than that in which it was actually destined to run. Had we predicted his course, we might have chosen diplomacy and foreign affairs, or the management of colonies, as best suited for that wide-grasping and polished mind, and for that just and equable disposition. But circumstances threw him early in another direction, and made him the great War Minister of his day. Perhaps no man in modern English history has so completely mastered his subject, and short of the technicalities of actual military movements, no man probably possessed a more thorough insight into the working of the great machine which we are obliged to keep ever ready while we wait for that far-distant time which the eye of the poet can alone see,

> "When the war flag will be furled
> In the parliament of man; the federation of the world."

* Wood's Athenæ Oxonienses, A. 1384.

Among the several divisions which compose our great military system, none occupied more of Lord Herbert's attention than the medical department. It was perhaps at first chiefly the kindness and tenderness of his disposition which led him to look closely into the arrangements for the relief of the soldier when sick or wounded. But he very soon recognised that the care of the soldier, while it is for all countries a duty, is for this nation a matter of vital moment. In the face of the great armaments of countries which equal us in intelligence and far surpass us in population, we can only maintain our station, and even our liberties, by keeping at the highest point the vigour and efficiency of our soldiers. Our small army must be a *corps d'élite*, and superiority both in mind and body must balance the immense excess of force and numbers which can be arrayed against us. Lord Herbert's constant object was to encourage in all branches of the army the development of mind, and to provide to the utmost for the care and strengthening of the body.

This work he in great measure accomplished, or at least has so prepared the way that little remains to do except to follow him with loyalty and vigour. He stamped a policy and initiated an action which must be followed, for it is firmly based both on truth and expediency. So far, then, we believe that this great administrator's work in life was accomplished, and that on that work is set the stamp of completeness and durability.

This is not the place or time to record all that has been done for the medical department of the army by Lord Herbert and by those who have been associated with him. We will only now say that he acted with equal justice, liberality, and wisdom. He clearly saw that the interests of the soldier and of the surgeons of the army are identical, and designed all his plans to be of equal benefit to both. The tone in which Lord Herbert always referred to the medical profession indicates the extent to which he understood its claims and action. He not only perceived its utility and appreciated its action on some of the deepest problems of this mysterious life, but he entered profoundly into its principles and even its technicalities. Lord Herbert was one of perhaps some twenty laymen who have mastered the principles of physiology and hygiène; and physicians who were brought into contact with him were often surprised to find him as well acquainted with many professional details as themselves. In this particular, indeed, no succeeding War Minister can hope to equal him; and herein his death will be an irreparable loss to the Army Medical Department.

It has been impossible for us to notice the work which heads this review without these few remarks, for the publication of an Annual Report by the Army Medical Department was part of Lord Herbert's scheme. It is, we believe, an essential point that such a report should be yearly issued, and we think that no one will read the present volume without admitting the expediency, and indeed the necessity, of Lord Herbert's proceeding.

The Report is intended to give to Parliament and to the nation

a yearly statement of the health of the army in all parts of the world, and of the working of the medical department. It consists of three sections, each section being the report to the Director-General by the head of one of the three divisions into which his office is divided—viz., of the statistical, the sanitary, and the medical branch.

The Statistical Report naturally commences the work. It contains a complete statement of the sickness, mortality, and invaliding of the army, during the year 1859, in all parts of the world except India. It was found impossible to obtain the returns from India for the year 1859, but in future years they will be given, and then at one view we shall be able to see the exact condition of every regiment of our scattered army.

This Report is by Dr. Balfour, and is to be considered as a continuation of those able army reports which, initiated by Henry Marshall, and worked out by Sir Alexander Tulloch and Dr. Balfour, have had so immense an effect not only on the measures taken to improve the health of the soldier, but indirectly on the progress of the great subject of public health.

We remember reading somewhere that Napoleon the First, in his early, ardent days, when the scheme of universal conquest first dawned upon him, used to say that no book was so interesting to him as the dry details of figures which showed him the efficiency or sickness of his troops. That great calculator of forces was no despiser of statistics, but knew well the deep meaning which underlies the formal and uninviting calculation. But what Napoleon in his vaulting ambition wished most to know, is also that which peaceful and contented England has chief need to learn. A conscientious and provident care of the lives of those who serve the State has need of the same system as the lawless lust of conquest which regrets only an unproductive expenditure of force. It is indeed surprising to us that annual reports of this kind should not have been sooner ordered.

The earlier statistical reports were productive of great good, and led at once to vast improvements, but they were published at such distant intervals, that their exposures of evil or statements of benefit were long after date. It is the very basis of good administration to know quickly, in order to act quickly. We look upon this annual statistical report as the most important of the changes effected by Lord Herbert. It is, as it were, the keystone which locks all the improvements together. The various arrangements by which accurate sanitary supervision is carried on throughout the army seem to be extremely well devised, but without this annual digest there would be danger that they might become mere forms. But now it is impossible that anything can go very wrong, or any duty remain unperformed, without early detection.

With respect to the Report itself, we defer its analysis to a later period, as we hope to present to our readers in a future number a full account of the statistical inquiries into the health of the army and navy which have been lately published. But we may observe that the Report

does the greatest credit to Dr. Balfour; it must have cost him great labour, and has evidently been most accurately prepared. There is a little difficulty in comparing it with the former army reports, as the classification has been altered, in accordance with the improved returns now used in the army. Although there cannot be a doubt that the new classification and nomenclature are much better than those formerly in use, we question whether the arrangement might not be still improved. The classes are now too large and heterogeneous, and one table sometimes requires a second before its meaning can be seen. Thus the heading, "Miasmatic Diseases," which includes not only malarious affections, but eruptive fevers, continued fevers, dysentery, cholera, tonsillitis, ophthalmia, and rheumatism, does not sufficiently express its meaning; Dr. Balfour has been obliged to distribute the diseases under the separate headings in a subsequent table. For statistical purposes the generalization has, we conceive, been carried too far, though Dr. Balfour has, by additional labour, to a great extent remedied this inconvenience.

We will only observe, before leaving this part of the Report to be more fully dealt with on a future occasion, that the health of the troops almost everywhere was very good in 1859. There is a most gratifying decrease in the mortality of all arms and at almost all stations. The causes of this are probably complex and dependent on better selection of men, better treatment of them, and more individual care on the part of the men themselves. Although it is too soon to express ourselves confidently, we have a strong impression that future years will tell a very different story of the health of the soldier from that recorded in the former reports and in the celebrated Blue-book of the Sanitary Commission.

The second section of the work contains the Sanitary Report, by Dr. Logan, Inspector-General of Hospitals. This is, as it were, the natural supplement to the Statistical Report; that shows the results, whilst this indicates the causes of the results, and what is doing to modify the results of future years. Dr. Logan takes a rapid survey of all the stations of the army, referring to their sanitary condition, and the measures taken to improve them. The following extract will show how this is done:

"India.

"In the *Bengal* Presidency this year circumstances were very exceptional throughout most of its upper provinces, and efforts were urgently continued to provide barrack and hospital accommodation, of permanent or temporary character, to meet the requirements of a largely increased European force separated into cantonments after field service during the mutinies. The period required the active supervision and constant care of the medical officers for preservation of the health of the troops at many stations, especially when they, unavoidably, were under insufficient shelter from climate during the hot season. The monthly sanitary reports received from the officers evinced the great activity and close attention they must have devoted to all matters of drainage, cleanliness, and sanitary police of cantonments, camps, and their vicinities; ventilation of barrack dwellings, means of ablution for the soldiers, and the many other details connected with the health of the men and the duties of sanitary officers. The senior medical officer present at each station having been appointed to the special and responsible charge, as sanitary officer, his diary of transactions was systematically submitted to the inspector-general of hospitals.

"*Madras.*—At many of the stations occupied by the British regiments the barracks were in a transitional and improving state. A new cavalry barrack was in process of construction at Bangalore on the race course, and was reported as being placed on high ground, free from any obstructing circumstances as to ventilation. The principal medical officer, the deputy-inspector-general of hospitals, gave his opinion that the duty and employment, in cantonment or garrison, exercised no injurious effect on the health of the troops, many of whom, however, had been subjected to severe exposure during the late mutinies, and may have thereafter suffered more or less. It was thought the vice of intemperance was diminishing, and hope was entertained that, with increased sources of employment and recreation as afforded by gymnastics, racket courts, reading rooms, &c., the taste for the debasing vice would be found to wear out. Many such proposed means, however, were negatived for the present on financial grounds.

"The newly-established red serge frock was found to answer well as a substitute for the cloth tunic, the only objection to the former being its non-durability; an improved manufacture might remedy this particular defect. The shako was no longer in wear, and the wicker helmet with white cotton cover was much approved of and in general use.

"In the diet of the troops an improved quality of meat, and, at many stations, a more abundant supply of vegetables, would have been desirable, could they have been procured.

"In the furniture of the soldiers' bedding and bedsteads, generally defective throughout India, little improvement has taken place in this Presidency, although pressing representations appear to have been made on the subject through its highest military authority. Iron cots were recommended for more general use.

"*Bombay.*—The annual sanitary report of the principal medical officer had been received up to the 31st March, 1859, only. He states that due means were adopted, during the term of his report, by the Government and military authorities, to remove, if possible, any causes of disease among the troops. Careful surveillance appears to have been exercised in regard to the quality and quantity of the soldiers' dieting, to proper adaptation of their dress in relation to season, climate, period of day or night, in which they were employed, and to circumstances of field duties.

"In respect of the troops not employed in the field (including some regiments newly arrived in the country), their sanitary condition, from their not having been exposed, as others had been, consequent upon the mutinies, was generally satisfactory."

It is certainly very satisfactory to be assured that so much is now being done in India, and we hope the statistical returns of next year will begin to show the influence of all this care. But we must observe, that matters will soon relapse into the old dreary round of negligent routine, unless the Indian officials know that some action will be taken at home in consequence of the reports transmitted from foreign stations. Thus, in the above extract it will be observed that at many stations in the Madras Presidency "an improved quality of meat and a more abundant supply of vegetables would have been desirable, could they have been procured." But we will be bound to say, there is scarcely a station in India where good meat and plenty of vegetables may not be procured if the authorities are in earnest on the subject. And we

conceive that such a paragraph as the one above should be followed at once by an order from the Home to the Madras Government to pay attention to this point. If a constant surveillance is kept up in this way, there can be no doubt that idleness and routinism will disappear. The fatal belief which has heretofore damped the energies of almost all officers, has been that whatever they represented, and however they represented it, nothing would be done; and that the man who was most active in suggesting improvements only got the character of a troublesome fellow who must somehow be put down. But now no representation can be a dead letter, it will always receive attention; if it is bad, it will be thrown aside; if good, it will be acted upon in the proper way, and at the proper season. At least, we infer that this is the course contemplated by the Government and by the able officer at the head of the medical department.

At p. 177, Dr. Logan gives an account of the suggestions made to the Minister of War by the Director-General at the outbreak of the China war, and of the orders sent to the sanitary officer of the force in China. We regret we have not space to quote these documents, but we hope that some official account will hereafter appear of the expedition to Pekin, as it was a most remarkable instance of the way in which the health of an army can be maintained under no very favourable circumstances by judicious management. If such a report should be issued, we shall then return to the documents contained in the work before us.

In addition to Dr. Logan's general summary, this part of the Report contains six able sanitary and topographical papers—on Deesa, Mount Aboo, Umballa, Ghazeepore, Columbia, and British Guiana, by Messrs. Hanbury, Ogilvy, Kendall, Fleming, Seddall, and Reade.

We presume that gradually a complete series of such reports will be published. The Indian journals—especially the old 'Madras Medical Journal,' the 'Bombay Transactions,' and the 'Bengal Indian Annals'—contain a number of valuable reports of this kind; but there will be a great advantage in giving them of later date, and in a single and accessible work.

Of these essays, that of Mr. Hanbury on Deesa, and of Mr. Ogilvy on the neighbouring hill station of Mount Aboo, are the most immediately interesting from their connexion with the great question of the location of European soldiers in India—a question which will receive its answer from the commission now engaged in considering the sanitary condition of the army in India. From the character and knowledge of many of the members of this commission, we believe there can be little doubt as to the result of their deliberations. For our own part, we conceive that one answer only can be given, and that is, that Europeans must occupy hill ranges, and that there is no military or political reason which is sufficiently important to set aside this cardinal measure. Mr. Ogilvy's report on Mount Aboo shows not only the advantage of the station, but also how much could be done, even in these chosen places, to improve the location, housing, and diet of the troops.

These topographical essays will evidently be a very valuable and important part of the new report.

The third and last section of the work is the Medical Report, by Deputy-Inspector-General, Dr. Mapleton, the head of the medical branch. In it are given all the details of the department, the admission into the service during the year of medical men, the deaths and retirements, the circulars issued from the office, and other particulars. The numerical strength of the department will probably surprise our readers; at the end of 1859 it was 1075, and this was exclusive of the great Indian service, which is even more numerous, and which is now incorporated with the royal army. The department must now number more than 2000 officers scattered over all parts of the globe.

The contents of this part of the Report are very various. Essays on sunstroke and dysentery; an account of the fittings of the hospital-ships *Mauritius* and *Melbourne*, employed in the China war; surgical reports by Dr. Savage, Mr. Lee, and from the General Hospital at Chatham; observations on the composition of the air in the wards of Fort Pitt; and two lectures by Professor Longmore, compose the bulk of this section of the work. A list of all the medical officers of the army; the questions asked at the examinations for entry and for promotion, and a full specification of the fittings of the hospital-ships just referred to, are appended.

It will be observed that a new system has been thus inaugurated—viz., the publication of essays on medical and surgical subjects by army surgeons. It has been long urged upon the Government that, both for the sake of the department and of science, it would be highly expedient to issue periodically a work similar in character and aim to the well-known 'Recueil de Mémoires de Médecine et de Chirurgie Militaires,' which has been published in France since 1766. The late Inspector-General, Henry Marshall, one of the most acute and philosophical of the army surgeons of our time, very strongly advocated this measure, and justly argued that it would be productive of the greatest benefit. We are truly glad to see the plan at last in action; medical officers will now have open to them a ready and easy mode of publication, and we do not doubt that there will soon be in English a collection of essays not inferior to those which have so long conferred such credit and honour on our brethren in France.

The essays in the present Report, although good and interesting, can hardly be taken as a sample of what will be forthcoming when the army surgeons become fully aware of the new system. The papers on sunstroke contain some good observations, and Dr. Massey's essay on dysentery will be read with interest, as affording additional evidence of the way in which the ipecacuanha treatment of dysentery is becoming the fashion in India. Large doses of ipecacuanha now appear to be employed, almost to the exclusion of other plans, and apparently with marvellous results.

Two papers on the determination of the carbonic acid in the air of the wards at Fort Pitt supply some valuable facts for the hygienist;

and the careful surgical reports from the same hospital by Dr. J. R. Taylor and Mr. Matthew, will no doubt be studied by all surgeons.

In this volume is commemorated the opening of the Army Medical School at Chatham, in October, 1860. Two lectures delivered by Mr. Longmore, Professor of military surgery, on the occasion, and before alluded to, contain an admirable account of the objects for which the school was established by Lord Herbert, and of the relations of the medical department to the other departments of the army. They are extremely well written, and we beg to direct the particular attention of our readers to them. We had intended to have given an account from the first lecture of the new Chatham school, which we believe will prove to be of very great importance to the Army, but the space at our disposal is at present so limited that we must defer our notice to some more favourable opportunity.

In conclusion, we have only to say that if we have spoken favourably of this volume, we have not said one word more than it deserves. It is a good commencement of a most valuable system, and will, we trust, be worthily followed up. We congratulate the Director-General on the issue of his Report, and we are sure he may regard it with unfeigned satisfaction.

But as we close our short notice, the unbidden regret rises again to our mind, that he is gone whose sagacity suggested and whose influence ensured the publication of this work. May its successive numbers ever embody his spirit: that earnest desire to do good and to press on to higher and higher aims which so emphatically marked the noble and generous mind of our great War Minister.

ARTICLE III.—*Notes of Cases from the Kidderpore Hospital, Calcutta.* By FRANCOIS DE CHAUMONT, M.D., 1st Battalion, Rifle Brigade.

THE following notes are a record of the more interesting cases of wounds, etc., which came under my care at the Kidderpore Hospital, during a period of five months, from January to June 1858. The establishment was organised, about the beginning of January, as a general hospital for the sick and wounded of the Queen's Regiments in the field or newly landed in the country. To these were afterwards added the Naval Brigade. The first admissions comprised the remains of the Lucknow garrison, and the sick and wounded of the relieving force.

WOUNDS OF THE HEAD.

CASE I.—Private Christopher Porter, 93d Highlanders, was wounded at the second relief of Lucknow, on the 16th of November 1857. A musket-ball entered the left eye, traversed the head, and passed out immediately above the zygomatic process of the right side. He stated that he had never suffered much pain. The right eyeball swelled to a great extent, and finally burst on the voyage down the river; the sight of both eyes had, from the first, been completely destroyed. Shortly after his arrival at Calcutta, a slight erysipelatous inflammation attacked the eyelids and upper part of the face, but this was speedily subdued by lead and opium lotion. A little purulent discharge continued to ooze from the left socket, but was gradually diminishing, and had nearly ceased when he left for England on the 8th of February.

CASE II.—This was a somewhat similar case, although implicating only one eye. Private Francis Lyons, 84th Regiment, was wounded on the 25th of September 1857, at the first relief of Lucknow under General Havelock. A musket-shot entered the head at the root of the zygomatic process of the left temporal bone, and passed out through the eye of the same side, which it completely destroyed. Considerable exfoliation had followed the injury at the wound of entrance, but both wounds were quite healed on his arrival at Calcutta. He, however, suffered frequently from pain, and was quite unable to bear the slightest exposure to the sun—the more so, as he had had brain fever in Burmah during the Pegu war. He was finally invalided to England.

WOUNDS OF THE ABDOMEN.

CASE III.—Private Cornelius Hogan, 32d Regiment, was one of the original garrison of Lucknow, and was wounded at Chinhut, near the city, on the 30th June 1857. A musket-ball struck him on the left side, just below the crest of the ilium, and passing into the abdomen, lodged there. The intestine was wounded, and an artificial anus formed of itself at the wound of the ilium, through which he passed all fæces for three weeks, nothing coming by the rectum. Even after the fæcal discharge had ceased, he passed flatus by the iliac opening for some months. On admission here, there was still a little purulent discharge, but the wound was tending to heal, and he walked about easily with the help of a stick. The particulars of his case were gathered partly from himself, and partly from the abstract sent with him from the Upper Provinces.

CASE IV.—Private James Felloon, 64th Regiment, was wounded at Cawn-

pore, on the 26th November 1857, by a musket-ball, which entered the epigastric region at the inner margin of the eighth rib, and was cut out laterally between the eleventh and twelfth ribs of the same side. According to his own statement, he vomited some florid blood immediately after receiving the wound. On admission here, the wound of entrance was quite healed, and only a very slight purulent discharge flowed from the wound of exit. In this case, both the diaphragm and peritonæum must have been wounded, as the bullet certainly passed behind the ribs. It is also possible that the stomach and liver may have been injured, although the symptoms were scarcely severe enough for such lesions.

In connection with these cases, I may mention some which occurred in the Crimea. An officer of the Light Division was wounded at the assault on the Redan, on the 18th of June 1855, by a ball, which, fired at a very short distance, entered the abdomen about three inches to the left of the umbilicus, and passed out in the lumbar region near the spine. The peritonæal cavity was to all appearance perforated; but he nevertheless recovered without a bad symptom, and is now doing duty with his regiment.

A rifleman, in the trenches, was shot through the body from side to side, the ball entering just below the twelfth rib of the left side, and passing out at nearly the same spot on the right. He passed blood in his urine immediately afterwards, and continued to do so for some time, though he ultimately recovered without a bad symptom.

A lad, who came under my care at Scutari, was wounded at Inkermann by a ball, which entered the abdomen in a slanting direction near the anterior superior spinous process of the left ilium. A great deal of offensive discharge came from the wound, and he finally sank exhausted. On examination, a large grumous abscess was found in the iliacus muscle, and the ball discovered, lodged in the body of one of the lumbar vertebræ.

WOUND OF THE THORAX.

Case V.—Private Owen Doyle, 34th Regiment, was wounded at Cawnpore, on the 26th November 1857, by a musket-shot, which entered the right side of the chest in the lateral region, breaking the eighth rib, and was cut out posteriorly near the root of the eleventh rib of the same side. He stated that he brought up a large quantity of florid blood immediately after the injury, and that he was bled freely from the arm. A number of exfoliations came away through the wound of exit; and, on admission here, he still expectorated purulent matter, and, occasionally, small fragments of bone. Beyond a little puerile breathing, and a few coarse moist sounds about the anterior wound, there were no abnormal signs on physical examination. About three weeks after his admission he was seized with pyrexia, œdema of the feet, vomiting, and diarrhœa. By and by, he began to complain of pain in the chest, and to have hemoptysis. On examination, the wound was found to communicate with the air-passages, as both pus and air were expelled on coughing. There was no pneumo-thorax. He lost his appetite entirely, sweated profusely, and his urine was alkaline and highly phosphatic. The chest was blistered, and calomel and opium administered, whilst a liberal diet, with malt liquor, was allowed him. Under this treatment he rapidly improved, and was soon able to embark for England.

I may cite another case of recovery from a wound of the lungs, which occurred in the Crimea in August 1855. A rifleman was wounded by a ball, which entered the right side of the chest, close to the sternum, between the cartilages of the third and fourth ribs, and, passing out in the axilla, lodged in the inner aspect of the right arm. He spat up a great deal of florid blood; and, when brought into camp, was suffering severely from dyspnœa, his face being almost livid. He was at once bled to forty ounces, with immediate and manifest relief. A repetition of the venesection was required the same evening; and from that time he did well, although he had ultimately to be invalided, as dyspnœa recurred on the slightest exertion.

WOUNDS OF THE EXTREMITIES.

Case VI.—Private John Daniels, 78th Highlanders, was wounded at the first relief of Lucknow, on the 25th of September 1857, by a musket-ball, which passed through the axilla. On his admission, the wound had healed, but the arm was disabled, as the power of the flexor muscles appeared to be lost, although the extensors acted pretty well. He suffered constant pain in the limb, aggravated at night; but otherwise his health was pretty good. A blister applied to the fore-arm gave him some relief, but did nothing towards restoring the power of the limb. He was finally invalided. The probability is, that the median and ulnar nerves were severely injured, if not completely divided.

The following is a similar case, from injury applied at the distal end of the limb.

Case VII.—Richard Kitt, A.B., H.M.S. "Shannon," was one of the Naval Brigade at Lucknow. On the 13th of November 1857, whilst in the act of loading a gun, the piece accidentally exploded before he had withdrawn the rammer, the handle of which was driven through his left hand, tearing it open between the third and fourth metacarpal bones. The arm was also severely injured, although he could not accurately describe the nature of the lesion. The wounds had healed on admission, but the limb was quite useless, as he could neither flex nor extend the fore-arm. It was colder than the other, much shrunken, and gave him constant pain, increased at night; he was, however, barely conscious of a sensation when the skin was touched or the ulnar nerve pressed. About six weeks after admission, a small abscess, about the size of a pea, formed in the palm, and from this a minute splinter of wood was extracted. The only relief he obtained was from friction and passive motion.

The following is a similar case, from a wound of a different sort.

Case VIII.—Private George Wickens, of the 90th Light Infantry, was with the ammunition guard at Lucknow on the 24th November 1857. An infuriated camel seized him by the right arm, and bit him severely in the upper third of the humerus. The wounds had healed before he came to Calcutta; but the arm was for all practical purposes useless, as he had completely lost the power over the muscles supplied by the median nerve, in the distribution of which he also suffered extreme pain. It is probable that the animal had nearly quite severed the median nerve, leaving only a few sensory filaments entire. The ulnar had not suffered at all, for the pain implicated only half of the ring finger, and he could flex the little finger perfectly.

Of the other gun-shot wounds of the extremities, the majority

had either healed before their arrival here, or had entailed amputation in the field. They, however, evinced a strong tendency to re-open, and the bones to exfoliate, particularly among those men who had formed part of the Lucknow garrison, and who had suffered so much hardship and privation. Several cases of phagedæna, too, were admitted, which had broken out chiefly on board the river boats during the voyage down to Calcutta. In two cases, so serious a loss of tissue occurred as to entail secondary amputation. The rest, however, yielded to treatment, which consisted of the local application of the nitric acid, both strong and dilute, alteratives, good diet, and stimulants.

Of incised wounds, only two cases presented themselves; both men having been on the baggage-guard at Alum-Bagh on the 24th September 1857, when they were attacked by the enemy's cavalry. One man had received a sabre cut on the right wrist, by which the extensor tendons were completely severed. The other had two sabre cuts on the head, one across the jaw, and many on the right hand, the three outer fingers of which were severed, and the index and thumb much injured; he had also a wound of the left foot, and two lance thrusts in the back, which he had received when on the ground. All the wounds had healed before his arrival here; but he had, of course, to be invalided on account of the loss of his fingers.

Case IX.—The following case is mentioned here because, though primarily a gun-shot wound, it proved fatal from other causes.

Richard Hocking, æt. 40, A.B., H.M.S. "Shannon," was one of Sir Wm. Peel's Brigade, and was wounded at Lucknow, on the 16th November 1857, by a musket-ball, which entered the right infra-clavicular space, about the coracoid process. Some exfoliation followed. On his admission here, on the 22d April 1858, the wound was discharging profusely, and on a probe being introduced, a good deal of rough bony surface was discernible. The ball had not been extracted; and he himself stated that he felt it under the scapula, but as there was no other evidence of its presence there, it was not considered advisable to cut down for it. An abscess had indeed formed in the axilla, and been opened, to the diminution of the discharge from the original wound, but the probe did not encounter any foreign body in the cavity. In the lower third of the scapula, however, at the seat of pain, there were puerile breathing and decidedly increased vocal resonance. On the 2d of May, he complained of pain in the perinæum, just behind the scrotum, and stated that he made water without much difficulty, but in an irregular stream. He further mentioned, that five years before he had been treated for stricture at Haslar, where armed bougies, had been introduced into the urethra, and the stricture divided from within, and that a false passage had been made at that time. On my attempting to introduce a catheter, he was suddenly seized with a violent rigor, on which the instrument was immediately withdrawn. He himself stated that it was ague, which used invariably to seize him on catherisation. This was proved by the rigor returning every morning at the same hour for some days. He did not again complain of pain until the 5th, when the penis and scrotum were found to be œdematous, and there was more difficulty in micturition. From the local symptoms, the urinous odour, and the marked anxiety of countenance, it was evident that urinary extravasation had taken place. The penis was freely punctured with a lancet, giving vent to a considerable quantity

of fluid, and an incision was made in the scrotum, with temporary relief. In two or three hours the swelling had increased, and there was intense pain on pressure in the hypogastrium. He seemed to suffer a great deal at the original spot in the perinæum, and there was also some pain and hardness to the right of the anus. It was judged proper to lay open the perinæum; and, accordingly, a deep incision was made in the mesial line, whereby an abscess of some extent was opened, giving vent to a large quantity of urine and very fœtid pus; and as this abscess extended into the right buttock, a counter-opening was made in that region. I now proceeded to divide the stricture of the urethra, a matter of some difficulty, as the rigidity of the penis prevented the introduction of an ordinary curved staff. A long probe was substituted; and on its point the stricture, which cut hard and grisly, was divided. On recovering from the chloroform, under which he had been put, he expressed himself as feeling much relieved. The pulse, which was 120 and hard before the operation, fell to 112, and became quite soft. After an opiate, he soon fell asleep, and passed a quiet night. On the 7th, he began to look typhoid, and wine was administered frequently. On the 10th, he complained of great pain in the hypogastrium, where an abscess having been found, was opened. By the same evening, another had formed in the right iliac region, which was also opened, to the relief of the patient. On the 12th, hiccup and diarrhœa came on; he became gradually weaker, and finally expired at 6 P.M. on the 14th, nine days after the operation.

Sectio Cadaveris. *Post-Mortem horas* xvi. Rigor mortis marked. Emaciation considerable.

Abdominal Abscess. The abscess consequent on the infiltration had extended itself completely over the lower half of the anterior abdominal wall, and was filled with blood, the consequence of the sloughing having penetrated the corpus cavernosum of the penis. On laying open the penis, the whole of the inside of the corpora cavernosa was found to have sloughed, and the organ was, in fact, enucleated. The corpus spongiosum and the urethra were, however, entire, down to the point where the stricture had been divided during life. The perinæal abscess extended pretty far into the cellular tissue of the right buttock. The bladder, with the penis, was removed *en masse*, and the canal examined. The stricture had evidently been very tight, and was hard and grisly. The mucous surface of the bladder was covered with black spots, which, on microscopic examination, proved to be only altered blood. There was no pelvic infiltration, the urine having evidently escaped from a spot close to the stricture.

The liver, spleen, kidneys, and supra-renal capsules were all in a state of fatty degeneration, the microscope showing large collections of oil-globules. There was occasional congestion of the mucous membrane of the alimentary canal.

Thorax. Lungs œdematous posteriorly; pale and very emphysematous anteriorly. Pericardium full of serum. Heart flabby. Head not examined.

Wound of Shoulder. The abscess of the axilla was found to communicate with the wound, and to extend to the apex of the scapula, where the bullet lay. It was a round one, with a slice off one side, as if it had encountered some hard substance and glanced off again.

The bullet appears to have lodged originally between the coracoid process and the clavicle, and to have subsequently dropped down. The coracoid process was roughened, but not broken. The cut surface of the ball was too clean to have been done by any of these bones, as the changes in shape which bullets in such circumstances undergo, are generally more rugged and irregular. This is, how-

ever, more seen in the conical than the round bullets. The latter very probably rotate in wounds; but all their diameters being equal, their doing so cannot be productive of very much injury. The conical ball, on the other hand, although it rotates on its long axis in its passage through the air, as soon as it strikes the body rotates on its short axis also, and presents its base at the point of exit; thus tearing up the tissues severely, and inflicting a much more serious wound. A rifleman was shot through the thigh in the trenches, in August 1855, the ball entering the middle of the limb anteriorly, and lodging in the cellular tissue posteriorly, where it could be distinctly felt through the skin. After cutting down upon it, considerable difficulty was experienced in its removal from its having been flattened. It had evidently struck the femur, but not *fair* enough to break it, and had consequently swung diagonally round the bone, presenting its base at the point of exit.

KIDDERPORE, *August* 2, 1858.

ARTICLE IV.—*Half-Yearly Medical Report of Fife County Prison, ending June* 30, 1858. By GEORGE LINDSAY BONNAR, M.D., Surgeon, Cupar-Fife.

DURING the first six months of the present year, the number of our inmates was 154, of whom 117 were males and 37 females. Amongst these, 45 reported themselves on the sick list, some of them more frequently than others, so that there were altogether 62 cases of illness prescribed for. Of these 46 occurred amongst the male, and 16 amongst the female prisoners.

Subjoined is a classified list.

Class.	Order.	Genus.	Species.	M.	F.	T.
I. Pyrexiæ.	II. Phlegmasiæ.	V. Cynanche.	1 C. Tonsillaris.	1		1
"	"	XXIII. Rheumatismus.	2 R. Chr.	12	4	16
"	IV. Profluvia.	I. Catarrhus.	1 C. a frigore.	2		2
"	"	II. Dysenteria.			1	1
II. Neuroses.	II. Adynamiæ.	II. Dyspepsia.		11	3	14
"	III. Spasmi.	Neuralgia.		2		2
"	"	V. Epilepsia.	3 E. Occasionalis.	1		1
"	"	X. Pyrosis.		1		1
"	"	XIII. Diarrhœa.	1 Crapulosa.	2		2
"	"	"	2 Biliosa.	2		2
"	"	XV. Hysteria.			1	1
"	IV. Vesaniæ.	I. Amentia.			1	1
III. Cachexiæ.	III. Impetigines.	II. Syphilis.		1		1
IV. Locales.	II. Vesiculæ.	II. Herpes.	2 H. Labialis.	1		1
"	"	III. Scabies.		1		1
"	IV. Pustulæ.	III. Ecthyma.		4	1	5
"	V. Papulæ.	I. Lichen.	1 L. Simplex.		1	1
"	"	II. Prurigo.		3		3
"	VI. Squamæ.	I. Psoriasis.			1	1
			Carry forward,	44	13	57

ART. II.—1. *Military Musings, by Col. J. S. Hodgson, 12th Regiment, Bengal Native Infantry.*

2. *A Treatise on the public health, climate, Hygiene, and prevailing diseases of Bengal and the North-west Provinces, by Kenneth Mackinnon, M. D., Surgeon and Medical Storekeeper, Cawnpore.* 1848.

3. *British and Foreign Medico Chirurgical Review. No. IX. Article on Dr. Mackinnon's Treatise of Tropical Hygiene. January.* 1850.

4. "*European Soldiers in India.*" *Bengal Hurkaru.* 1850.

A SINGLE fact published in the *Quarterly Review*, and afterwards in a little half-crown pamphlet, some few years ago, by that popular writer, Sir Francis Head, attracted more attention to the subject of railways, than all the scientific volumes that had previously issued from the press. Thousands had been in the habit of travelling by "Rail;" but few were aware, that on *every Monday morning throughout the year*, on one particular railway, a new engine and tender, costing £ 1,250, were put upon the line. The fact was an astonishing one, and set men's minds thinking, and calculating, if this occurred on only one railway in the United Kingdom, what must be the enormous expense, and still more enormous incomings, of these undertakings, to enable them to return a profit?

Would it be thought less startling, or of less interest with reference to the subject before us, viz., the mortality of European troop, in this country, to be told, that "the British soldier, 'who now serves *one* year in Bengal, encounters as much risk 'of life, as in three such battles as Waterloo?" It is, as if every private at present serving in H. M.'s regiments at Calcutta, Dinapore, and Allahabad, were called upon three times a year to expose himself to the dangers of such a conflict, in which one in forty of the combatants fell; and this, too, not for one year, but for several. Carry out the calculation still further, by adding the number of men invalided, and the number of those who die on their way home, or soon after reaching England; then multiply the whole by the number of years that European troops have been serving in India, and reckon what has been the amount of mortality in the three presidencies during the last century!

How often has it been our lot, at some of our large military

stations, to hear at early dawn, the dull sound of the muffled drum, and the long drawn notes of the trumpet, followed by the rattling discharge of musketry, announcing that another of our countrymen had been committed to the silent grave; and yet how seldom is the enquiry made as to the aggregate of deaths occurring in our European regiments, or the conviction brought home to us, that there is a fearful amount of unnecessary waste of human life occurring yearly amongst their ranks, immensely exceeding the slaughter of the bloodiest battles recorded in history.

The most valuable and accurate work, that has ever been published on Medico-Military Statistics, is *Tulloh's Parliamentary Returns:* and it is much to be regretted that, out of the voluminous documents at present lying in the offices of H. M. Inspector-General and the Hon'ble Company's Medical Boards at Calcutta, Bombay, and Madras, a similar abstract has not been prepared by order of Government. Still there have been labourers in the cause, who from time to time have given to the public the benefit of their observations and researches, and have made earnest appeals to "the legislative branch" of the Government, for correction of the evils that exist; and amongst this class are the authors, whose names we have prefixed to this article.

Before going into the subject of Tropical Hygiene, which forms the bulk of Dr. Mackinnon's Treatise, we would collate from the different sources open to us, a few of the most important statistical facts, the correctness of which may be vouched for by the authority under which they were published. They will shew in a clear and tabular form, what the mortality of European soldiers, serving in India, amounts to, and what are the proportional rates of deaths at different stations in different years:—

TABLE I.

Shewing the annual mortality from sickness in every 100 men, both European and Native, of the three armies of Bengal, Bombay and Madras, for the last 20 years.

In every 100	Bengal	Bombay.	Madras.
Europeans	7.38	5.078	3.846
Natives	1.79	1.291	2.095

This table is taken from a valuable paper by Col. Sykes, on the "Vital statistics of the Indian army,"* and (it must be remembered) does not include casualties in the field, or while on service, nor yet the mortality from cholera in Scinde. The most striking fact here shewn is, that the loss of life amongst our European soldiery in Bengal, is double of what it is in Madras: or in other words, that whereas 74 out of every 1,000 die annually in Bengal, only 38 in the same number would be the loss in the sister presidency. The causes, by which this difference may be accounted for, we shall notice hereafter.

The next table is extracted from Dr. Martin's work on tropical climates, and exhibits the relative salubrity of several military stations in the Bengal presidency:—

TABLE 2.

Stations.	Ratio of admissions per 1,000 of strength.	Ratio of Deaths per 1,000 of strength.
Berhampore	2.196	82.742
Dinapore	2.398	64.261
Fort William	1.883	62.781
Chinsurah	1.930	62.954
Cawnpore	1.599	47.689
Ghazeepore	1.438	36.922
Kurnal	988	2.681
Meerut	1.169	2.816
Agra	1.360	2.433

To make this table thoroughly understood, it must be explained that the column of admissions shews the numbers of cases sent into hospital. Thus, it will be observed, on taking the mean of these nine stations, that there are nearly two attacks of disease annually for *every* European soldier in Bengal. These comparative results of locality and climate were obtained from documents, furnished by the Inspector-General and the Medical Board, and extending over a period of ten to twelve years.

Let us, in the next place, ascertain what is the average duration of life amongst the *same class of men*, serving in England and other temperate climates.

* "Statistical Society's Journal."—*Vol. X, page* 124.

TABLE 3.

Stations.	Period of Observation. Years.	From	To	Mean Annual Strength.	Annual ratio of mortality per 1,000.	Increase of mortality per 1,000 beyond that of Great Britain.
Temperate.						
Great Britain	10	1819	1828	46,460	15	
Canada	7	1816	1832	2,975	11	
Malta	8	1824	1831	2,226	15	
Gibraltar	7	1816	1822	3,267	20	5
Tropical.						
Madras	4	1827	1830	11,820	48	33
Bengal	7	1826	1832	8,700	57	42
Windward & Leeward Islands	19	1810	1828	5,768	113	98
Jamaica	19	1810	1828	2,528	155	140

From this statement, which is only one out of many similar calculations of much interest, published by Dr. A. S. Thompson, in his *Prize Thesis* "On the influence of climate," we observe that the ratio of mortality is in every case greater amongst British troops in tropical, than in temperate, climates; and that in India, it is nearly four times, in the Windward and Leeward Islands more than seven times, and in Jamaica ten times greater than what occurs in Great Britain.

Our next point is to ascertain whether all Europeans suffer to the same degree; or whether this great mortality is confined to the ranks of European soldiers. Dr. Hutchinson, the late Secretary to the Medical Board at Calcutta, in the appendix to his work on Indian Jails, says, "The mortality among 'officers of the British army, serving in tropical climates, is 'not so high as that of the soldiers. Thus, taking the mean 'of all the tropical stations, where British troops were em-'ployed, the annual ratio of mortality per 1,000, among the 'officers, is about twenty-nine, whereas, among the soldiers, it 'is seventy-eight. The comparatively low rate of mortality 'among the officers serving in tropical climates, compared 'with that of the private soldiers, shews how the influence of a 'tropical climate may have its deleterious effects ameliorated 'by care; and, although we cannot attribute the increased 'mortality, which occurs among natives of Great Britain, en-'tirely to their habits and condition, it is to be expected that 'the mortality might be materially diminished by careful at-'tention to the diet, clothing and accommodation."

To this all writers agree. Gibbon, after stating that "the 'Roman soldiers, from their excellent discipline, maintained 'health and vigour in all climates," (Asia and Africa being included), adds, "that man is the only animal, which can live and multiply in every country from the Equator to the Poles." Niebuhr, also, who saw all the companions of his travels perish around him, remarks, in his account of Arabia, that, "their 'diseases arose from their European mode of life, such as eating too much animal food, and exposing themselves to the 'night air." Colonel Sykes, whose valuable paper on the statistics of the Indian Army we have before quoted, says emphatically, "*The climate of India is less to blame than individuals: 'for in case foreigners find the people in a country healthy, they 'should, to a certain extent, conform to the habits of the natives 'also.*" But a writer of the present day, Dr. Daniel, who was located on the most deadly part of the African coast in charge of H. M. troops, gives actual proof from ocular demonstration of the truth of these remarks. At Rio Formosa, which he visited in 1839, he found two vessels moored a short distance from the mouth of the river, one of which had buried *two entire crews*, within the short space of five months, a solitary person only remaining; the other, which had entered at a much later period, had been similarly deprived of one-half of its men, and the remainder were in such a debilitated condition, as to be incapable of undertaking any active or laborious duty. He concludes thus: "And yet, amid these regions so rife with 'disease and death, I have known Europeans reside for a 'number of years in the enjoyment of good health, from the 'simple secret of moderately conforming to the habits of the 'natives, as regards diet, exercise, and attention to the due 'performance of the cutaneous functions."

This brings us to the real object of the present article, viz., How may this dread mortality and sickness be lessened, or avoided? Why do we sit down in a state of stoical apathy, and say, 'It must be so, because it always has been so?' We are confounding the "post hoc" with the "propter hoc." We cannot change the climate, it is true: but we "can mould our 'obsequious frames to the nature of the skies, under which we 'sojourn*;" we can study the habits of the natives of the soil among whom we dwell, and "call to our aid those artificial 'means of prevention and amelioration, which reason may 'dictate and experience confirm." †

* Dr. James Johnson, on Tropical Climates. † Ibid.

The causes of disease that produce such fearful loss in the ranks of our European regiments in India, may be classed under two heads: 1st. Those connected with the locality itself, in which the troops are placed, including climate, position, barrack accommodation, ventilation, and drainage; 2ndly. Those over which the individual himself has a control, such as personal habits, occupation, amusements, &c.

We shall briefly show by one or two examples, what has been done by sanatory measures in diminishing the destructive effects of some of our most unhealthy stations in this country.

From a return shewing the mortality at Hong Kong and Tinghæ, we find that, at the latter place, there died, in less than six months, viz., from July 13th to December 31st, 1840, no less than 433 men in three of H. M. regiments. The 18th regiment lost fifty-two, the 26th regiment 238, and the 49th regiment 143. At this rate of mortality, an entire regiment would have been destroyed, as regards numbers, in a twelve month.

		per cent.		In 1,000 Men.
At Hong-Kong in	1842 there died	19	or	190
,,	1843 ,,	22	,,	220
,,	1844 ,,	13¼	,,	135
,,	1845 ,,	8½	,,	85
,,	1848 ,,	2½	,,	25

Now, during the first three years, the troops were exposed to the malarious influence of the paddy-fields, and were very badly housed. In 1845, their accommodation and position were much improved; and since that time, excellent barracks having been built, and great attention paid to drainage and ventilation, the sickness is not greater than that of a healthy station. At Kurrachí and Bellary, the same results have been produced, by increasing the accommodation and space in barracks. At both of these stations, it was proved beyond a doubt, that, where ten deaths were caused by cholera, a hundred might be attributed to over-crowding. The men, literally, were poisoned by an artificial pestilential atmosphere. This is totally separate from a bad locality; although, where both causes are combined, as at Secunderabad, death mows down its victims with two-fold power. At the latter station, which is the most unhealthy in the Madras presidency, the average mortality among the European troops, for fifteen years previous to 1846-47, has been 75 per 1,000—being nearly double the average of the entire presidency, and more than double the average of the more healthy stations. The men composing the regiment, are crowded into small barracks and narrow verandahs, while the officers

of the same regiment, and the detachment of artillery, who are quartered in more roomy barracks at no great distance, are comparatively healthy and free from disease.

Dr. Burke, the late Inspector-General, speaking of this station, says, "The excess of casualties in H. M. regiment at 'Secunderabad over that of any corps in the other stations of 'the presidency, during four years, is 117 men; a loss, there-'fore, intrinsically of that station, exclusive of officers, wo-'men and children. It has been stated that every European 'soldier landed in India, costs the state £100 sterling; calcu-'lating from which, the intrinsic loss of 117 European soldiers 'by Secunderabad in 4¼ years is £11,700 sterling. But, 'as these 117 men have to be replaced, the doing so will 'cost another £11,700;—to which must be added the loss in 'acclimatizing these latter, amounting on the lowest calcula-'tion to one-eighth, or £1,462; giving a sum total of £24,862, 'as the actual loss sustained in 4¼ years,* or probably as 'three lakhs of rupees in five years. But as Secunderabad 'would appear to have been a station for European troops for 'at least thirty years, the cost to the state for that period may 'be estimated at twelve lakhs at least."

So much for the value of fresh and pure air, as a mere question of finance;—but it has often struck us as one of the strangest anomalies, that it should be so little valued and appreciated, by all classes, and in every country and climate. Until the discovery of the circulation of the blood by the great Harvey, it was the universal opinion of both ancients and moderns, that air was the circulating fluid in our veins and arteries. It is too much the habit, in the present day, to fall into an opposite error, and to fancy that it never enters into our animal system at all; or at any rate to act, as if we had such an idea. Who is there, (however poor or straitened his circumstances may be) that would offer his fellow a dirty plate, or a cup of dirty water? A hair, a straw, a mere mote is carefully picked out, before we put the glass to our lips; and yet we, one and all, with strange inconsistency, think nothing of swallowing draughts of dirty air. The particles of dust, that we so carefully wipe from our mouth, or the minute substance, that we detect floating on the surface of our draught, and pause to remove, ere satisfying our thirst, are in themselves harmless; the infinitesimal speck of carbonized matter, that has haply fallen from the fire on our meat,

* We do not quite see the propriety of thus doubling the loss in 4¼ years. It would appear that the real pecuniary loss sustained is the expense of bringing out the men, who have died; or £11,700, with a per-centage added for the acclimatising of the recruits, by whom their places are to be filled up.—Ed.

raises our whole bile, though, in itself, literally wholesome; but poisonous fœtid air, that has been breathed over and over again, until it has become destructive to animal life, we inspire with the most stolid indifference.

A remarkable instance of the poisonous effects, resulting from over-crowding and want of air, is given by Dr. Mackinnon. It proves how the bad reputation of a station may be entirely owing to local causes (not natural or peculiar to the site), which might be easily removed or remedied. In speaking of Dinapore, he tells us, "that the European regiment quartered here, 'occupies two ranges of buildings extremely hot, confined and 'ill-ventilated. In May 1847, the 98th regiment lost sixty 'men: whilst there was *not one* death among the artillery, liv-'ing within a few yards, but in better barracks."

What ventilation will do for the buildings, drainage and cleanliness will do for the locality; although it is too much the fashion in the present day to "run up" cantonments with every possible despatch, and pay no thought or attention to that great item, drainage. The barracks are built, the officers' bungalows finished, and large pits and hollows in every direction testify to the activity, if not to the prudence, of the architect. The ground thus becomes artificially lowered and sunk. During the dry weather, these excavations become the receptacles of refuse of every description, and after the rains, they are hot-beds of malaria. Those, who know what a large standing camp is in all its *minutiæ*, may do well to pause and consider what a large military station, with its sudder and regimental bazars, its commissariat establishment, hospitals and thousands of camp followers, must become, where no regular system of drainage is laid down and systematically carried out. We, too often, go on the principle of "every man his own doctor," and expect the station to drain itself.

A foreigner would feel no little surprise at the quiet easy way, in which, not only our military stations in this country are *chosen*, but also *abandoned*. While these sheets are being corrected for the press, we learn that the station of Ludiánah is "*done away with*," as the phrase goes. Now Ludiánah and Kurnál were once considered two of the very healthiest stations: but diet, stagnant water, and other removable causes, have, in each case, caused the loss of lakhs of rupees to the public, and much needless expense to individuals, who could ill afford it. At Kurnál, the European barracks were good, but badly placed—close to the canal, which was allowed to overflow and form marshes, in the rushes and grass of which, close to

cantonments, elephants even might have been lost. At Ludiánah, the European barracks (except those of the artillery) were, and we believe still are, what is called "temporary," that is, capable of standing for two or three years, and intended to last until they tumble! The floors of the barracks at this station were *lower* than the surface of the ground. If we go a little further, we find the same farce being enacted at Lahore. Something in the shape of drainage had been commenced upon in the cantonment of Anarkulli, when it was determined to abandon it; but nothing was determined, in so vital a matter, for its substitute, Meanmír, which has perfect *seas* between it and the town of Lahore. Condemning a cantonment of only four years' existence, without first establishing a perfect system of drainage and cleaning, is like amputating a man's limb at the hip-joint, for the cure of corns on his feet.

At Peshawur, something is being done: as the gardens and irrigation, immediately surrounding it, were nuisances too flagrant to be winked at. Wuzirabad was built literally in a swamp; and the officers of the force stationed there had to swim, or go in boats to each other, last season; but at Sealkote, (the site selected instead), we are not aware that any thing is being done towards draining it.

These three cases are the more glaring, because sums of money, far beyond any thing ever before heard of, are being expended on "Palaces," thirty feet in height, giving nearly three times the number of cubic feet of space per man, hitherto considered necessary; while the soldiers are intermediately condemned to live for years in ill-ventilated, or non-ventilated, buildings and hovels, that are, certainly, not half as good as the outer verandah of the said "palaces" will be, when they get them. Sixty, seventy and even eighty lakhs of rupees will be the respective sums required for erecting each of the new cantonments at Lahore, Sealkote and Peshawur—years* being required for their completion, and without any security or guarantee, that they will not possibly be condemned by some future Sir Charles, who may, peradventure, ride across the station, some wet morning in 1860, and find his boots wet!

At Kussowli and Subathu, the European barracks are not twelve feet high. They were ordered by Lord Ellenborough (as

* The cantonment of *Umballa* was built by Col. Napier of the Bengal Engineers in two years; and a force of 10,000 men was housed comfortably and commodiously. The station was drained simultaneously, as the earth was dug out for bricks, of which 250 lakhs were made.

an experiment) to be prepared without delay;* but, though temporary, ten years ago, they have not yet been replaced by others of a better description.

Such are the extremes we go into, when we would do well. The late Commander-in-Chief involved the Government in much needless expense, by rushing into impossibles, and insisting on non-essentials; so we do not wonder that the Governor General and the much abused Military Board should wince at every extra expense. But it is not even now too late to rectify the error: and we would suggest that, if no other means of supplying funds for draining, baths, ball-courts, gymnasia, and gardens, be available, the height of these monster barracks be reduced to twenty-four feet, and the inner space to 1,200 cubic feet per man.

We will here quote a remarkable instance of what may be done towards lessening the mortality of a station by draining; and it is not less an instructive example of the useful application of the labour of the soldier.† "Fort King George, in the island ' of Tobago, was at one time unhealthy; it is now, as appears ' by a comparative view of the sick returns of the army, one ' of the healthiest quarters in the Windward and Leeward ' island station. The means, through which it was made so, as ' not of common application, deserve to be brought under pub- ' lic notice. The fact is strong, but it has not made useful ' impression upon the official authorities. Fort St. George ' stood, in 1803, under the lee of a swamp, at a distance of ' nearly one mile, and at an elevation of 500 feet above the ' level of it. The exhalations, which arose from the swamp, ' carried to the height by strong currents of wind, were supposed ' to be injurious to the health of the garrison. The cause was ' obvious: and the effect was so destructive at one time, that ' the commanding officer of the Royal Scots regiment, ' which then formed the garrison, acting with the impulse ' of a soldier, determined to drain the swamp by the labour of ' the men, rather than allow them to be destroyed in detail, by ' its pernicious exhalations. The fact is authentic, and it is ' important. It furnishes unequivocal proof, that the European ' is not less capable of sustaining labour in tropical climates,

* It was generally understood, and we believe given out by Lord Ellenborough himself, that his object, in ordering these barracks to be "*run up without delay*," was to prevent the possibility of their being objected to by the Court of Directors. It is possible that a similar reason actuated Sir Charles Napier, when he hurried on the foundations and walls of his monster-model barracks in the Punjab.

† "A view of the formation, discipline and economy of armies," by Dr. Robert Jackson.

' even *severe field labour*, than the African; and it is further ' of value, as it shows that most of what relates to the ' quarters and accommodation of the military, may be effected ' by the military themselves, without expense to the public. ' The planters lent the tools in the present case; and the soldiers ' of the Royals drained the bog. They did it without reward, ' and without injury to their health. Fort King George is ' now a healthy station, and is rendered so by the 'Royals.' ' Its future garrison may be supposed to bear a lasting sense of ' gratitude to the memory of Lt. Col. MacDonald, who con- ' ceived the feasibility of the undertaking from his own good ' sense, and executed it at his own responsibility."

Though much may be done by the means here pointed out, it cannot be denied, that some of our military stations, such as Berhampore, Barrackpore, and Masulipatam, are decidedly unhealthy localities. The former, after a trial of seventy-seven years, and an expenditure of the enormous sum of sixteen millions eight hundred thousand pounds sterling (including capital and interest), was abandoned as a station for European troops by order of Lord William Bentinck, in 1835. The deaths, on an average taken for thirteen years, amounted to 103 in 1,000 men: so that, if to the cost of the buildings, which were unexceptionable, we add the intrinsic loss resulting from the destruction of life, we should arrive to a result of the most startling and fearful nature. Dr. R. Jackson was the first individual who pointed out to Government, the advantage of locating European troops in the interior and mountainous parts of the tropical islands: and "since the adoption of the measure proposed by him of ' forming cantonments, on the mountain ranges, the diminu- ' tion in the rates of sickness and mortality has been such as to ' justify the assertion, that if this measure had been adopted ' at the time it was first urged by him, the lives of from 8,000 ' to 12,000 men would have been saved;—a sufficient lesson, one ' would think, to our military authorities, not to *delay* the in- ' troduction of improvements, which experienced medical offi- ' cers concur in urgently recommending."*

In the East Indies, the same measure was advocated by Dr. J. R. Martin, and the plan, suggested by him, of calling on military surgeons for notices of the medical topography of the country generally, was adopted and ordered for the three presidencies in November 1845, by the direct act of the Government.

We confess that we see no grounds on which state policy can defend the retaining European troops at Fort William, Dum Dum, Dinapore, and Allahabad, when the range of the

* British and Foreign Medico Chirurgical Review, Vol. IX., January 1850, *page* 96.

Cossyah hills to the South, and the Himalayas to the North East, present such facilities for locating them in a climate adapted to their constitution; and where they would be a vigorous, hardily-trained body of troops, ready to take the field on any emergency, instead of being, as at present, corps of which full half the men are either young recruits, invalids, or sick. It has been proved by various returns, that out of every 1,000 British troops in Bengal, 129 men are constantly confined to hospital with sickness; and that for every individual soldier there are registered two attacks of illness in the year: and this, it must be remembered, is only the ratio taken as the average of the whole presidency, whereas, at particular stations, as Fort William, Chinsurah, and Dinapore, the number is much higher.

By a very interesting document lying before us, we learn that of one of H. M. regiments, which arrived in this country, eight years ago, there are now exactly 109 men left. One seventh part only are surviving, after a lapse of seven and half years. At this proportion a regiment would be decimated in a twelve month!

We give the details in the form of a Dr. and Cr. account; and only wish that similar returns were published yearly from every regiment:—

H. M. 98th Regiment, January, 1851.

Periods.	Serjeants	Drummers.	Rank & File.
Strength of regiment on landing in China, July 1842	37	11	718
Deaths amongst this number, between that period and February 1844, a space of 18 months	11	4	417
Strength of regiment on arrival of the Depôt, February 1844	32	7	304
Strength of the Depôt Companies joining service, in 1844	11	5	630
Number of Recruits and Volunteers received between February 1844, and embarkation from Chusan for India, in July 1846, a period of two years and a half	"	1	258
Strength of regiment on landing at Calcutta, in November 1846	52	18	689
Recruits and Volunteers received since	1	0	644
Deaths, and Invalided since November 1846, up to 1st January 1850	29	7	403
Number of deaths between 17th February and 20th November 1849, a period of nine months (Not marching)	3	1	83
Number of men *now* effective who came out to China with the regiment in July 1842, a period of seven and half years	7	1	101

Abstract shewing the Increase and Decrease in H. M. 98th Regiment.

Increase in 7½ years.	Serjeants.	Drummers.	Rank & File	Decrease in 7½ years.	Serjeants.	Drummers.	Rank & File
Strength on landing	37	11	718	Strength now present	48	17	858
By joining of Depôt	11	5	630	By Death	71	12	1081
Recruits from England	1	1	586	Invaliding	13	3	162
Volunteers	0	0	316				
Total	49	17	2250	Total	132	32	2101
Total Increase...1,550 men				Total loss by sickness...1,342			

The number of men, who have taken their discharge, &c., has been purposely omitted from this table, which shows the decrease, by sickness alone, to have been at the rate of 178 men yearly.

Now, this regiment has never enjoyed the advantages of a hill station. Had a certain proportion of the men, selected from amongst the most unhealthy, with due regard to their particular cases, been located for six months at Darjeling, while the regiment was at Dinapore in 1848, or immediately after the corps arrived from China, the result would have been very different. But we totally dissent from the plan on which our "sanataria" are made use of at present. Instead of sending only the invalids of the season to Darjeling, Mussúri, or Kussowli—dragging the poor creatures, many in a state of great suffering and exhaustion, hundreds of miles for the purpose, and locating entire regiments at Dugshae and Subathu—we would earnestly advocate an equal enjoyment of the hill stations by each of the European regiments serving in the Presidency, by letting every corps, cavalry, artillery and infantry, benefit yearly by them to an equal extent as regards numbers, and for a similar period. Thus, if a detachment of from fifteen to twenty-five per cent. from every European corps were marched to the nearest hill station, so as to arrive in the early part of April, and all those not requiring a winter in the hills ordered to rejoin head quarters again in November or December, there could be no dissatisfaction felt on the point of interest or favouritism, and the greatest benefit would result to the greatest number. A seven months' residence in the hills is sufficient for most parties;—many get tired and "ennuyed" in half that

time; while to many, the climate is not only not beneficial, but positively injurious. To the larger bulk of a European regiment, if located in good barracks at an ordinarily healthy station in the Upper Provinces, a hill climate is by no means necessary. The men should be selected by the medical and commanding officers of each regiment, with reference to their state of health during the past year, as well as good conduct, and be accompanied by a relative proportion of their own officers, the detachment being commanded by a *selected* one. The only objection, that we have heard offered to this plan of letting *all* the European Regiments benefit to an equal degree yearly by our "sanataria," is that the men would suffer in their drill, or fall off in discipline. With a good selected field-officer to command the depôt, with a good depôt-staff, and with each regimental detachment commanded by a selected officer, we do not see why there should be any falling off in discipline. The argument, if true, would tell both ways; for, if the men from some very "crack" corps did retrograde in their drill, others would improve. All commanding officers of regiments are not so strict, able and considerate, nor are all regimental systems so good, as that individuals and detachments might not even gain by removal for a time, to be placed under different men and different influences. But even admitting that there were temporary deterioration, and that the men returned to their regiments again a little slack in their parade duties, better this, than having to replace them by raw recruits; better that they should appear a little round-shouldered with the ruddiness of health, than be stretched out on hospital cots, and carried about in a dying state in "doolies." Better, far better, to be in the hands of the drill serjeant than the doctor!

There is another, and, we suspect, more prevailing reason. Some commanding officers would rather have 1,000 pale-faced *Indians* in their ranks than 800 ruddy *Europeans*. Short-sighted and cruel policy! Neither the "*physique*" nor "*morale*" of the majority of Europeans will stand many consecutive years of exposure in the plains of India. Napoleon and other great commanders carefully watched the *morale* of their soldiers. It is too much neglected in India: and while every doctor will tell his subaltern or centurion neighbour, that he has been too long in India, and that he should go home and take a run on the Continent, or in the Highlands—how few think that European soldiers, with fewer comforts and more exposure, even when not positively prostrated by illness, require *their* change, and *their* stimulus. We are convinced that for ordinary times, and to meet daily wants, the system, we advocate, would save hundreds

of lives and lakhs of rupees: and we could shew that it might possibly save an army, nay even an empire. No one, who saw H. M. 44th regiment marching for Kabul in 1840, and had witnessed the landing of the same corps at Calcutta, less than twenty years before, but will understand our meaning. At Arracan, during the Burmese war, it was as fine a corps as any in the service; at Kabul, it was composed of pale-faced boys, many of them born in the country, and of broken down Indianized old men, who passed the greater part of the year in hospital. The *Morale* was as low as the *Physique*.

We must pass on, however, to points of special Hygiene, over which the European soldier has individually a personal controul. Upon this head Dr. Daniell remarks:—

"Could those causes of disease, which have been hitherto
'ascribed to climatorial alternations, be more thoroughly in-
'vestigated, I apprehend, we should discover that no small
'number were founded on very inconclusive data. It is a
'well-known fact, that the notorious insalubrity of Africa has
'frequently served as the scape-goat, on which the blame of
'those evil consequences (resulting from the reprehensible
'indulgence of dissipated courses) might be unreservedly
'thrown, without the risk of their being disputed, or even ques-
'tioned. When we seriously reflect on the impaired consti-
'tution of two thirds of the human beings who frequent these
'colonies, recklessly indifferent as to the price of life, we re-
'quire no further argument for the rational explanation of
'those abnormal states of the system, that so largely swell the
'amount of victims in these occasional and almost inexplicable
'pestilences."

Colonel Sykes is not less explicit:—"I have a strong conviction," he says, "that much of European disease in India is
'traceable to over-stimulus; and that the mortality among the
'European troops will not be lessened, until the European
'soldier is improved in his habits; until he is made to under-
'stand that temperance is for the benefit of his body, libraries
'for the benefit of his mind, exercise for the benefit of his health,
'and Savings Banks for the benefit of his purse."

The excessive use of spirituous liquors, according to the same authority, and according to all experience, is the great cause of sickness and mortality amongst our European troops. In analysing the comparative ratio of deaths between natives and British soldiers, occurring in the three presidencies, (table 1) three points strike us, as remarkable. "In the first place, the
'great contrast between the rate of mortality of the European
'and of the native troops, serving together, and exposed to
'the same morbific causes; secondly, the great difference

'between the mortality of the troops serving in the different 'presidencies; and thirdly, the circumstance, that in the Ma- 'dras presidency, the rate of mortality is *highest* among the 'native troops, and *lowest* among the Europeans."

On the first point, Colonel Sykes remarks;—"I will not say 'that the question is absolutely solved by the reply, "habits 'of life;" but I will say, reasoning from analogy, that the 'reply goes a great way to solve it. The European soldier 'in India is over-stimulated by food, over-stimulated by drink, 'and under-stimulated in mind and body. He eats a quantity 'of animal food every day of his life; he drinks a quantity 'of alcohol every day of his life, to the amount of a bottle 'of spirits in five days, two drams being served out to him 'daily; and he has not any mental, and little bodily, exercise. 'Happily, the pernicious practice has been recently discon- 'tinued; but time was, when the European soldier was com- 'pelled to take his dram by eight o'clock in the morning, with 'the thermometer varying from 70° to 90° or more, at different 'seasons of the year, leaving him in a state of nervous irritation 'and thirst, which could only be relieved, as he thought, by 'further potations; indeed, I have been assured within the last 'few days, by a pensioned artillery staff-serjeant, *who never 'drank in India, and was only in hospital five days during twenty- 'one years' service*, that he has known, out of a detachment of '100 artillery men, no less than eight men in straight jackets 'at one time, absolutely mad from drink."

"Now, animal food, with the assistance of such an auxiliary, 'and combined with mental vacuity, go far to account for the 'excess of mortality amongst Europeans."

The question next arises, why the mortality of the Euro- pean troops in the Madras presidency should be so much less than that of the others, being about *three fourths* that of the Bombay troops, and but little more than *half* that of the Ben- gal army. There do not seem to be any such differences in the climatorial diseases, or in the character of the military stations of the three presidencies as are by any means sufficient to ac- count for this discrepancy; and if there were, we should expect them to manifest themselves alike in the native and in the European army.

"That the reverse is the case (for at Madras, the mortality 'among the native soldiers is the greatest, but the least among 'the Europeans) must be admitted to be a cogent argument, 'if not a complete proof, in favour of the insufficiency of any 'such account of the discrepancy."

The following are the causes assigned by Colonel Sykes:— "The *Bengal* European army has no supply of porter, but

'is furnished with rum, a spirit not so wholesome as arrack. 'On the other hand, the *Madras* army consumes a large quan- 'tity of porter, and drinks comparatively little spirit; what it 'does consume being arrack. The *Bombay* troops have only 'recently commenced the consumption of porter, and the spirit 'they drink is understood to be more wholesome than rum, 'and less so than arrack. "These results," says Col. Sykes, 'are certainly not conclusive; but I cannot help associating the 'increased consumption of malt liquor by the Madras Euro- 'peans, with their comparative healthiness; and the gradations 'of the mortality in the Bengal and Bombay European troops, 'as partly influenced by the quality (no doubt, much more by 'the quantity) of the spirits they respectively consume.

"Now, on the other hand, the excess of mortality in the 'native army of Madras above that of the Bengal and Bombay 'troops, is equally attributable to a difference in the habits 'of the individuals composing it. Of the *Bombay* army, 'six-eighths consist of Hindus, and considerably more than 'half of the whole army are Hindustanis. These men 'never taste meat, fish, or spirituous liquors; but live, I 'may, from personal observation, venture to say, almost 'exclusively upon unleavened cakes of wheat, or other 'Ce- 'realia,' baked upon an iron dish, and eaten as soon as cooked. 'The great majority of the *Bengal* army consists of a similar 'class of men. The *Madras* army in its constituents is the 'reverse of the other two. In the cavalry, there are from six 'to seven Mussulmans to one Hindu, and, in the infantry, 'there is one Mussulman to every 1½ or 1¾ Hindus; but 'amongst the latter, there is a considerable number of low 'castes, without prejudices about food, and unrestrained by the 'prejudices of caste; therefore the majority of the native 'troops of the Madras army can eat and drink like Europeans.

"Thus then we see, that whereas in the Madras army, in 'which the European and native habits most closely assimi- 'late, the mortality of the former is *less than double* (about 'thirty-eight to twenty-one) that of the latter; the morta- 'lity of the Bengal Europeans is *nearly six times* (about seventy- 'four to thirteen) that of the Bombay natives; the difference 'bearing such a relation to the greater abstemiousness of the 'native soldiery, and the larger consumption of spirits by the 'Europeans, that it is scarcely possible to avoid the inference 'that they must be connected in the relation of effect and cause."

Intemperance is, we have no doubt, the exciting cause of nine-tenths of the sickness and mortality amongst European troops in this country. Men may disguise the fact, pass over it as being delicate ground, or deny it altogether by saying,

"*it is the climate*;"—but the truth remains, "*If you drink, you die!*" If a man, walking on the edge of a precipice, were to act, as if he were in the middle of a grassy plain, and by his own folly were to fall to the bottom of the abyss, no one would say that the precipice killed him; but in India, the *climate*, the *heat*, the *sun*, are the ready scape-goats for man's insane actions.

Two remarkable paragraphs in the public journals, lying before us at the present moment, speak volumes, as to the results of temperance, or the reverse.

"The *Bombay Telegraph* contains some interesting statistics, 'collected by Dr. W. B. Carpenter, on the longevity of the 'few private soldiers in the Indian service, who adhere to the 'principle of temperance, as compared with the great majority, 'who indulge in the free use of spirituous liquors. In the 'year 1838, the daily average number of Europeans in hospital, 'who were members of the Temperance Society, was only '3.65 per cent., while the average of the remainder was 10.20 'per cent., or nearly three times as great. In the Cameronian 'regiment, of which a large proportion became converts to 'the temperance principle, the number of gallons of spirits 'diminished from 14,000 gallons a year to 2,516: and in 1838, 'the amount consumed was 8,242 gallons *less* than the regi- 'ment was entitled to draw. The general average for the 'year 1838 above given, is instructive, as it clearly demon- 'strates the evil effects of ardent spirits on the frame of the 'European soldier; and the details of the Cameronian regi- 'ment are conclusive, as to the possibility of a regiment main- 'taining alike its discipline, and its carriage in the field, with- 'out the stimulant of large quantities of alcohol."—*Friend of India*, 18*th July*, 1850.

The second paragraph, that attracts our eye, is an account in one of the Bombay Journals, of a funeral monument erected to the memory of 415 soldiers, women, and children, of the 78th Highlanders, who died in one year in Scinde. It was this fearful mortality, that gave rise to so much discussion, from the sensation that it created at the time, and which has been lately revived in some degree from the part that the late Commander-in-Chief, Sir Charles Napier, took in the matter—he being at that time the supreme military authority in Scinde.

It would answer no good purpose to open up the question again, as to the immediate or remote cause of the extraordinary loss of life on that occasion; but, whether it was intemperance on the part of the men, or improvidence and want of judgment on the part of those who ordered them to march in the month of September, still the fact remains the same—recording a loss of life from exposure, which is, we believe, without a parallel.

Returning to our subject, we next make a long extract from the British and Foreign Medico-Chirurgical Review, as testifying not only most favourably, as to the state of H. M. 84th Regiment, but being itself most valuable and suggestive.

The Reviewer (at page 92) says:—

"Having learned that the 84th regiment of H. M. Foot 'has, for some time, enjoyed the reputation of being one of the 'most temperate and best conducted regiments in the Euro- 'pean portion of the Indian army, we have consulted the army 'medical returns, for the purpose of ascertaining, whether its 'rate of mortality has differed in any marked degree, from the 'average given above; more especially, since it has been quar- 'tered at Secunderabad, which (as we have seen) lies under 'the bad repute of being one of the most unhealthy stations 'in the Madras presidency. In the year 1846-7, the average 'strength of H. M. troops, in the Madras presidency, was '5,963, and the number of deaths was 251, or 4.21 per cent., 'which is rather above the average mortality in this presiden- 'cy, as calculated by Colonel Sykes. During the first eight 'months of this period, the 84th regiment was quartered at 'Fort St. George, Madras, which is considered a healthy sta- 'tion; it then performed a march of between four and five 'hundred miles to Secunderabad, in an unusually wet season— 'the roads (such as they were) being in some parts knee-deep 'in water; and it took up its quarters at Secunderabad, about 'two months previously to the date of the medical return '(April 1st, 1847).

"The return of the regiment for this year presents us with 'the almost unprecedentedly low number of thirteen deaths on 'an average strength of 1,072 men; the mortality being thus 'at the rate of only 1.21 per cent. Now, during the same peri- 'od, the 63rd regiment, which was quartered at Secunderabad 'up to February 1st, 1847, (or nine months out of the twelve) 'lost seventy-three men, which was at the rate of 7.88 per 'cent. for the entire year; whilst the mortality for *all the other* 'stations in the Madras command was only 3.02 per cent. for 'the same year. Hence we see, that the mortality of the 84th 'regiment for the year 1846-7, was only *two-fifths* of that of 'the average of the *healthier* stations in the Madras presidency, 'which average its own very low rate contributed to reduce.

"During the year 1847-8, the total mortality in the Madras 'presidency was 227 to 6,040 of average strength, or 3.76 per 'cent: but this reduction, from the preceding year, was not due 'to any considerable difference in the rate of mortality at the 'other stations, being almost entirely consequent upon the di- 'minution in the number of deaths at Secunderabad. For the '84th regiment, which remained at that station during the

'whole year, lost in that time, no more than thirty-nine men, 'out of an average strength of 1,139, so that its percentage 'of mortality was only 3.42; which was below the general aver- 'age of the presidency, and *less than half* the average rate 'at Secunderabad for fifteen years previously. It seems 'impossible to attribute these remarkable results to any 'thing but the abstinent habits of the soldiers of this regi- 'ment; a large proportion of them being total "abstainers," 'and those, who were not so, being *very moderate* in their 'consumption of alcoholic liquors. The influence of the sys- 'tem upon their moral health has been no less favorable than 'upon their physical. During the year 1846-47, as we learn 'from the surgeon's report, there was but a single court-mar- 'tial in the entire regiment. On the march to Secunderabad, 'which occupied forty-seven days, there was not a single pri- 'soner for drunkenness; the officers were surprised to find that 'the men marched far better, and with fewer stragglers than 'they had ever before known; and it was noticed by eve- 'ry one, that the men were unusually cheerful and contented. 'What a heavy responsibility have our military authorities 'taken upon themselves, in ordering the discontinuance of 'Temperance Societies in the army! We have been inform- 'ed by a regimental surgeon, recently arrived from India, 'that within *one month* after the promulgation of this order, 'he had *forty* cases of 'delirium tremens' under his care. 'The reason assigned for this measure we understand to be 'that nothing like an '*imperium in imperio*' can be permitted 'in the army—its systematic organization for military purposes 'being (it is considered) interfered with by any other, however 'good its design, and however beneficial its effects. We can- 'not imagine that the Commander-in-Chief, when he issued 'such an order, can have given his attention to the subject, or he 'would have seen from such returns, as those we have adduced, 'how greatly temperance is to the advantage of military subor- 'dination, as well as to the health and general welfare of the 'troops. The difficulty would be got over with the greatest 'facility, if the officers of the regiment would become the of- 'ficers of its Temperance Society, as we understand to have 'been the case in the 84th. There would then be no ground 'whatever for the apprehension, that the organization of the 'Temperance Society could, in any way, interfere with that of 'the regiment, and the example of the officers could not but 'have the most beneficial effect upon the men, as was abun- 'dantly proved in the case just referred to.

"But even if this be not thought practicable, we would 'strongly urge (with Dr. Mackinnon) that the use of *beer* 'should be substituted as much as possible for that of *spirits*;

'every thing is in favor of such a measure. It is well-known 'that, since the introduction of bitter ale, as the ordinary be- 'verage at the officers' mess table, in place of wine and spi- 'rits, the longevity of the officers in the Indian service has so 'greatly increased, that promotion is no longer expected to be 'more rapid in that part of the army than in any other. The 'thing has been already done for the soldiery, to a great ex- 'tent, in the Madras army, and more partially in the Bombay 'force; why should it not, we ask, in Bengal?—since there 'can be no greater practical difficulty in that presidency than has 'been already overcome in the others. A fact, mentioned by 'Dr. Mackinnon, tells strongly in favor of the advantages, 'which might be expected from such a change, as well as in 'favour of exercise in the open air, as conducive to health. The 'Indigo-planters at Tirhút, he tells us, lead active lives, enjoy 'the comforts of good country-houses and generous wholesome 'diet; but, on the other hand, they are subject to much ex- 'posure; and the district cannot be regarded as very favour- 'able to health, since, although comparatively cool, well clad with 'vegetation, and free from jungle, there are many lagoons or 'old beds of rivers, and extensive rice-jhíls, full of water 'in the rains, but drying up more or less completely by evapora- 'tion. 'For Natives,' say Dr. Mackinnon, 'I do not believe 'there are many parts of India more unhealthy. But the ap- 'pearance of the Indigo-planters is that of rude, robust health, 'very different from that of the Civil Servants residing at the 'stations in the same district. Many of them are generous 'livers, as to the luxuries of the table; but as to drink, beer is 'their favourite beverage—the slightest excess in spirits being 'always found prejudicial, and a free indulgence, fatal after a 'time." The European male population, during the ten years 'that Dr. Mackinnon resided among them, amounted to an 'average of 130; and during this period, no more than nineteen 'deaths occurred among them, which is at the rate of only '1.46 per cent. per annum; and several of these deaths were 'brought about by diseases, which might probably be attributed 'to habitual excess in diet, and which would be less likely 'to occur, if even the moderate stimulus of beer, with that of 'high seasoned cookery, were dispensed with."

In the concluding paragraph we most cordially agree, and we think that the true solution of the problem lies not in the consumption of beer, but in the avoidance of spirituous liquors, and the advantage of daily exercise in the open air; while the mind is at the same time occupied, not in a business, forced and distasteful, but in pursuits, which embrace both interest and recreation. How widely does this picture differ from that of the European soldier in India!

Another point on which very much of our sickness depends, viz., want of pure and wholesome water, is deserving of special notice.

"It is not to be expected that the habit of water-drinking 'should become more prevalent among our Indian army, unless 'good water be provided. We gather from various passages 'in Dr. Mackinnon's work, that very little attention is usually 'paid to this point. It is sometimes raised from wells, and kept 'in large earthen jars for use; in other instances, it is obtained 'from tanks, in which rain water is collected. In both cases, 'however, it almost invariably contains a large impregnation 'of vegetable and animal matter; so that it very speedily be-'comes fœtid. A very slight degree of trouble is sufficient to 'correct this evil, at an almost nominal expense; the remedy 'being simply to keep the reservoirs clean, and to boil the 'water, and filter it through charcoal. Of the pernicious ef-'fects of the habitual use of foul water, there cannot be the 'least doubt, either theoretically or practically; for whilst 'theory would show that the continual introduction of putres-'cent matter into the system, in however small a quantity, 'must predispose it to be acted on by other morbific causes, 'even if it do not itself become the exciting cause of diseases, 'experience demonstrates, that epidemics most prevail where 'the water-supply is the worst."

To aggravate all this, the European soldier has animal food, consisting invariably of the same kind, viz., beef eaten twice a day, washed down by draughts of new rum, or bad water, for 365 days in the year without change or variety; and this too, in a tropical climate, without bodily exercise, or mental occupation! Utterly opposed to this is the plan laid down by our great military writer, Dr. R. Jackson.

He says, speaking of abstinence and exercise;—

"The case has been tried, and it has been proved on many oc-'casions, that persons, who live abstemiously, and live chiefly 'on vegetable and farinaceous foods, which furnish nutriment 'of a less irritating quality than animal matter, not only 'escape sickness in tropical climates, but preserve their health 'in vigour and activity; while those, who live freely and fare 'sumptuously, die in great numbers. This has been frequently 'seen in time of war, in the example of prisoners, who, fur-'nished with a measured ration, especially a farinaceous one, 'chiefly bread and rice, rarely experience sickness.

"Occupation of mind and body, implying exercise to an ex-'tent sufficient to act with impression upon animal structure, 'is preventive of disease, particularly among Europeans in 'tropical climates. This opinion receives proof and illustra-'tion from the example of planters, who are obliged to spend 'the greater part of the day in the sun, superintending the 'field labors of the slave. This class of people, in the West In-'dies, may be said to work hard. When actively employed, they 'are little liable to illness: while soldiers, confined the greater 'part of their time to barracks, supinely passing their hours 'in a state of indolence and ease, suffer severely: but soldiers 'are vigorous and healthy under activity of military service, 'even in tropical climates—and this without regard to season."

A direct and well authenticated proof of the value of exercise, nay, even of hard labour, exists in the example of French soldiers in the Island of St. Domingo, previous to the revolution of 1789. These soldiers, Europeans and Natives of France, were employed at that time in forming the great roads and aqueducts, which convey water through the plains for the purpose of irrigating the plantations. They consequently worked in the sun the whole day long, as labourers work in Europe. They sweated and toiled, and were so tanned in colour as scarcely to be distinguished from the Mulattoes. They were brown in colour, it is true, but, it rests on good authority, that they experienced little sickness, while employed in this manner; when confined to the towns, however, and disposed at ease, or idling, and rioting, they suffered sickness, and died in large numbers, like the soldiers of other nations.

We do not advocate the necessity or even advisableness of hard labour; much less that of forced labour. We consider that out-of-doors employment, in which the mind is occupied and interested, furnishes the best safeguard against disease among our European troops in this country. Let the occupation be what it may, still it should harmonize with the taste, or be conducive to the interest of the individual. Put a European on a dusty road, with a musket in his hand, and give the order to march ten miles into cantonments—he looks upon it as an irksome duty, and, from having nothing to break the monotony of the task, the depressing powers of the mind are at work, and he is reported ill on its completion. But change the musquet for a fowling-piece; let the pace be uncontrolled, and the direction left to his own choice—he will walk double the distance with a very different result, going over much more difficult ground, and with much more exposure to the sun. Try the experiment in a hundred different ways, the same conclusion will be arrived at in all. We all know that an hour's gallop on horseback under a burning noon-day-sun, or through the hot wind, is much less exhausting than half the time spent in the saddle at a walking-pace only; and that a game of cricket, played while the thermometer stands at 80°, is felt to be

less fatiguing than a morning parade, in which there is neither violent exertion, nor a high temperature to be endured.

On the marking out of a new cantonment in this country, officers are observed spending their entire day in the open air, watching or superintending the erection of their bungalows, staking out their gardens, planting trees, &c., with almost the same indifference to heat and sun, as if they were in England, and in the enjoyment of better health, sounder sleep, and greater appetite, than when living in their residence with all the comforts and luxuries that art can supply to mitigate the "desagreméns" of an Indian climate. And, as with the European officer, so it is with the private soldier. The longest marches on record, and under the greatest exposure to heat of weather, have been made by British troops, without any injury to the health. The change of scene, the interest excited by every rumour that finds its way to the camp, the speculation on coming events, all act as powerful stimulants in counteracting the *otherwise* injurious effects of excessive fatigue and exposure.

And here we think, that Government has not done enough for the European soldier serving in India. In laying out every new cantonment, we would wish to see the "Gymnasium" commenced as soon as the "parade ground;" the cricket-field ordered as well as the "Conjee-house"; the "soldiers' garden" sanctioned as much as the canteen.

It will be a glory to the Marquis of Dalhousie to establish such a system, and to leave behind him, at every station, the means of innocent recreation and exercise to the soldier, European and native. In one station in the Upper Provinces, viz., Lahore, this has been done through the generous exertions of a single individual—Sir Henry Lawrence. A large space of ground, containing several acres, has been laid out strictly as a "soldier's garden;" there are shady walks, "parterres" of flowers, a cricket-field, swimming bath, Gymnasium, Ball-and Racket-courts, work-shops, skittle-grounds, and a reading room and library; while the beverage, "that cheers, but not inebriates," is retailed at a very low rate on the grounds, to the exclusion of all spirituous liquors.

This, we believe, is the only instance of the kind in India; but we venture to predict that it will be taken as the model for similar establishments, as soon as the truth becomes apparent, that, in order to preserve our European soldiers in good health, and prevent the slow but certain diseases produced by drink, indolence, and dissipation, we must provide something else beyond the parade ground and canteen.

From a list that has been placed at our disposal, we find that one of H. M.'s cavalry regiments, at present serving in India, is composed as follows. The multitude of trades is very great, and the proportion of labourers to artisans and mechanics is about one-fifth of the whole:—

TRADE.	NO.
Apothecaries	3
Appraisers	1
Brick-layers	12
Button-makers	1
Brush-makers	3
Bakers	17
Butchers	17
Carpenters	20
Colour-mixers	2
Chemists	1
Cotton-spinners	1
Curriers	2
Compositors	1
Corrector of the Press	1
Confectioners	1
Clerks	41
Coopers	2
Cabinet-makers	3
Coal-meters	1
Carpet-layers	2
Carver and Gilders	3
Cigar-makers	2
Cloth-dressers	1
Cooks	3
Drapers	7
Dyers	2
Edge-Tool-makers	1
Engineers	1
Engine-Fitters	1
Farriers	16
Flax-Spinners	1
Fishermen	2
Founders	3
Farmers	1
Gas-Fitters	3
Grooms	27
Gun-Smiths	1
Gardeners	2
Gilt-Toy-makers	1
Grocers	1
Harness-makers	3
Hatters	2
Hair dressers	1
Joiners	4
Jewellers	3
Land Surveyors	4
Labourers	126
Leather dressers	2
Miners	1
Masons	10
Musicians	2
Maltsters	1
Mercers	1
Mill-Stone-makers	1
Opticians	1
Porters	3
Printers	9
Plumbers	1
Painters	7
Paper-makers	2
Plasterers	4
Poulterers	2
Pewterers	2
Paper-stainers	2
Pocket-Book-Makers	1
Rug-makers	1
Rope-makers	1
Shoeing-Smiths	2
Sugar-bakers	1
Spindle-makers	1
Shoe-makers	23
Servants	40
Sawyers	4
Smiths	10
Silver-Smiths	4
Saddlers	3
Stationers	1
Tailors	24
Tanners	6
Turners	2
Tin Plate-workers	1
Upholsterers	1
Watch-makers	2
Weavers	6
Wheel wright	1
Wool-comber	1
	646
No previous occupation	8
Total	654

What must have been the amount, paid in premiums and apprentice-fees, by the parents of these 646 artisans? And what would it cost Government to obtain the services of a like body of mechanics for the purpose of completing a railroad in the Upper-Provinces, with all its various requirements of machinery, carriages, station-telegraph, &c.? Why should the benefit of these men's early education be lost to the state, as well as to themselves, when we have them on the spot? How much might have been done by the soldiers themselves, during the last two years, at Lahore, Wuzirabad and Peshawur, towards the completion of their own barracks, with positive advantage to all, not only as regards pecuniary emolument, but the much higher points of health and life! On board ship, the European private helps to work the vessel by order of his Commanding Officer, and takes a pull at the "*main brace*" with a hearty good will. On the march he pitches his own tent, or constructs a raft for crossing streams, without being considered to suffer either in character or discipline. It is only in cantonment that he is taught to be a mere marching machine—a parade automaton. Some of the men, in the regiment alluded to it is true, do obtain an addition to their pay by working at their original trades, between the hours of parade and roll-call: and the money, thus gained by their own manual labour, is more likely to be accumulated towards purchasing their discharge or deposited in a Savings Bank, than any surplus derivable from their pay, or "dry batta," which, by a recent excellent order of Government, is allowed to be disbursed daily at the "grog-tub," to all who prefer receiving money to rum.

The expense, however, of each individual's providing his own tools is a serious impediment to the men working at their old trades. This difficulty would be removed, if the officers of each corps would establish and encourage regimental workshops, where, by the division of labour, much larger profits would be accumulated, and the expense of materials and implements could be defrayed by a per centage on the price received for the manufacture.

Half-a-dozen good coachmakers and wheelwrights, who might be found in most European regiments, ought to be able, in a few weeks, to build a buggy that would realize some five or six hundred rupees, if well finished and substantially put together. So with boat-building, cabinet-making, engraving, painting, book-binding, and many other trades—the men would find a ready market for the manufactured articles, especially in the Upper Provinces, where the residents of a station are cut off from the advantages derived by living near Calcutta, Delhi, or Agra.

From a series of Papers, entitled *European soldiers in India*, which appeared in the *Bengal Hurkaru*, during last year, we make the following extract, which touches upon this part of our subject. The writer, who is evidently practically acquainted with the question he discusses, points out, that the experiments, hitherto made for providing occupation for the European soldier in India, have failed, simply from the fact that sufficient attention has not been paid in the first instance to the different habits, tastes, and pursuits of different individuals, and that recreation ceases to be such, if forced. It then becomes, in fact, only another kind of drill.

"Many persons," says he, "who have written in recommendation of certain modes of recreation for European soldiers in India, have simply urged those recreations, which they found most congenial to their own temperaments. Some have urged manual labour and employment, either in gardens, or workshops; some recommend athletic games and field sports, calling into activity all the muscular powers of the body. Some, on the other hand, look more to mental recreations, and recommend theatrical amusements, or musical entertainments of a somewhat similar kind. Some go further still, and, being of a more sober turn, recommend branch libraries and reading clubs, chess, &c. It is seldom, however, that the advocates of any, or all of these various means of recreations, consider that, according to the old proverb, "it is all a matter of taste:" and, as different men are of different opinions, so unless the soldier himself inclines to the species of amusement proposed for him, it is to him not a recreation, but a toil. You cannot make a man love to dig in a garden, or find recreation therein, by putting a spade in his hand, and preaching to him of the value of horticultural pursuits! He may like greens and potatoes well enough, when served up at table; but he may think the labour of procuring them by delving far too great a toil, and thus would rather employ his leisure hours differently, and purchase all his greens in the market. We illustrated this, the other day, by observing that some men might like carpentry-work;—but that for ourselves, especially in warm weather, such as it is at present, we preferred some less heating employment than sawing a two inch plank. Thus it is with all other occupations; the man, who loves the one, will often detest the other. The only method that appears to us divested of innumerable objections, is to leave the soldiers, as much as possible, to their own liberty of choice. Let them take such recreation, as they feel disposed to take, and when and how they like. To do this, they must

'have some leisure time allowed them: and their time should 'not be cut up with what can never conduce to the good of 'service, but must weary every sensible soldier to death;—we 'allude to the endless drills and parades, and all the little ob- 'servances of military life, devised more for the purpose of 'keeping the men employed, than of instructing them in any 'branch of their profession. When officers or soldiers are not 'required for actual duty, let them have as much liberty as 'possible. Soldiers are treated far too much as children; treat 'them as grown-up men, and they will behave as such. Let 'them have every facility for the lawful exercise of all their 'talents and mental or bodily powers. Let them, if acquaint- 'ed with handicraft trades, pursue those trades, if they feel 'inclined to do so, and whenever they are able. Let them, 'if fond of gardening, garden; or if fond of acting, let them 'rehearse plays; if fond of reading, let them read; but 'let them not be driven to any of these so called recrea- 'tions, as to a task, because some few of them may chance 'to like it. We would always advocate freedom of action, 'as far as is consistent with the exigencies of the state. We 'would make all officers and soldiers, when on duty, do their 'duty;—and let them, when not on duty, do in all respects 'what any other man may do. We might carry out this ar- 'gument very much further, but that we fear the time has not 'yet come for it. We doubt even, whether we carry with 'us, as far as we have now ventured, the favourable opinion of 'many of our military readers; but we feel convinced that, 'till soldiers are treated more as human beings, and less 'as military puppets, drunkenness and all its train of at- 'tendant evils will not be put down. How are we in 'India to get rid of the monotony that hangs over Indian 'life, and in particular, Indian barrack life, which saps the 'energy and spirit of the bravest and most enterprising 'men? When the monotony of the daily drill is added to this, 'who can be surprised at the results evolved by it? Some men 'are constitutionally formed to like this kind of monotonous 'existence. We feel that this must be the case; for otherwise the 'military advocate for the eternal round of puppet-show parade, 'would not be able to point to some model men in his estima- 'tion, whose souls are moulded on the pattern of a parade ground, 'and who never felt dull care in all their lives. The reason 'is plain, that these few exceptions to the rule are in their 'proper element; their mental faculties, such as they are, are in 'full occupation; and healthful exercise they have sufficient of; 'such men are thus placed in the situations physically best

'adapted to them. But, neither mentally nor morally, are these 'men better than their more mercurial companions, who pine 'for what they are denied, and, in their idle hours of irksome- 'ness, seek the solace of strong liquors, to the prejudice of dis- 'cipline and order, and the injury and ruin of their health. 'Man, whether in the upper or lower walks of life, must, to 'enjoy happiness, have the means of exercising such mental 'and bodily functions, as he is endowed with. This is the true 'philosophy of life; and, without this liberty of action, all other 'things are positive sources of pain and misery to us. When 'ignorant men are checked in the natural exercise of their 'bodily or mental powers, they seek for the means of gratify- 'ing their lower propensities or appetites; and, liquor being 'universally cheap in India, it is readily procured by them to 'their own destruction. Nor are vile and worthless characters 'wanting to aid the tempter's work and to stimulate a crav- 'ing for liquor, in order that they may thereby reap an 'unhallowed harvest by the illicit sale of the poisonous com- 'pound."*

Where it is impossible to provide out-of-doors employment and recreation, all the year round, from the want of proper shelter, afforded by trees, or by the shady side of a high wall or building, it would at least be practicable during the cold season, from October to March, at all stations. We cannot see why European soldiers might not spend their leisure time in (for instance) laying out a public garden, with carriage drives *round*, but not *through*, it;—a work, which would be a lasting benefit to the station, and might be well pointed out to succeeding corps, to serve as a stimulus for further industry and enterprise, in improving upon the original plan. We would, however, go even further than this. We think that, if a Railroad were in the course of being constructed within a reasonable distance of any of our large military stations, at which European soldiers are located, a very large number of volunteers would be found in every regiment, who would feel it a privilege to be allowed to shoulder a pickaxe or spade, and assist in throwing up the embankments of a great national undertaking, that may, in after years, be a far more glorious military monument of what had been achieved by the British soldier in India, than all that has been engraved on marble urn, or mural tablet. A horde of Goths and barbarians may invade and *conquer* a country, but it is only a civilized nation that can *improve* it; and the first great step

* *Bengal Hurkaru*, June 17th.

is the opening out of its resources, and making communication perfect, by means of roads, canals, and navigable rivers.

But, until these truths can be impressed upon the minds of those, who have the power and authority to act in remodelling our present defective system of maintaining a gigantic peace-army in idleness and sloth, we must be content to be looked upon as visionaries, and to hear our plan ridiculed as Utopian and impossible. Without the co-operation of the officers of a regiment, we well know that we are undertaking the labour of Sisyphus: and that any scheme—whether for the improvement of the men, or the education of their children—whether it be to procure health or recreation—to establish a "soldier's garden" or regimental work-shops—will necessarily fall to the ground, if the commandant and his officers take no interest in the matter. It cannot be expected that the men will take the initiative, if ridicule and satire from their superiors are to be brought to bear against them. The French have long set us an example in this matter well worthy of imitation: and Napoleon's opinion of the value of his corps of Pioneers and Sappers was never lessened, or detracted from, by any of the most brilliant deeds of "the old guard."

In the native army of this country, where there is all the difficulty of caste and prejudice to be overcome, we find sepoys of as high caste, and as well disposed to fight, in the ranks of the "Sappers* and Miners," as in any other regiment of the line. These men will "pile arms," and commence trundling a wheel-barrow, or digging a trench, without feeling that, on that account, they are in the slightest degree less efficient as soldiers, or less honoured by their brothers and relatives in other regiments. And so with our Europeans;—we would by all means scout the idea, that the men of Worcestershire and Kent, the sturdy Hibernian, and long enduring Scot, are only called upon to handle the spade, while engaged in the trenches before an enemy's fort. Why should field-labour, in which hundreds of our troops have been engaged up to the hour of their enlisting, and the value of which is so universally admitted and felt in all military operations, be no longer practised, because "pipe-clay and drill, say—No?" The miscellaneous duties, that our British sailors are called upon to perform, and *do* perform with alacrity and good will, have never proved an impediment to rigid discipline, on the one hand, or efficient manœuvring of their ships on the other; and yet the Nile and Trafalgar

* We have seen a company of that splendid corps, with thirty-five Brahmins in its ranks, working at a road with hearty good will.

stand out as brightly on the page of history as Waterloo or Badajoz.

We are glad to see this subject taken up in an earnest manner by an officer of many years standing in the service, Lieut. Colonel J. S. Hodgson, of the 12th Bengal N. I., who has recently given to the world, a small pamphlet under the title of *Military Musings*. Many of the author's data and suggestions are the fruits of actual experience during his residence in India; and, from his knowledge how soldiers may be led and governed by energetic men, who will set the example, as well as give the order, his arguments in favour of "Camps of Exercise" being formed every successive cold season, are entitled to more than a mere passing notice. We are convinced that, as a sanatory measure alone, the experiment would be attended with great benefit; and we hope to see it fairly and fully tried. But we shall let Colonel Hodgson speak for himself;—

"That apathy, which characterises the British subject in 'India, were it the national trait, would speedily bring Great 'Britain, now the foremost nation of the world, into the same 'scale with Spain and Portugal.

"The endurance of military toil, in all its forms, is compre-'hended in a soldier's duties. He should be accustomed to do all 'those things, which appertain to military service, in tropical, 'as well as in temperate, climates. His physical capacities are 'not unequal to their performance. This is a fact which ex-'perience has well authenticated.

"The plan of military labour is intended to apply equally 'to the European soldier: for it would be invidious, and unjust 'in the extreme, to exempt him from those military toils exact-'ed from the native soldiers.

"The time of the European soldier in India is not sufficiently 'employed. The numberless courts martial amply substantiate 'this fact. The crimes are those attendant upon his over-feed-'ing, and almost listless state of existence. Both his mind and 'his body are left comparatively without exercise. The com-'mon drudgeries of the service are all performed by "sepahis." 'The European soldier is kept in such luxurious indolence, 'that it merely requires the addition of a palanquin to each 'soldier's stock of necessaries, to render the picture graphic 'and complete. In the West Indies, far more work is exacted 'of him, to the vast improvement of his health and character. 'British seamen work with equal moral and physical energy 'in tropical harbours, as in those of more temperate latitudes: 'and the value of such labour and exercise is perceptible in 'their preservation of health, and cheerful spirits, with a pro-

'portionate absence of crime. The exhaustion in India is 'more a mental, than a physical, prostration: and both are 'quite susceptible of vigorous preservation by a judicious use 'of those faculties, which nature has bestowed on man.

"Many of the early campaigns of the Indian army were 'made in the rains and hot months; and yet the troops, both 'European and Native, kept their health in a remarkable 'degree. Sickness was almost unknown; the soldiers had not 'time to be sick. The battle of Plassey was fought in June: 'the campaign in Guzerat, extending over a period of six 'years, was carried on during all seasons of the year: the same 'may be said of the Mysore campaign from 1790 to 1793.

"Seringapatam was carried by assault in the month of May. 'The campaign of 1813, against the Mahrattas, opened in the 'rainy season, and continued throughout, with the most bril- 'liant results. The campaign in Java (1811) was carried on 'with success during the most unhealthy season of the year. 'These facts, together with a variety of others all equally well 'authenticated, are conclusive that, so long as the mind and 'body are kept actively employed, there exists every reasonable 'hope of the general health of soldiers continuing good and 'undisturbed—though exposed to all the dangers of a tropical 'climate during the most inclement seasons of the year. It is 'more than probable, that the troops, which served in the above 'enumerated campaigns, would have experienced a far greater 'mortality, had they been subjected to the slothful effects of a 'cantonment or barrack life, than they did from actual con- 'flict with the enemy in the field. Greater objection is antici- 'pated by the author to his plan from the European than 'from the Native. The realization of such objects must un- 'questionably entail personal trouble; and personal trouble is 'abhorrent to an extent in this country, which would, if more 'generally known, excite the derision of our fellow subjects 'in Europe.

"There is but a very small portion of energy exerted in 'resisting the enfeebling effects of *example*—the writer will not 'say, *climate*; for he believes that a trifling amount of mental 'vigour, only properly brought to bear, is always sufficient to 'modify, if not ward off, its stealthy approach.

"Common sense cannot acquiesce in the assumption of an 'impracticability, where no attempt is made to ascertain its 'feasibility. The exclamation of "what a bore!" appears to be 'the general anathema, whenever duty is required. Perhaps 'there is no army, in which less duty is exacted of its officers, 'than from those of the Native regiments of the Indian army.

"This system of military labour in time of peace can only be 'put into energetic and effective train by the cordial zeal 'and patriotism of the European Officers. Its adoption 'will give a noble impulse to the native soldier; tend, 'by the diffusion of a patriotic motive, to strengthen and se- 'cure the British Empire in the East; and redound to the 'imperishable honor of the native army of India. Surely 'these are momentous national considerations, not unworthy 'the ambition of British officers.

"In carrying out a system of military labour, distinct camps 'of exercise might be formed, and separate portions of work 'allotted to the different divisions, to be effected under the 'scientific supervision of the proper officers. By this arrange- 'ment, a spirit of ardour and emulation would obviously be 'excited and fostered."

We are fully aware that there would be an outcry raised at first on the bare mention of European soldiers working in a tropical climate. There would be a cry of "*coolies*," "*slaves*," "*convicts:*" but the outcry would come from those, who have either paid the subject of the "mortality of our troops in India," no attention, or who, from ignorance and prejudice, look upon the very idea of change or improvement, as embodying some- thing revolutionary and destructive. To such we would beg to quote the words of one, whose writings will probably outlive those of most of his co-temporaries, and whose energy and per- severance enabled him to overcome all opposition, because his heart was in the work. Dr. Arnold says:—

"There is nothing so revolutionary, because there is nothing 'so unnatural and so convulsive to society, as the strain to 'keep things *fixed*, when all the world is, by the very law of 'its creation, in eternal *progress*; and the cause of all the evils 'in the world may be traced to that natural, but most deadly 'error of human indolence and corruption—that our business 'is to *preserve*, and not to *improve*. It is the ruin of us all 'alike, individuals, schools, and nations."

From the returns of six of H. M. regiments, serving in the same presidency, who have arrived in this country within the last eight years, we find that the average of mortali- ty amongst the officers is one in every regiment yearly, and the average number arriving with each regiment was 37⅔. Taking the aggregate of the whole number in the six regiments, viz., 226, this gives less than three per cent. as the yearly ratio of deaths amongst European officers, which tallies exactly with the number we before quoted from Dr. Hutchinson's tables "of 29

in 1,000 for all tropical stations, where British troops are stationed."

With civilians, the average mortality is 2¼ per cent: but with the European private, the mortality is from five to seven per cent. How is this great difference caused? It is not from exposure: for the habits of our military officers, their fondness for field sports, their visiting the mess house or billiard table at all hours, their attendance at Committees and Courts, cause them to be much more exposed to the climate, than either the civilian in his "*Kacheri*," or the soldier in his barrack. It is not from work or duty; for here the occupant of a barrack is almost wholly exempt, whilst the civilian is more engaged than his military brother. Is not the cause to be found in the absence of employment, or recreation, and the want of variety and novelty? Would not this be the verdict, if the civilian, instead of the military officer, were compelled to experience a twelve months' trial of barrack-life in India. The author of the papers, *On the European soldier*, which we have before quoted, extends the necessity of change and variety, even to the daily rations served out to the troops: while he allows that these are liberal in quantity and of wholesome quality, he insists that the system of admitting no variation, during the twelve months, is a bad one, and productive of much that requires to be corrected. The "toujours perdrix" is more easily tolerated by the human stomach in England, than in this country: and every one, who has experienced the horrors of a daily grilled "*Múrghi*," while making a long "dâk" trip, can imagine, that 365 rations of stewed beef in the year would be by no means an improvement.

The necessity of a variety in the daily meal is now not only admitted, but enforced in all our Indian jails—vegetables either being supplied two days in the week, or rice served out instead of "*atta*," on Sundays. The argument, though quaintly put by the writer, has sound sense to recommend it, and we therefore give it as it stands.

"Our military readers will be aware, that an uniform table ' of daily rations has been established for the European troops ' of the three presidencies, being the same at all stations and ' seasons, and on the same scale, as is allowed for Her Majesty's ' soldiers in Jamaica, with the addition thereto, of firewood and ' salt granted gratis. The rations are as follows:—

"One pound of bread per man.
"One pound of meat per man.
"Four ounces of rice per man.
"One and two-seventh ounces of sugar per man.

"Five ounces of tea amongst every seven men.
"Three pounds of firewood per man.
"One chittack of salt per man.

"It is provided that in every instance, when the actual cost ' to Government of the rations above specified (fuel being sup- ' plied gratis) shall fall short of the actual stoppage of three ' annas and four pie per day, the soldiers shall be entitled to ' receive the difference back from Government through the ' Commissariat. This difference in the month usually amounts ' to ten annas, and sometimes even to a rupee. Taking a ' month of thirty days, the cost of a man's rations, supposing ' that a rupee is returned to him, would be five rupees, five ' annas, and four pie. These rations are not, however, valued ' so highly by the men. We have heard that, in the case of ' a man drawing rations, and messing with other men, en- ' titled to draw "dry batta," and who consequently re- ' ceive no rations, his rations are only taken as an equi- ' valent to four rupees, which shows the value put upon ' them. Queen's troops, coming from home, like their Indian ' rations, and consider them to be superior to those served out ' at home; and recent arrivals will often make no objections ' to receive supplies, which would be rejected by older stagers ' in India. There is nothing, therefore, to be objected to, in ' the scale of rations laid down, nor to the Government system; ' unless we suppose that an old hand in India could provide ' himself with a better meal, at a cheaper rate, than is provided ' by Government. It is not probable, that any one would be ' able to retail the small quantities of rice, tea, sugar, or salt at ' a cheaper rate, than they can be supplied by the Commissariat. ' The same may also be said of the bread, which must be baked ' in large quantities. We suspect, therefore, that it is the ' meat, which is considered to lower the general value of the ' rations; and it is very possible that its invariable nature adds ' weight to this objection. In Bengal, the meat served out is ' invariably "beef,"—not exactly the roast beef of old England, ' but a very lean and tough representative of it. The 'lean ' kine of Pharoah' would appear fat, in comparison with those ' which are frequently slaughtered. It is extraordinary, how ' beef is associated with British soldiers of all times. Learned ' authorities might be quoted to show, that, from the earliest ' days, all our great battles have been won per force of British ' beef. There is a good story told of the Duke of Marlbo- ' rough's cook, who invited the French Marshal's cook to dine ' with him, in return for a grand entertainment given by the

'Frenchman. This latter had all the extraordinary dishes that 'his country's art could invent; the Englishman was unable 'to excel him in this respect, and placed on the table nothing 'but a plain sirloin of beef and a plum pudding. "Sir," said 'the Frenchman, "this is so uncommon a dish, that I did not 'expect any thing like it." "Very likely Monsieur," replied 'Mr. Bull; "but this is a dish for an Englishman to be proud 'of: it has carried my countrymen twice through France alrea-'dy, and I don't doubt, but that it will do so again."

"Whatever credence we may give to this story, which is just 'as likely to have originated in a little quiet satire of the pri-'mitive mode of cooking practised by the English, and their 'contempt for their more scientific opponents in the art of 'gastronomic,' the practice of administering to English sol-'diers pretty severe doses of a tough substance, called beef, has 'continued to this day. Our readers must not suppose, that 'the beef is usually roast. A kind of stew with vegetables is 'the more usual mode of cooking; but we are not inclined to 'recommend this dish to any one for 365 days of the year. 'Let our readers, who are inclined to doubt our notions of 'this matter, try this ration of beef for a year or two continu-'ally. Is there no surgeon, or assistant surgeon, of sufficient 'resolution, to adventure on the task of this experiment, and 'to try in his own proper person its effects? We can fancy 'him exclaiming:—

"O dura messorum ilia!"

'and forswearing beef for ever after.

"When we really come to consider this question gravely, it 'must appear, that the constant sameness of this food is injurious 'to the men: and we know that, in consequence of this opinion, *dry 'batta* is very often much preferred by the old soldier. It is es-'teemed a privilege to be allowed to draw *dry batta*, instead of 'receiving rations; and, if we are correctly informed, it has fre-'quently been applied for and refused. Some men considered 'their ration of beef, as comparatively good for nothing!

"We must not tire the patience of our readers: for, if these arti-'cles are to be of any service in pointing out what is objection-'able, we feel they must be short and to the point: but we must 'make room for a little support from our old friend Fergusson. 'He says, that although our soldiers' ration is abundant and ex-'pensive, yet we seem to have overlooked a great physiologi-'cal principle, and that is, the natural appetite for change and 'variety. "It is ever the same; and no man, even if he will,

'can be satisfied with this." His stomach and digestive or-'gans will be heard in their own cause; and, if they be not at-'tended to, their owner will fly to alcohol in solace of their 'disappointment.

"How this unvaried meal has continued so long in vogue, it is 'difficult to say. Most of those, who have the power to change 'it, see not its ill effects: and some feel a difficulty in meddling 'with a part of 'a system.' It is, indeed, a system, which ruins 'the health of many a poor soldier. We only wonder how they 'stand it—tough beef and new rum taken daily *ad-libitum!* 'What better *recipe* could we have for chronic dysentery? 'Could it be worse, if soldiers were contracted for in each regi-'ment, at so much per head, for any available man kept fit for 'duty, of a given height and weight? This would give a sol-'dier the same chance as a horse, or an elephant, or an ass, which 'animals, both in diet, clothes, and exercise, are often more 'scientifically treated, than our men! But seriously, would 'not the Chinese system of paying the doctor, according to the 'health of the men, be better than the present? Not that 'we wish to blame either commanders, or medical officers, for 'the system of the day: they have found it as it is; and very 'few commanding officers have either will or power to change 'it. They have grown grey with the idea, that soldiers are 'different animals from civilians; and, though they may com-'pare soldiers of one nation or one time, with those of ano-'ther, yet they seldom ever think, that soldiers can either 'think, eat, dress, or act as other human beings about 'them."*

We might extend the subject much further, and furnish me-lancholy details of the mortality amongst the children of our European soldiery. The same causes, viz., impure air, bad water, improper food, confinement to the barrack, want of amusement or employment, tell with ten-fold power upon the offspring, whether born, under such adverse circumstances, of sickly parents, or experiencing such a change in their habits and mode of life, on arriving in this country.

Taking the returns of two regiments, that reached India last year, we find, that in one there have been born 44 children, of whom, at the end of the fifteenth month, there are only 29 surviving, shewing a loss of 27 per cent. within the *first year*.

In another regiment, 52 children have been born within fourteen months, of whom 32 have died in the same period,

* *Bengal Hurkaru*, June 21st, 1850.

giving a ratio of mortality equal to 33 per cent. during the first twelve month of their life in India.

In another case, taking the children born in England or on board ship, who arrived with the regiment in India, eight years ago, out of 159 (the original number) no less than 112 have perished. Of the remaining 47, how few, in all probability, will grow to manhood! Hence we see that, whether we take 100 children imported from England, born of healthy parents, or 100 children born of the same parties within the first year of their arrival in India, still the melancholy result is the same —proving, beyond all doubt or question, the system of barrack life amongst our European soldiery in this country to be totally unfavorable to colonization.

This will be seen still more clearly by the following table, shewing the respective ages of the survivors of 261 children born in one regiment, since landing in India 8 years ago:—

From	7	to	8	Years of age		4	113 Surviving.
,,	6	to	7	,,	,,	8	
,,	5	to	6	,,	,,	13	
,,	4	to	5	,,	,,	15	
,,	3	to	4	,,	,,	20	
,,	2	to	3	,,	,,	15	
Under	2			,,	,,	38	
Died							148
Total in Eight years.....							261 Births

It would be interesting to know what number of children, born of European soldiers in India, ever return to England; and what is the proportion, in a regiment of those, who, under the most favourable circumstances, attain the age of 21. Many of the deaths necessarily must be attributed to the loss of the mother, during infancy or childhood; and it is gratifying to know that there is now an Asylum in the Hills, which, from the admirable care and superintendence exercised over those, whose cause we are pleading—the children and orphans of European soldiers serving in India—affords the best, if not the only true, insurance of life and health, to a large class, who, with claims upon every one of us, have been hitherto sadly forgotten and neglected.

By a late report we observe that the juvenile inmates of the *Lawrence Asylum* amount to 136, of which number nearly

half are under ten years of age, as will be seen in the statement following:—

Sex.	Entire Orphans.	Fatherless.	Motherless	Having both Parents.	Above 10 y'rs of Age	Under 10 y'rs of Age	Of pure European Parentage.	Of Mixed Parentage.	Protestants.	Romau Catholics.	Total number in the Schools.
Boys.....	25	24	14	13	37	39	64	12	70	6	76
Girls.....	22	18	6	14	29	31	41	19	59	1	60
Totals	47	42	20	27	66	70	105	31	129	7	136

When it is remembered that, out of this number, four-fifths have lost either one or both parents, and may therefore reasonably be supposed to have suffered in some degree in their health, for want of that care and attention, which, it is rightly considered, none but a parent can bestow—the value of the Institution, and its admirable locality as a sanatarium, may be judged of, on learning that only *two* deaths have occurred since the commencement in April 1847, and these were cases of children, who had been only "a few weeks in the Asylum, and who arrived in a state of disease."*

What a far different result is shewn to be the case in the Lower Orphan School of Calcutta, where the deaths are stated to be one in fifteen;† and how is it that the officers of the Company's Service do not advocate its removal to the hills?

It may appear surprising that length of residence does not appear to acclimatize, or confer a greater degree of immunity from disease in India. By returns of the several ages, at which death occurs in this country, it is found, that among the young civilians arriving in India, the ratio per cent. of deaths during the first year's residence may be stated to be 1.95

During the 2nd year's residence	.....	2.35
,, 3rd ,,	,,	.....	2.00
,, 4th ,,	,,	.....	2.20

* Second Report of the Lawrence Asylum for the orphan and other children of European soldiers, serving or having served in India. Sunawur near Kussowlie, 1850.

† Article by H. T. Prinsep, Esq., on the mortality for ages and births of Indo-Britons in the Orphan School, Calcutta, during 40 years.—*Asiatic Society's Journal, September*, 1838.

Here we see that, tracing the same individuals through four successive years of residence, the liability to mortality is on the whole augmenting.

The same result will be arrived at with regard to military officers, who generally reach this country at about the same age—viz., from eighteen to twenty. From perusing the valuable tables furnished in Major Tulloch's Parliamentary Reports, we find that the mortality amongst Ensigns (youths recently arrived) is 23 per 1,000.

Lieuts. at least three years longer resident.....	27	per	1,000
Captains, twelve to thirteen years longer	34	,,	,,

And so on, in a corresponding proportion with the higher grades. Out of 1,184 deaths among regimental officers of the Bengal army, the following is the proportion occurring annually in each rank, and at each age :—

	Colonels, average age 61.	Lieut. Colonels, average age 51.	Majors, average age 40.	Captains, average age 36.	Lieutenants, average age 25 to 30.	Ensigns, average age 18 to 23.
Died annually per 1,000 of each class	59.4	48.4	41.0	34.5	27.5	23.4

The mortality amongst the civil servants for a period of forty-six years—from 1790 to 1836, exhibits almost precisely the same results, viz :—

	Age above 50 and service over 30 years.	Age 40 to 50 Service 25 to 30.	Age 40 to 45. Service 20 to 25.	Age 35 to 40. Service 15 to 20.	Age 25 to 30. Service 5 to 10.
Died annually per 1,000 of each class.	48.6	36.4	35.4	23.4	20.8

In the six European regiments before alluded to, as serving at present in India, and from which very interesting "returns" afford much valuable information touching the "stations at which located;" the time spent in tents, and on the march, campaign or field service; the number of men invalided, and dead; the recruits that have joined, since the arrival of the regiments in India, and the number now effective of the original strength, the casualties by cholera or other diseases,

&c., &c., we learn, that the average age of the privates is as follows:—

No. of Regiment.		Date of Arrival.		In September, 1851.	
In the	1st	Arrival in India	1842	The average age is	32
,,	2nd	,,	1842	,,	26½
,,	3rd	,,	1846	,,	26½
,,	4th	,,	1846	,,	26½
,,	5th	,,	1849	,,	26½
,,	6th	,,	1849	,,	24
Mean of the whole number in six regiments is—26.96					

This table shews a very close approximation in each regiment: and, in the first, in which the average age of the men stands as high as thirty-two, it should be explained, that in no other corps has there been such a heavy mortality. Of 1,035, who originally landed with the regiment eight years ago, no less than 649 have died, of whom 400 were cut off within thirteen months only! The youngest seem to have been the principal victims.

We might conclude here, without branching out further into details, though the subject is by no means exhausted; but must find room for one more extract from the *Medico-Chirurgical Review*;—

"We have said enough, we think, to show that among the 'causes of disease, which tend to keep up a high rate of mortal-'ity among the European residents in tropical climates, the 'greater number are readily preventible, either by the direct 'remedial measures, which the civil and military authorities 'have it in their power to apply, or by the individual self-'regulation, which they have it greatly in their power to en-'courage; and we would urge upon them, therefore, in the 'strongest manner, that wherever the returns show an unusu-'ally high rate, not imputable to the transient influence 'of an epidemic, they enquire into its causes, and endeavour 'to remedy them, instead of quietly setting it aside as an in-'evitable result.

"We have seen what has been the efficacy of such remedies 'at Hong Kong and at Bellary, and we trust soon to have 'an equally favourable result at Secunderabad. Can nothing 'be done for Barrackpore, to remedy the fearful mortality to

'which every regiment stationed there seems liable? Look at 'the sad details of this station.

"The 3rd Native Infantry, stationed for three years at 'Mynpúri, lost twenty-six men out of an average strength 'of 753; during three years at Barrackpore, out of an aver-'age strength of 865, it lost 283 men.

"The 57th regiment, when stationed at Benares, lost in 'three years thirty-five men, out of an average strength of '749; during three years at Barrackpore, out of an average 'strength of 892, it lost 240 men.

"The 58th Native Infantry, stationed at Jumaulpore, lost 'in three years twenty-four men; during the next three 'years, at Barrackpore, it lost 208 men." *p.* 95.

Here are three different regiments, which at three remote stations, during a period embracing nine years, only lost an aggregate of eighty-five men out of 2,253; but, when stationed at Barrackpore, the aggregate loss was increased to 731 out of 2,636. The great difference between the stations, in calculating the percentage of mortality, will be best seen by putting it into a Tabular form; thus:—

Regiment.	Where Stationed	Numerical Strength.	Loss in 3 years.	Per centage in 3 years.	Annual per centage of mortality.	Where Stationed	Numerical strength.	Loss in 3 years.	Percentage in 3 years.	Annual per centage of mortality.
3rd	Mynpoorie..	753	26	3	1	Barrackpore...	865	283	27¾	9¼
57th	Benares ..	749	35	4⅔	1½	Barrackpore...	892	240	27	9
58th	Jumaulpore	751	2	3⅓	1	Barrackpore...	879	208	23¾	8
	Aggregate..	2253	85		1		2636	731		8⅓

"We have not the slightest doubt that this fearful rate of 'mortality is in great part dependent upon removable causes. 'How heavy a responsibility rests, therefore, upon those, who 'have not merely every facility for investigating them, but 'the absolute power of removing them, when discovered. No 'considerations of expense ought to prevent the recourse to the most efficacious means for the prevention of disease, that 'it may be possible to devise; since, to say nothing of other 'considerations, there can be no doubt that, whether the direct 'pecuniary economy of sanitary reform will prove as great

'among a civil population, as its more sanguine advocates maintain, every rupee judiciously laid out in improving the accommodation, drainage, water-supply, &c., of such of our 'troops, as are posted in tropical stations, will be repaid over 'and over again—in the diminution of all the expences, consequent upon the continual replacement of such individuals 'as die, or are invalided—upon the loss of effective force occasioned by the constant presence of a large amount of sickness, and upon the frequent removal from station to station—'which last measure is at present required to diminish the 'destructive effects of the most unhealthy stations upon the 'troops stationed there, or, at any rate, to distribute them over 'a large number, and thus to equalize them, instead of letting 'them fall for any length of time upon one corps. How much 'has been done in this respect in the navy, is known to every 'one. The current statement, that three ships may now be 'kept afloat with the number of men that were formerly required for two, is not, we believe, in the least exaggerated.

"It was in a great degree through the sagacity of Sir 'Gilbert Blane, that those improvements were devised, and 'through his perseverance, that they were effected, which turned 'a ship of war from the floating hospital, which it too frequently 'was, into the healthful residence, which it may now, under 'judicious management, be considered. Much has been done 'in the army in the same direction, chiefly owing to the 'corresponding sagacity and perseverance of Dr. Robert 'Jackson; but much still remains to be done; and we 'are certain that, if the military authorities would order an 'investigation, by competent inquiries, into the condition of 'every station reputed to be unhealthy, and would seriously 'set themselves to think, not how *little* they *need* do, but how '*much* they *can* do, to remove the causes of disease, which will 'then be disclosed to them, they will soon be rewarded by such 'diminution in the amount of sickness and mortality, as shall 'most amply demonstrate the capacity of the European soldier, 'for health and longevity in any stations, but such as are located in the midst of pernicious exhalations, whose influence no sagacity or prudence can avert.

"But here, as in many other instances, we have to complain 'of the very small degree of attention, which has been too frequently given to medical representations by the civil and 'military authorities. There is scarcely a page of Dr. Mackinnon's work, which does not bear testimony to the justice of 'this complaint.

"It is not merely of their apathy, that the medical officer

'has to complain. It is too frequently the case that the attempt to draw attention to the imperfection of the existing barrack accommodation, sanitary regulation, &c., causes the medical man to be regarded as a troublesome meddler, and becomes a bar to his advancement, instead of being considered (as it most assuredly should be) an evidence of his intelligence and zeal. 'It has been suggested to me by a friend,' says Dr. Mackinnon, 'that my remarks, regarding public health and the sanitary regulations existing in this country, are too freely spoken. I cannot think so; for I describe things as they are; and it ought not to be displeasing to a great, just and benevolent government to know the truth. 'In other parts of his work, he gives every credit to the Supreme Government for its desire to promote sanitary improvements, but laments the want of co-operation among the subordinate officials."—*British and Foreign Medico-Chirurgical Review.*

The authorities, referred to in the preceding paragraph, cannot even shelter themselves under the plea, "Am *I* my brother's keeper?" We entreat them to remember, that their position involves responsibilities on this head; that the commission they hold, and the pay they receive, bind them as honest men to do faithfully the work that is before them. And let those who are labouring in the good cause, and are discouraged and discountenanced, remember that there is a day coming when the faithful steward will be very surely distinguished from the slothful one: and with this assurance let them not "be weary in well-doing." Their efforts may seem fruitless; but let them remember

> "Not all, who seem to fail, have failed indeed;
> "Not all, who fail, have therefore toiled in vain."

The importance of the subject must be our excuse for the length and the frequency of our extracts. We desire not to be original, but to be useful;—we care not to cry up any set of men or opinions, or to run down others. We are neither exclusively medical, military, nor civil in our views. We simply advocate common sense, and the golden rule of doing as we would be done by. Government and individuals have dearly bought the knowledge, that dissipation and malaria, foul air and foul water, cause death. Let us only benefit by past experience, and, as is the duty of a great government, act *not* impulsively and by starts, but—as sensible men do, when they act for themselves—examine and enquire deliberately and *impartially*, and then act decidedly and honestly. We hope to return to the subject.

From the Author
M. 1859.

NOTES

ON

THE DISPATCH OF TROOPS BY SEA.

By

CHARLES J. KIRWAN, Esq., L. R. C. S. I.,

Formerly Demonstrator of Anatomy, &c. &c. &c.

ASSISTANT SURGEON,

H. M. 13th (Prince Albert's) Light Infantry.

Calcutta:

THACKER, SPINK AND CO.

W. THACKER AND CO., LONDON,

AND

THACKER AND CO., FORBES' STREET, BOMBAY.

1859.

Printed by P. M. Cranenburgh,
Military Orphan Press.—Calcutta.

To

THOMAS ALEXANDER, C. B.,
Director General,
Army Medical Department.

Sir,

The observation of your continued endeavours to promote the health and efficiency of the British Army, has induced me to forward to you the accompanying Notes on the Transport of Troops by Sea, in the hope that you may be induced to make enquiry into a phase of the economy of the Soldier's life, which does not appear to have received so much attention as it deserves.

I feel confident that were the subject introduced to the notice of her Majesty's Government under the sanction of a name so much respected as your's, substantial results would follow in the improved sanitary condition of the Army and the consequent maintenance of the honor of England.

I have the honor to be,
Sir,
Your Obedient humble Servant,

CHARLES J. KIRWAN,
Asst. Surgeon,
H. M. 13th Light Infantry.

Calcutta,
4th May 1859.

INTRODUCTION.

These notes which form some portion of the results of journals carefully kept during nine voyages with troops are submitted with the anxious wish that attention may be drawn towards the manner in which our troops are sent to sea. Nothing but the conviction that an immense amount of destruction of the property of the soldier, and permanent loss of health (not to speak of the temporary discomfort) result from the imperfect fittings of the ships employed, and the defective arrangements made for the government and discipline of the men when on board, would have induced the writer to introduce a production which he is painfully conscious is full of imperfections. But voyage after voyage and year after year the same subjects for regret have forced themselves on his notice—no endeavour to improve the state of matters has become apparent to him—and no one has taken up the pen either to point out existing defects, or to suggest remedies for them. The soldier proceeding to India is profusely fed, but in some instances he is ill lodged in a leaky ship, where his clothing is injured and his bedding frequently wet, and he is harassed by night watches injurious to his health, and that too in a

situation where the appliances for its restoration are of a very inefficient description. No amount of over-feeding will protect men from the effects of exposure to cold and wet, and the want of convenience for that strict cleanliness both of clothing and person which is so necessary at sea as a means essential to the preservation of a sound state of health, as well of the mind as of the body. The equivocal position of the Officer in Medical charge in a situation where his services as a sanitary agent are necessarily of such paramount importance, seemed also to be a subject demanding attention, and although it be one somewhat delicate for a Medical Officer to treat upon, the author has not hesitated to do so, being fully convinced that the suggestions made tend to an improvement in the service. Subjects have sometimes been touched upon which may not seem to come legitimately within the sphere of the observation of a Medical Officer, but it has not been done in any offensive or dictatorial spirit, but rather with the hope that the attention of Officers within whose province they naturally lie, may be drawn to such matters. It may seem that some of the topics noticed are of a trifling description, but when it is considered that a very small neglect often causes a great deal of discomfort, or even danger at sea, they will assume a much greater degree of importance. No note has been made on any subject, and no conjecture as to consequences has been ventured, on speculation. Every single matter which has been commented upon, and every consequence which is noted as likely to result from certain methods of procedure, has actually come

under the observation of the writer, and this, it is conceived, adds a *practical* value to remarks which might otherwise appear of minor importance. That they may be stigmatised by some as visionary, is perhaps what may be expected. But be this as it may, the writer has merely done what he considers to be his duty, in availing himself of the opportunities of observation, which have been afforded to him during the period of his service in endeavouring to direct a tide of enquiry upon a subject so intimately connected with the health and efficiency of our Troops, and one which seems so deserving of attention as their SAFE AND COMFORTABLE TRANSPORT BY SEA.

CONTENTS.

Pages.

Introductory—Causes rendering subject important—Number of Troops now being shipped—Objections to Merchant Vessels—To Men of War—Class of Vessels which would be suitable—Size—Ports—Upper-decks—Houses on Deck—Store-room—Hospital—School-room—Galleys—Laundry—Lavatory—Butcher's shop—Hurricane Deck—Live stock—General Remarks, ... 5 to 12

Troops in Merchant Vessels—Matters to be attended to—Time should be allowed to get ready—Ships trading to Northern Climates—Leaving Dock—Caulking of Decks—Danger and inconvenience of neglecting this—Life-boats should be hung on davits—Awnings should be fitted up before leaving port—Drawing and distributing water—Insufficiency of usual appliances—Danger and inconvenience arising from this cause—Downton's Pumps—Their advantages—Saving of life, time, and fresh water from their use—Shoots for carrying off refuse matters—Such matters ought not to be put into latrines—Cook-houses—Insufficiency of Cook-houses usually supplied to Troop-ships—Their danger from fire—Lamps—Hints regarding them—Examination of Ship previous to sailing—"Clerk of Works"—His Duties—Queen's Regulations on the subject—"Stevedore," or stower—Necessity for such an Officer, ... 13 to 22

Conducting Serjeants—How to be chosen—Hospital Serjeant—Percentage of Marines—Their uses and duties—Serjeant Major—and Quarter-master Serjeant—Their duties.—Sea Necessaries to be placed in Quarter-master Serjeant's Store-room, 23 to 26

Troop-ship Hospitals—Position—How to be fitted—Lights—Medicine chest—Cooking appliances for Hospital—Medical history of patients to be entered in Soldier's Small book—Advantages, ... 27 to 31

"Imperium in imperio"—Relative position of Officer Commanding and Medical Officer—Duties and position of each

Pages.

should be distinctly defined—Medical Officer considered as Sanitary agent—His suggestions relating to such subjects should be recognised—Reasons why authority under certain limitation should be given him—General Orders suggested—Informations be afforded to Medical Officer—Special regulation suggested—General Remarks—Remarks on night watches as a source of disease, ... 32 to 38

Victualling of Troop-ships—Queen's Regulation Scale—Indian Scale—Passenger Act Scale—Indian Scale full—Alterations—Biscuit—Tea and Sugar—Beef and Pork—Vegetables—Butter—Preserved meats—Suggestion regarding them—Medical Officer in charge should be qualified to give opinion on quality of provision. ..... 39 to 42

Management of articles put on board by Quarter Master General's Department or Council for India—Hammocks—Blankets—Sea-kits—Remarks on Trousers—Smocks—Flannel—Forage cap—Marine Soap—Shoes — Socks— Scissors—Tooth-brush—Articles supplied by owner—Remarks on, ... 43 to 46

Relations of Officer Commanding and Shipmaster—Commandants at intermediate Ports, ... 47 to 49

Miscellaneous—Ventilators—Washing days—Suggestion on stowing Soldiers' necessaries—Covering for bedding when on deck—Latrine—Place for Guard—Charter Parties—Stowing of arms—Ship's pumps—Senior Officers—Complement and rating of seamen—" Orders," ..... 50 to 54

Administration of Transport Service—Different departments engaged in—Objection to this—Remarks—Propriety of reducing whole matter to one responsible head—Arguments in favor of—Celerity,—Simplicity,—Efficiency—Suggestions as to details—Director General—Transport Service Board—How composed. Naval Surveyor—Officer from Quarter-master General's Department—Medical Officer—Their qualifications and duties—Subordinate Officers,—Their qualifications and duties—Remarks, ... 55 to 61

CHAPTER I.

Introductory—Causes rendering subject important—Number of Troops now being shipped—Objections to Merchant Vessels—To Men of War—Class of Vessels which would be suitable—Size—Ports—Upper-decks—Houses on Deck—Store-room—Hospital—School-room—Galleys—Laundry—Lavatory—Butcher's shop—Hurricane Deck—Live stock—General Remarks.

THE following notes on the Transport of Troops by Sea, have been written under an earnest conviction, that the subject well invites attention, and that any propositions however unpretending the source from which they may emanate, or however humbly they may rank as a literary production, will, on a matter of such vast importance, elicit due consideration; and that the critical tests which may be applied to them will be concerned rather with their usefulness and practicability, than with the correctness or style of the language in which they may be couched.

The possession of transports urged.

2. An opinion prevails among those who have studied the subject in all its bearings, that England ought to possess a fleet of Government Troop-ships creditable to her position as a great maritime nation, and efficient for the despatch of Troops at any moment.

3. Trusting to chance for vessels in every way suitable for troop-ships is questionable policy. The number of men England is obliged to send

to her colonies and dependencies is gradually increasing, and her detached army being insufficient to maintain possession of her immense territories, it may become necessary, to adopt means for its rapid assembly.

4. To prevent the loss of men, or the reduction of the standard of health during the progress of such a concentration, necessarily rapid and exciting or even during the quiet relief of a regiment in a distant colony, is a matter of paramount importance. To effect such desirable ends, sufficient space, and proper appliances are absolutely necessary; and these, it will scarcely be disputed, are rarely to be found in the ordinary Merchant Vessel, chartered for the conveyance of Troops.

5. The urgent necessity, which of late years has more than once arisen for the rapid deportation of large bodies of men from one country to another, seems to suggest the need of having at hand to meet such emergencies, some means of transport readily available, and better suited for the occasion, than the means of conveyance hitherto in use.

Men-of-War as troop-ships objectionable.

6. Various and weighty objections to the conveyance of Troops either in Men-of-War, or merchant Vessels, might easily be stated. Not the least of these as regards most Merchant ships is their general unsuitableness, and want of convenience for the purpose for which they are employed; while the simple fact of employing Men-of-War for the transport of Troops, suffices to prevent them from exercising their proper functions.

7. Independently of the advantage which would accrue from the possession of a class of ships expressly devoted to the transport service, in the

speedy removal of troops from one part of the globe to another, an additional recommendation for their use would be found in the *improved general health*, and the favorable state of morale or pluck in which men would be landed. In the means of conveyance now in use there are in nine cases out of ten, no appliances of a suitable description for the care of the sick, for the prevention of the spread of infectious or contagious disease, for the drying of wet clothing in heavy weather, for the preservation of the cleanliness of either the person or clothing of the soldier, for the segregation of married men and their families, or for that continual drill which is so essential to the efficiency and soldier-like bearing of the men. In short, there exists in too many cases, absolutely from want of means, the utmost difficulty in enforcing order, cleanliness, and obedience, without which men are in danger at the termination of a voyage, of being landed, a mob, rather than an army.

New arm of service proposed.

8. For the prevention of such evils, the introduction of a class of ships solely devoted to the transport service is proposed as a distinct arm of the service.

Description of troop-ship necessary.

9. The size of such vessels might according to circumstances be varied; but perhaps ships ranging from 2,500 to 3,000 tons register would be best adapted for the purpose. They would be sufficient for the accommodation of a regiment a thousand strong, with its proportion of women and children, and stores and provisions for twelve months' use. The means of progression for a ship of this class, would in favorable weather, be sails, but with the addition of a small steam power, say from 250 to 300 horse, applied to a screw propeller, for the purpose of steaming through belts of calm, or of keeping way against light baffling head winds. These engines would be of little

avail during the prevalence of strong head winds against which the ordinary expedient of beating would require to be adopted.

10. The decks on which the troops are lodged should have no impediment to the free circulation of air, and should also have ports similar to those of the fighting decks of a War ship, with the addition of the usual bull's eye port in the centre of the folding part, to be used for the purposes of light and ventilation when it became necessary to shut the larger ports.

Deck houses.

11. The upper deck should have as few impediments as possible, in order that plenty of clear space may be left for parading and exercising the men. Immediately in front of the poop deck, which ought to occupy as little space as possible, consistent with the comfortable lodging and messing of about a hundred Officers, naval and military, the roof of the engine room would stand, occupying only the central portion of the deck. From hence to a point considerably in front of the main hatch, would occur but few obstructions, and this portion of the deck could be used as a parade and drill ground. In front of the main hatch would follow a range of houses on deck, *viz.*—

Store-room.

a.—A store-room having shelves like a retail shop, in which supplies of every kind, for immediate use, could be stored. This room ought to contain a hatch communicating with the main stores in the hold, so that all provisions could be brought direct to the proper place for being served out, without any of the inconvenience of moving boxes or barrels along the decks.

Hospital.

b.—An Hospital and Surgery which last should also be fitted up with shelves, and all

other essentials for the proper and expeditious arrangement and dispensing of medicines.

School-room.

c.—A school-room, which might serve also as a Library.

Galleys.

d.—Galleys or Cook houses, divided into Ship's Saloon, Hospital, and Troops departments, furnished with salt-water pumps communicating with the sea.

Laundry.

e.—A laundry or washing-house, in which the women of the regiment could be employed as on shore, in washing the men's under clothing, and so constructed as to be capable of being used as a drying room for wet clothing in heavy weather. For this purpose it should be furnished with a large number of hooks on the ceiling beams, and around the walls, and also be provided with a steam drying, or rather heating apparatus, which could, by a little management, be supplied with the requisite quantity of heat from the same fires which serve for the washing and cooking apparatus. This apartment as well as the galleys to be provided with conveniences for pumping in salt water, and both to be lined with tiles, and floored with them in every part where the furnaces may be in the vicinity of timber.

Both the galleys and the laundry should have some method of discharging refuse water, without deluging the decks in their neighbourhood.

Lavatory.

f.—The lavatory for the men would also be well situated near the laundry. There is, on board a troop-ship hardly any point which requires more strict attention than cleanliness of person, and there is none

which seems to have received less, if the nature of the appliances, furnished for the purpose, is to be taken as a criterion.

Butcher's shop.

g.—A butcher's shop ought to be provided in the range of deck houses, in order to guard against the filth created by slaughtering on the open deck, as well as to hang the meat in until required.

Hurricane deck.

12. These houses, with the addition of any others which may suggest themselves as necessary and useful, and for which there may remain space, would run forward so as to meet the roof of the forecastle; and the roofs of the whole combined, would form a spacious hurricane deck broken only by the foremast, and a few sky-lights and ventilating shafts. This deck would form a spacious promenade for the men, and ought to be kept sacredly clear of all lumber, with the exception perhaps of a few sheep pens.

Live stock.

13. Since live stock has been here incidentally mentioned, it may be as well to finish the subject at once by saying that such an animal as a pig should not be allowed on board a troop-ship. The amount of dirt which they create and the intolerable stench which is ever about them, (all efforts to the contrary notwithstanding) forbid their presence. Good hams, well cured pork, bacon, pig's face, &c., are surely sufficient representatives of the animal deceased, without being disturbed by its living presence.

Pigs disallowable.

Milk.

14. The art of preserving milk has now been brought to such perfection, that the presence of a milch cow might also be dispensed with. The quantity of milk which these animals give at sea is so small, and

they get into such a dismally low condition, that economy and humanity combine in declaring their presence at sea to be unnecessary.

15. The few unconnected hints which have here been thrown out, regarding the class of arrangements and appliances requisite, on board troop-ships, might with the greatest case, be multiplied indefinitely. Much might be said regarding the cabins allotted to officers, of their inconveniently small size; of the improvements which might be made in their mess and sitting rooms; of the disagreeableness of having the Messman's pantry, generally full of stewards, attendants, and Officers' servants, within ear-shot of every conversation carried on in the apartment allotted as mess-room, general sitting room and orderly room. These and many other points might be made the subject of comment; and in the parts of the ship allotted to the troops, mention might be made of proper companion ladders, distinct from the hatchways, of ventilating apparatus; indeed a thousand matters, trivial when singly considered, but taken together, forming the great whole of comfort, regularity and salutary arrangement for the preservation of a sound physical and moral condition among the men, press forward for consideration.

Troop-ships should be worthy of the soldier.

16. To enumerate them all would be to write a specification for a well appointed troop-ship, a task better executed by the Naval Architect, under the instructions of the officer whose province it may be to determine the class of vessels required, and the amount of accommodation to be allowed. Suffice it to say that the ship should be of the first class, whatever her tonnage, with every improvement in naval arthitecture which may have stood the test of careful experiment, and with every appliance for the health and comfort of the men with which

modern science has made us acquainted, so long as these do not tend to degenerate from comfort into luxury.

17. Such a class of ships would be a credit to the liberality, and an honor to the good feeling for the welfare of its troops, of any nation possessing them, and would enable it to make the proud boast of having been *the first to organise a fleet of Sea Barracks, in which its troops could enjoy and maintain a state of comfort, health and efficiency, inferior only by a few degrees to what they could enjoy in Garrison, on shore.*

CHAPTER II.

Troops in Merchant Vessels—Matters to be attended to—Time should be allowed to get ready—Ships trading to Northern Climates—Leaving Dock—Caulking of Decks—Danger and inconvenience of neglecting this—Life-boats should be hung on davits—Awnings should be fitted up before leaving port—Drawing and distributing water—Insufficiency of usual appliances—Danger and inconvenience arising from this cause—Downton's Pumps—Their advantages—Saving of life, time, and fresh water from their use—Shoots for carrying off refuse matters—Such matters ought not to be put into latrines—Cook-houses—Insufficiency of Cook-houses usually supplied to Troop-ships—Their danger from fire—Lamps—Hints regarding them—Examination of Ship previous to sailing—"Clerk of Works"—His Duties—Queen's Regulations on the subject—"Stevedore," or stower—Necessity for such an Officer.

Matters to be attended to in chartering.

18. SHOULD it not be considered expedient to construct a fleet of transport ships or *sea-barracks*, it would be well that certain points were attended to in chartering vessels for that service. A few of these may be enumerated, in the hope that they may prove suggestive of others, to those who have devoted their attention to the subject.

Owners should be allowed reasonable time.

19. In chartering for the conveyance of troops it is not at all unusual that ships are accepted to sail within a few days, having at the time of tender their inward cargo to discharge. The Merchant marine of Great Britain can do a great deal, but it is expecting or believing too much, to think that a ship of a thousand or two thousand tons can discharge, be overhauled, fitted up, take in ballast and cargo and stores, and be every way

ready to embark troops for a long voyage in a space of perhaps not more than a fortnight; except in cases of emergency, no charter party should be entered into without allowing ample time for all necessary alterations, repairs, &c.

Suitable vessels only should be taken up.

20. Ships which have been built for the purpose of trading in Northern climates, should, as a general rule, be avoided; they are ill adapted for conveying troops through the heats of the tropics, and, from their original construction, it is next to impossible to alter them, so as to render them suitable for sea-barracks for soldiers during a long voyage.

How the ship is *found*.

21. Before leaving dock it would be well to see that all the standing rigging is properly set up, and as much of the running gear as is possible rove, and that the ship is well found in sails, spars and cordage.

Troops on board 36 hours previous to sailing.

22. No vessel ought to be allowed to proceed to sea, until fully 36 hours have elapsed from the time of the embarking of the last company or detachment, nor until the whole of the spare spars shall have been properly lashed, and the deck lumber either cleared away, or properly secured.

If properly water-tight above and below water-line.

23. It should be carefully seen that all vessels, and especially those which have recently arrived from tropical ports, have their upper decks properly caulked and pitched before proceeding to sea; indeed this precaution should extend to every part of the ship. If this be not attended to, the comfort, health, and spirits of the men will soon suffer, so soon as heavy weather or rain is met with, the rain runs through to the tween-decks, making them messy and sloppy, the air is rendered foul, and the damp induces rheumatism and chest affection. In addition to

this the clothing and accoutrements of the soldier are partially or perhaps totally destroyed, causing him to become dispirited and careless, and obliging him to go in debt for a new kit, at which it is not wonderful that he should feel aggrieved; to be placed in a leaky ship, and made to pay for the damage done, owing to that cause, is an arrangement which he cannot well understand.

Life Boats.

24. Suitable arrangements for preserving boats intended for saving the lives of passengers should be one of the chief cares of those charged with the fitting up of troop-ships. The arrangement by which we see the great proportion of the boats, and these the heaviest, fixed on board on beams running from bulwark to bulwark cannot be sufficiently condemned. The boats become warped and cracked by the sun, and, in heavy weather, get strained by bumping and jolting one against the other. In addition to this, they prevent the free current of air down the hatchways, and render it impossible to spread a proper awning over that part of the deck where the men most congregate. In the event of their being required, the probability is, that they will be found to be useless, and in any case, much valuable time is lost and needless danger incurred, in getting them overboard. Any one who has seen a storm at sea, or has even read a detailed account of one, knows how little chance there is of securing anything like unity of action. Without it how foolish to expect that a boat, freighted with living cargo, can be lowered into a raging sea, when two tackles, each working independently of the other, are required for the purpose. All life-boats therefore, should be hung on davits, furnished with Clifford's patent lowering apparatus, or some other of a similar description, by which a single individual, or at most two, working on the same line, can lower an entire boat's crew.

25. It is also a matter of some importance that the upper decks of ships carrying troops to India should be supplied with proper awnings, which should be seen fitted up before the ship is passed as being ready to proceed to sea. These awnings, it must be understood, are not intended as articles of mere luxury, but as medical necessaries, for it is considered that men, by lying exposed to the vertical rays of the sun, become *predisposed to suffer from coup-de-soleil;* and on this account alone they may be considered a necessity. Their being fitted up before starting is recommended from the belief that there is little chance of their being made at sea, as many ships from the construction of their upper decks are not well suited for them; and Captains, once escaped from port, naturally evade, if possible, cutting up canvas for a temporary purpose, preferring to make an old sail suit the end in view.

Awnings.

26. The means of drawing and distributing water, both fresh and salt, is a subject which should perhaps engage more attention than it seems at present to do. Few ships taken up for the conveyance of troops contain any appliance for the purpose of drawing salt water other than the ordinary pump, of the simplest construction, which is usually fixed in the heads; and however well this may suit when there are none on board but the crew, and a few passengers in the cuddy, it is quite inadequate in a troop-ship. The multiplication of the number of passengers, requires a like multiplication of the means of water supply.

Water supply.

27. The appliances which sufficed for forty, cannot suffice for four or five hundred. The consequence is, that much danger is incurred in procuring even an insufficient supply of water, by means of buckets

Danger from drawing water by buckets.

thrown overboard. With a ship running at eight or ten knots an hour, a stiff breeze and some sea on, he must be a strong man, and steady at standing on a lee rail, if he do not run some risk of being dragged overboard, or of losing his bucket. Men do not like being dragged overboard, so they let go the bucket, and thus the means of water supply become day by day diminished, until at length a few buckets, cherished like gold, are all that remain. These, of course, must be kept for what may be called Public purposes; such as washing decks, cleaning urinals, latrines, &c., &c. Were it not that the shifts to which men are then put in order to ensure an approach to cleanliness are distressing, they would be ludicrous to contemplate. Mess *kids* capable of containing about a gallon and a half, serve for tubs to wash clothes; and grave attempts are made to supply the want of proper lavatories for the person by the use of the tin from which preserved meats (about four pounds to each tin) have been emptied.

28. A simple remedy for all this, would be to put on board at least two force pumps on Downton's or some similar principle, with a sufficient supply of leathern and canvas hose and nozzles, as well as the materials for repairing them efficiently when out of order; one of the pumps to be kept in reserve as a fire engine, and the other to be constantly at the disposal of the troops, under charge of a Serjeant appointed to take care of that and all other cleansing apparatus. By these means, decks could be washed down,—latrines cleaned out, tubs filled, buckets and perhaps lives saved,—fresh water drawn from the hold, and this, almost independently of the state of the weather, and in one-fourth part of the time which, by the primitive bucket and head-pump system, is occupied in doing one of them.

A liberal supply of force pumps necessary on troop-ships.

Force pumps a means of saving fresh water.

29. So far as salt water is concerned, the saving of life, time, and labour should be a sufficient recommendation of the proposition, but an additional one presents itself in the case of fresh water, *viz.*, the saving which would be effected in the quantity of water used, or rather destroyed. No one who has seen the laborious operation of drawing fresh water from the hold in buckets, or who has suffered from the want of water at sea, can witness without pain the spectacle of twelve or fourteen men toiling for four or five hours under the burning sun of the tropics to bring up two or three hundred gallons of water, and in the process wasting, not by carelessness, but inevitably, from the nature of their appliances, at least one-sixth part of the whole quantity rendered available. A force pump, and a few hundred feet of hose, would prevent all this, and the work would be done in half an hour.

Refuse discharging shoots necessary.

30. Another matter may be noticed, and although it may appear trivial, experience has proved it to be of no inconsiderable importance in securing the cleanliness of a ship's sides, decks, and latrines. This is the fixing in the bulwarks of some apparatus for the purpose of carrying off dish-washings, cinders, cook-house refuse, deck-scrapings, &c., &c. It is highly improper that these matters should be discharged into the latrines or urinals, as is too often the case. It is almost unnecessary to adduce reasons for this. One may suffice. The angle at which latrines are set is not acute enough to carry off these matters, and consequently they become choked up. It is therefore recommended that an iron shoot, two and half feet wide, having its upper edge projecting two feet inwards, should be inserted into the bulwarks, forming an angle with them of about 45°. Their proper place would be a few feet abaft the galley doors on each side.

Inferior cooking appliances in troop-ships.

31. Every one who has been at sea knows that, great as is the economy of space in every part of the ship, there is no portion of it where the pinching system is more rigidly carried out, than in the cook-house or galleys. And if this is the case even in the best class of passenger packet ships what can be said of the kitchen of a troop-ship, where all that is required of the owner is, that boilers be provided, capable of containing after the rate of half an imperial gallon per man. Of course the form which takes up least superficial or deck space, (always a primary consideration on board ship) is the deep square tank shape. A flimsy wooden caboose is erected around the boilers leaving just space enough on one side of the interior, for two men to pass each other, and here the cooking for four or five hundred men is carried on.

Troop-ship galleys a dangerous source of fire.

32. Little provision is made for fire risk, unless the covering of the floor, and the lining of portion of the sides of the caboose, with sheet iron of a very light guage, be considered sufficient. Practically, however, this sheet iron is a sort of invitation to fire, with a promise annexed to keep its presence secret for a certain length of time. The fierce fire which must be maintained, in order to keep coppers of such a depth, and presenting so little surface to the action of the flames, in a boiling state, speedily renders every portion of iron-work about the surface red hot. From hence the heat is communicated to the flimsy sheet iron floor, the dry deals get it, and in a few minutes, and without any warning, the galley is in flames.

Good lights tween decks.

33. The lamps on board troop-ships should be sufficient in quantity, as well as efficient in quality. Instead of being made of thin tinned iron, they should be made either of strong block tin, brass or copper, and of considerably larger size than they usually are. Some-

thing like a globe mast-head signal lamp would be the proper thing. The guard wires should not be soldered, but either rivetted or screwed on, because when the lamps have been sometime alight, the metal gets heated, the solder gives way, and as the guard wires form the only support of that part of the lamp under the globe, it must fall to the ground, unless indeed the cement by which the metal is fixed to the glass, be strong enough to support the weight of the lamp which is seldom or never the case.

34. Many other requirements might be mentioned, but it is trusted that if public attention be once drawn to the subject of troop-ships, no single item will fail to receive the consideration to which it is justly entitled.

A practical man to oversee alterations.

35. Something more than a mere cursory overlook should be given to a ship, before being permitted to put to sea: indeed it would be no more than is necessary, if, in cases where alterations and repairs are required, an official, somewhat corresponding to the "Clerk of works" of civil life, were put on board, to check the whole of the materials and workmanship, and put his *veto* on any thing he considers insufficient. Without this, unsound and untradesman-like work can neither be avoided nor detected. It looks well enough on a passing inspection, but it is certain to give way during the first gale of wind.

Additional guarantees as to fulfilment of Charter Party.

36. In the Chapter of the Queen's Regulations treating of embarkation of troops (1st July 1857, page 195,) it is provided that "on the arrival of a "vessel for the reception of troops, the General, or other "Officer Commanding, is to cause such inspection to be "made by the Staff and Medical Officers under his Command, "as may satisfy him that the vessel is in every respect

"fitted for the accommodation of the number of Officers and "men to be embarked, and that proper and sufficient stores "are provided for their use." Now as it is utterly impossible for any Officer whatever, to satisfy himself *conscientiously* upon all the requisite points, in the limited time which usually elapses between a ship's being reported ready for sea, and the period when it is anticipated that the troops are positively to embark, the officer, naturally anxious to expedite the public service, will, unless he has reason to suspect delinquency or fraud on the part of the owners or master, upon the simple statement of the master, purser or some other party interested in the profits of the voyage, pass the vessel as ready for sea. It is true that papers will generally be produced, purporting to shew how much provision has been taken on board, and to give corroborative evidence on some other points, but it is contended that this is not enough, and that some other guarantee should be had. The penalty attached to having a short supply of provisions on board is so small, that a speculating captain or owner would think little of risking to make a passage to India with 90 or 100 days' provisions on board, instead of 140 days which he is supposed to carry.

"Stevedore."

37. For the prevention of anything of this kind, and in order also that the ship may be guaranteed to be properly stowed, both as regards security from shifting and ease of access, it is recommended that an officer, corresponding to the "stevedore" or professional ship stower and discharger of the Mercantile Marine, should be appointed to superintend the stowing, and to check the shipment of every article put on board in fulfilment of the Charter party. This officer, as well as the Clerk of Works, previously mentioned, would give his certificate of the fitness of the ship to proceed to sea, and thus the officer embarking the troops could give the neces-

sary clearance with more satisfaction than if his information was derived from interested parties.

It should be seen that these subordinate Officers discharge their duties faithfully.

38. In order that these officials should thoroughly discharge the trust reposed in them, it would be requisite that they should remain on board during the whole time that repairs and alterations are going on, or goods being taken in, and be under the superintendence of a Director General of transports, from whose office visits should be occasionally paid to the ship, during the time that she is being fitted out for sea. It is impossible to expect that the head of such *an important branch of the service as the despatch of troops by sea is fast becoming*, should be able to devote the time necessary to see the fulfilment of details, and such an arrangement as above indicated seems well adapted for securing the end in view.

CHAPTER III.

Conducting Serjeants—How to be chosen—Hospital Serjeant—Percentage of Marines—Their uses and duties—Serjeant Major—and Quarter-master Serjeant—Their duties.—Sea Necessaries to be placed in Quarter-master Serjeant's Store-room.

Class of men suitable as Conducting Serjeants.

39. The ship fitted up and ready for sea with troops, the next consideration is, how the necessary details for comfort, health, and regularity are to be arranged and carried out. It too often happens that the selection of men qualified for the arrangement and management of these matters is left to chance. The excellent suggestion of H. R. H. the Commander-in-Chief, which eventuated in the appointment of Conducting Serjeants, went far towards removing the difficulty, but the fact of the men chosen having occasionally been parties *effete* from age, or who had perhaps never encountered a longer passage by sea than from London to Dublin, and who were therefore utterly ignorant of the economy of life on board ship has at times rendered inoperative a suggestion of great practical value. The men chosen as Conducting Serjeants for detachments should be young, active and intelligent; accustomed to life on boardship, and also to the special occupations in which they will be engaged.

40. Three of these Conducting or Sea-Barrack Serjeants should be sent on board every troop-ship as under, *viz.*—

Hospital Serjeant should be selected from Medical Staff Corps.

41. First and as of greatest importance, the Hospital Serjeant. For this, more than any position in the Military life of a soldier, special qualifications are necessary. A man of even temper, active habits, and above all, having some knowledge of the nature and action of medicines, and of the method of performing the various capital and minor operations of surgery, so that he may be able to act in some degree as an Assistant to the Military Surgeon.

42. Such men are seldom to be found among the miscellaneous inhabitants of a troop-ship, and the officer in medical charge too often gets for an Hospital Serjeant, a man not only inadequate to the performance of his duties, but even incapable of being instructed in them in time sufficient to make himself useful. Such a man is a hindrance rather than a help. Again should there happen to be a man on board adequate to fill the situation, he may either not come under the observation of the Officer in Medical charge, or if he does, his own Officer may require him for Regimental duty. Accidents may, and often do, occur during the embarkation of troops, and in such a case the Medical Officer is either totally without assistance, or he has a mob crowding round him, all equally willing, and equally ill-qualified to render assistance ; or he has one man handed over to him, hastily selected, ignorant of what an Hospital Serjeant is expected to do, and so, quite useless. It is earnestly recommended that the filling of such an important situation should not be left to *chance*, but that a young, active, and trustworthy Serjeant of the Medical Staff Corps should be put on board every troop-ship, which may not otherwise carry a person of known and approved qualifications. He ought to be a man knowing and exemplifying the difference between cool expedition and breathless hurry, and who has had experience in a Military Hospital. He

ought to be shipped one or two days before the troops are embarked, so that during the interval he may make himself acquainted with the nature and amount of the medicines put on board, and have them properly arranged, and ready for instant use.

Marines as Sanitary Police.

43. Next to health, and as a principal means for its preservation stands, cleanliness. To ensure it, it is proposed that a small percentage of Marines should be put on board ships carrying detachments, to act as Sanitary Police. It would be their duty to see that all Sanitary Regulations on board were duly carried out, and strictly enforced, and that no dirt is allowed to accumulate about the decks, latrines, or any part of the ship. Being men accustomed to the sea they would be of essential service during the early part of a voyage, in seeing that cleanliness was preserved in every part of the ship, in washing decks, in rousing the men on deck, in acting as sentries on hatchways, latrines, wind-sails, and articles supplied for the cleansing of the ship ; and this at a time when troops are usually prostrated by sickness, and perfectly unwilling and unable to take care of any person or thing but each one, himself, individually. These men as well as the Hospital Serjeant should be on board one or two days before the troops embark, in order to have every thing in readiness.

Serjeant Major and Quarter Master.

44. The next conducting or sea Barrack Serjeant is the Serjeant Major, who, as well as the Quarter-master Serjeant, should be chosen with special reference to his fitness, rather than to his length of service. Men steady, active, and intelligent, strict, but not tyrannical in discipline, and who have been to sea previously.

Troop-ship Regulations published.

45. The Serjeant Major having received from the embarking Officer printed regulations re-

lating to the duties of troops on board ship, should have them posted up conspicuously throughout the ship, at the different hatchways, between decks, &c., &c. He should be ready to receive the various detachments or companies as they come on board, and conduct them to their quarters, and to publish all temporary orders of the Officer in command.

Duties of Quarter Master Serjeant.

46. The Quarter-master Serjeant should post in various parts of the ship the scale of rations, and the scheme of their distribution. He should be thoroughly acquainted with the quantity of every article of consumption put on board for the use of the troops, and with the part of the hold in which they are stowed. He should see that all rations are served out regularly at the specified time, and in the specified quantities, and take a general oversight of the cookhouses, so that no irregularities take place in that department. He should keep a correct account of all supplies received by the troops, and of the manner of their distribution so that his books, kept in a business-like way, may serve as a complete check on the accounts of the purser. With these duties to perform, his time would be fully occupied, and he should therefore be personally exempt from all duties connected with the cleansing of the ship, or the care of the utensils employed for that purpose. It might also form one of his duties on the arrival of troops on board, to see that the sea necessaries of the detachments were not put on board promiscuously with other cargo, but in a place where they can be had when required. Much trouble often results from these requisites being hurriedly put away, to be afterwards sought for.

Sea necessaries not to be shipped with General cargo.

CHAPTER IV.

Troop-ship Hospitals—Position—How to be fitted—Lights—Medicine chest—Cooking appliances for Hospital—Medical history of patients to be entered in Soldier's Small book—Advantages.

Importance of troop-ship hospitals.

47. THERE is no department in the economy of a troop-ship which should receive greater attention than the hospital, or sick bay, its appurtenances, and appliances. It is much to be regretted that the Commissioners appointed in May 1857, to enquire into the sanitary condition of our army, did not bring the subject of troop-ships under their consideration. The amount of talent displayed in the plan of investigation adopted by them, and the untiring labor undergone in carrying it out, *can never be forgotten by the public*, and almost the only omission in their philanthropic labours which these gentlemen left to be regretted, is that which has now been indicated.

Should be isolated.

48. Having a number of sick, some perhaps labouring under contagious or infectious disease, contaminating the air of the sleeping quarters of the troops, is, as it were, inviting a dissemination of disease. The removal of an hospital, where all the disease of a ship is necessarily concentrated from a corner of the 'tween decks to the light, air, and comparative isolation of the upper deck, would be a matter of material benefit to the healthy, as well as the sick.

How hospital should be fitted.

49. It should be fitted with berths and cots—the former made sufficiently high from the "deck floor" to let it be seen that no dirt is allowed to accumulate underneath them. They might also be sufficiently high to admit of the patient sitting up comfortably in bed, if occasion required that he should do so, as in bleeding, &c. ;—and the side boards be constructed so as to admit of their being folded down, to allow the patient to be easily lifted out and in, or a dry mattress or sheet to be slipped under him. The *cot-lashings* should be sufficiently strong, the principal lashing being of not less than half an inch in diameter. Much annoyance to patients often occurs from ropes supplied not being stout enough, and occasionally giving way. The Hospital should be fitted with shelves, presses, a table, and some seats, in fact with as many of the conveniences of the land as possible. The means of having both natural and artificial *light* should be abundantly supplied. A small apparatus for *heating water* quickly in cases of emergency during the night, when the cook-houses are closed is also recommended, as well as a *filter* for the purification of water used for compounding medicines.

Medicine chest.

50. The *medicine chest* put on board should be constructed in such a manner as not to render it necessary that one article should require to be turned out in order to find another. Such an arrangement, even on land, is inconvenient and unsatisfactory in the highest degree, and at sea, when the ship happens to roll, cannot fail to be attended with breakage and loss.

Cooking for sick.

51. Sufficient provision for *cooking for the sick* should be put on board every troop-ship. Either a small detached galley, or a portion of one of the larger galleys should be set apart for this purpose, and well supplied with saucepans, &c., in all ships carrying a number of

troops. When such an arrangement is not made, the *greatest difficulty* is experienced in procuring supplies of hot water, and in having the requisite *diet* cooked for the sick, a state of things in itself sufficient to render nugatory the best endeavours of the Medical Officer.

A compact Register submitted.

52. Nothing annoys Military Surgeons either at sea or on shore so much as the want of any *certain information regarding the previous Medical history of his patients.* The symptoms may be obscure, the patient's account of his affections unintelligible, and he may be either unable or unwilling to give any satisfactory account of his previous Hospital service. In such a case the Surgeon has naturally some difficulty in arriving at a correct opinion regarding it. A simple remedy for this would be, to have a space set apart in the soldier's Small-book, in which his Hospital service could be entered. In case of his going on draft or on detachment, or in any other way coming under the notice of a fresh Medical Officer, there would be an innumerable host of difficulties cleared from the path of the Surgeon, and a very great benefit conferred on the soldier himself. This need not by any means be a full journal of each illness and its treatment, but should be rather suggestive in its nature, indicating by a word or two as much as might form a finger-post for another Medical Officer. A form somewhat similar to the following is submitted.

Hospital Service of No.—A.—B.——H. M.——Regt. of———

Station.	Disease.	Remarks.	No. Days on Sick List.	Discharged.	Surgeon's Signature.
Bengal.	Cholera.	Spasmodic. Followed by Fever. Invalided to England, ...	47	19th March 1859.	
Chatham.	Venereal.	Phagedenic chancres, and gonorrhœa, ...	35	25th December 1859.	
At Sea.	Secondaries.	Syphilo-Rheumatic pains, skin eruption and Condylomata, ...	40	13th June 1860.	
Cape of Good Hope.	Heart Disease.	Accompanied by dropsy and general debility, ... Invalided to England.	60	14th February 1861.	
		Total days, carried forward,..	182		

53. This form which measures 6⅝ inches by 4⅜ inches, the exact size of the soldier's Small-book at present, and into which it could easily be inserted, would, it is supposed, prove valuable to Pensioning and Invaliding Boards.

Valuable as a document of reference.

54. A man's "*Hospital Service*" as distinguished from his "*duty* service," could be seen at a glance; and whether his disabilities were contracted on duty or from vice; and this knowledge *would be of service in enabling the Board to determine the amount of pension to be awarded.*

55. It is also considered that the knowledge than a man's Hospital service is kept in this public manner, would, to some extent, tend to prevent any unnecessary additions to the numbers on the Sick List.

CHAPTER V.

"Imperium in imperio"—Relative position of Officer Commanding and Medical Officer—Duties and position of each should be distinctly defined—Medical Officer considered as Sanitary agent—His suggestions relating to such subjects should be recognised—Reasons why authority under certain limitation should be given him—General Orders suggested—Informations be afforded to Medical Officer—Special regulation suggested—General Remarks—Remarks on night watches as a source of disease.

Knowledge of duty essential to harmony.

56 THE regulation of an "imperium in imperio" has ever been a task of the greatest difficulty. With the advantage of the best considered laws, collisions between governing powers seem to be inevitable, and it cannot therefore be surprising, if, in a troop ship, where a Commanding Officer, and an Officer in Medical charge are sent on board without having their duties distinctly defined, occasional difficulties should arise.

The responsibility of Medical Officers not clearly published.

57. This is the case more than it might otherwise be, on account of the prevalent idea that the duty of a Medical Officer is merely to *cure*. Were this the case, the recommendation which is sometimes given him, "to confine his attention to the Hospital" would be somewhat more pertinent. But when it is taken into consideration that the duty of a Medical Officer, and this holds more particularly at sea, is as much concerned with the *prevention*, as with the cure of disease, it will at once become apparent that there are

many points where the Commanding Officer, and the Officer in Medical charge, may easily come into collision.

The publication of Instructions urged.

58. It is therefore suggested that each should be furnished with a Code of Regulations, defining the limits of the duty of both; and containing instructions for their guidance, in all cases where it may be advisable that they *should work in unison*. The Medical Officer is, from his *special* education, more keenly alive to the danger of infringing Sanitary laws. He has been taught, and he knows by experience, that nothing so much conduces to perfect health as perfect cleanliness. Thus he becomes at once alarmed if the decks, or indeed any part of the ship, or the persons, or clothing of the men are not kept in a state of perfect purity. He is, from his position minutely acquainted with the state of the general health on board, what forms of disease prevail, and by induction he arrives at a conclusion regarding their originating causes; and consequently *is best able to form a judgment as to the means to be adopted for their immediate suppression and future prevention.*

Medical Officer recognised as Sanitary adviser.

59. On these accounts, recommendations having in view the conservation of the health of troops should receive every consideration; indeed it should be made known that the forwarding of such recommendations to an Officer commanding constitutes an important part of the duty of a Medical Officer; and that it is as incumbent on him to suggest the adoption of measures suited for the general sanitary good, as it is to treat disease when developed.

Situations in which Medical opinion should preponderate.

60. In fine, now that Military Hygiene or the conservation of human life ranks as an accepted science, its qualified representatives may surely be entrusted with authority, as well as burdened with responsi-

bility. There are situations and contingencies in which Medical opinion might well be left to preponderate,—where pure military necessities are seldom likely to overrule sanitary recommendations. Not the least important of these situations may be found on board a troop-ship, where, for the time being, military education is in abeyance. When large numbers of men, with their proportion of women and children are for a time, confined within a limited space, it is of paramount importance that the vigilance of the Hygienist should be exercised to the utmost, to detect any predisposing cause of disease—to check the slightest departure from strict sanitary law; and so to nip in the bud the elements of disease and general ill-health. No one, so well as he, knows that contagious or infectious disease, once having gained a footing in such a situation, cannot be isolated, and that they will pass like a destroying angel through every part of a ship.

General Order suggested.

61. Such considerations as these render it imperative that great regard should be paid to all recommendations and suggestions emanating from an Officer in Medical charge, on subjects which may either directly or indirectly have a tendency to affect the health of troops.

62. In order that this should be as far as possible ensured, the publication of a General Order, somewhat to the following effect, is strongly recommended.

63. "That every troop-ship shall "have a 'Sanitary Recommendation Book' in which an Officer "in Medical charge shall write his opinion on every thing "likely to act prejudicially on the health of the troops, to be "laid before the Commanding Officer, who will append his "approval and publish the recommendation, or note in the

"same book his objections thereto. If the recommendation "objected to, be of an important character, copies of "such memoranda may be forwarded to the Director Gene-"ral of the Army Medical Department, and to the Adju-"tant General."

64. A Medical Officer, more particularly if he be a junior, should, upon embarking, receive the fullest information regarding the nature and extent of his duties and responsibilities, and the description and amount of Medical and Surgical appliances at his disposal. It is also desirable that he should be furnished with a copy of the charter party, and the scale of rations, a list of the Medical comforts, the Hospital bedding and utensils; and indeed, generally, every information should be afforded to him which might in any way be turned to account in the successful prosecution of his special duties.

The publication of a few Sanitary rules advisable.

65. With reference to the position of the Medical Officer as a Sanitary Agent, some such regulations as the following might be advantageously promulgated:

a. Bedding to be aired as often, and in such manner as the Officer in Medical charge of the troops shall recommend.

b. Upper decks to be cleaned as often as he shall consider them dirty.

c. Articles considered likely to perniciously affect the atmosphere of the ship generally, to be removed or disposed of to his satisfaction.

d. Sleeping places to be cleared out, cleaned and fumigated, to his satisfaction.

e. Awnings to be spread at such times as he shall consider them necessary.

f. Parades, punishments, &c., to take place at such times as he shall consider advisable.

g. The issue of rations considered bad by him shall be prohibited until they shall have been surveyed by a Board of Senior Officers.

h. Ventilating apparatus to be worked at such times as he shall consider necessary for the purity of the air between decks.

i. Sanitary recommendations regarding cooking, cleanliness of the ship, persons and clothing to be attended to.

j. Recommendations having in view, the prevention of accidents to receive attention, and to be complied with as far as possible.

A matter of great importance to the State and the Soldier that Medical Officers be upheld in the conscientious discharge of responsible duties.

66. Experience as an Officer in charge of troop-ships has produced an earnest conviction that the publication of a memorandum, somewhat to the above effect would be productive of good results. There are many points which naturally escape the observation of Officers commanding, and unless they have Orderly Officers of some experience and zeal, they are not always apprised of every thing which it is necessary for them to know. An Orderly Officer coming on duty only at intervals of nine or ten days,

cannot be expected to manifest as much interest in the discharge of duties of such a temporary character, as if they were of a more permanent description, and implied more ulterior responsibility. Except during the twenty-four hours of his tour of duty, an Orderly Officer is not expected to manifest any great anxiety regarding the care of a detachment, and it not unfrequently happens that the Orderly Officer who gives least trouble considers himself the most efficient. Many energetic and zealous Officers will be found, in almost every troop-ship, but when accompanied by others of a less practical disposition, and the Commanding Officer happens to be indulgent, irregularities affecting the sanitary condition of the ship not unfrequently occur. The position, therefore, of an Officer, on permanent duty, and having continually in view the health of the troops, should be upheld as an incentive to the due performance of the responsible duties of an Orderly Officer as enumerated in the Queen's Regulations. If the utility of the above regulations be acknowledged, it is conceived that their publication would tend to harmony on board ship.

Night watches objectionable.

67. In concluding these remarks on troop-ship Hospitals, it may be desirable to draw attention to a fertile cause of sickness on board troop-ships, viz., night watches. However beneficial it may be that troops when on board ship should be as much on deck as possible, the propriety of four hours watches, night and day, is open to question. During the day there is nothing to be apprehended, but from eight in the evening until sunrise is a prejudicial time. Men sleeping in the sweltering 'tween decks are hurried up into the night air. If the night be fine, they lie down upon the decks which are always more or less damp, or if it be rainy, they crowd together under some imperfect shelter and get to some extent wet. Upon

Troop-ships should not be over-crowded.

going below, the chances are that they lie down in their wet clothing, and sickness ensues. Would it not be better to discontinue watches altogether from eight P. M. until sunrise? Troops are not of the slightest use on deck at night, and the benefit which is supposed to accrue from their absence from between decks, is more than counterbalanced by the sickness which that absence engenders. That turning a man out of his warm hammock at midnight to sleep (for sleep he will) on a cold damp deck is prejudicial to health there cannot be a doubt, and many a man invalided for rheumatism and chest affections has, in all probability, laid the foundation of his disabilities during night watches on board a troop-ship.

Guards should be under shelter.

68. A strong guard in a round house on deck should be sufficient for all purposes, and arrangements should be made to have as few sentries posted at night as possible. The cook-houses should be properly secured and therefore should not require one, and no sentry should be required over the meat tubs, which should be securely locked. The men being all asleep would require neither light nor sentries between decks, and the only lights necessary would be in the Hospital, and a safety lamp with the guard in the round house.

CHAPTER VI.

Victualling of Troop-ships—Queen's Regulation Scale—Indian Scale—Passenger Act Scale—Indian Scale full—Alterations—Biscuit—Tea and Sugar—Beef and Pork—Vegetables—Butter—Preserved meats—Suggestion regarding them—Medical Officer in charge should be qualified to give opinion on quality of provision.

Rations.

69. The scheme of victualling provided for troops proceeding to India, while it is on the whole well considered and liberal, may be made the subject of a few remarks with a view to its improvement. It may not be popular to audit the quantities which are so amply, and with something like an excess of generosity provided for the troops, but if the task should prove conducive to the improved health and efficiency of the men, and at the same time effect even a slight saving in the public expenditure, a good purpose will have been served.

Review of different victualling scales.

70. Upon comparing the scale of victualling provided for troops proceeding to India with that taken from the Queen's Regulations, or with the one required by the Passenger Act to be provided for persons proceeding to the Australian Colonies, the reader will be struck with the immense superiority of the Indian scale, especially in the article of animal food. But taking into consideration that Passengers proceeding to Australia, after a voyage of ninety days during which they subsist on the

somewhat meagre scale of the Passenger's Act, land in good, and even in improved condition, the idea must naturally occur, that the Indian scale is not only liberal, but somewhat extravagant.

71. A few instances may be noted in which it is conceived that alterations and deductions might be made with beneficial results.

Shameful waste of biscuits.

72. The biscuit ration appears to be excessive, and might safely be reduced from 30lbs. to 24lbs. per mess of six men weekly. Those who have seen the wanton waste of biscuit which take place under the 30lb. scale, cannot but approve of this recommendation. Not only large quantities of broken biscuit, but biscuit positively untouched, may be daily seen thrown over-board, or given as food to the pigs. This being an indisputable fact, no material objection can be offered to the proposed reduction.

Constitutions of recruits of the present day broken down by excessive smoking and drinking strong tea on board ship where grog is not procurable.

73. The rations of tea and sugar also appear to be somewhat too liberal. A pound of tea per week for each mess of six men is a much larger quantity than is generally used in a family of even greater numbers, and if other evidence were wanting, the colour and flavour of the infusion would settle the point. It is as black as ink, and, until the sugar is added, as bitter as wormwood. The sugar having been added it is much too sweet. For this reason it is recommended that the tea ration be reduced from one pound to $\frac{3}{4}$ of a pound per mess per week, and, it being preposterous to suppose that it is necessary for a soldier to require a quarter of a pound of sugar daily, (within $\frac{1}{7}$ of an ounce) exclusive of an ounce allowed for lime juice; the sugar ration might well be reduced from 9lbs. to 7½lbs. per mess of six men for seven days. Independently of the saving

which would be effected by the reduction, it recommends itself from the fact that the health of the men would be benefitted by the change, as it is well ascertained that strong tea when combined with the *quantity of strong Cavendish tobacco* served out to the men, exercises an injurious tendency on all constitutions. It appears also that an occasional, or an alternate ration of coffee would be both useful and agreeable.

Animal food excessive.

74. It appears somewhat anomalous that a ration of beef or pork consisting of 16 ozs. per diem should be issued to men at sea. The ration of fresh meat allowed on shore where men have regular exercise and drill is 12 ozs. and if men doing duty can be maintained in good condition on that quantity, it is difficult to conceive on what principle a ration of 16 ozs. can be necessary when leading a life almost totally inactive. Would it not be better to revise the regulation, and give an increased ration of meat when troops are actively engaged, and a less quantity during periods of inactivity? It is pretty well ascertained, that there is no tendency on the part of Europeans on their first arrival in India to debility, but rather a proneness to plethora, and its consequent diseases; it is more judicious therefore, to land men light, wiry, and active, than to have them moving masses of adipose and oleaginous matter, a condition *highly obnoxious to apoplexy and coup de soleil.*

A daily issue of preserved potatoes recommended.

75. The ration of compressed vegetables might be advantageously dispensed with, and preserved potatoes substituted. The vegetables are difficult to be kept sound, have little or no flavour, and do not appear to be relished by the majority of the men, while the preserved potatoes are generally liked, and possess greater anti-scorbutic qualities than the mixed vegetables.

Butter ration insufficient.

76. The allowance of butter might be judiciously altered. If the article is to be served out at all, it ought to be in such quantities that with economy it might last during the entire week. To effect this 8 ozs. per man per week might be substituted for the 4 ozs. at present allowed.

Preserved meat.

77. As it is next to impossible to procure fresh preserved meats without a proportion of spoiled tins, it would be advisable if a percentage were sent on board, over and above the specified quantity, for the purpose of meeting any deficiency which might occur, and as they are an article liable to much adulteration, or rather to the introduction of inferior, or even injurious matters, it might be well that they were *prepared under the supervision of Government.*

Medical officer should be a good analytical chemist.

78. Medical Officers being frequently called upon to decide on the quality of articles of food, it would be well if, in the lectures to be delivered on various subjects of Hygiene in the Victoria Hospital at Netley, some instructions were given on the means of judging of the quality of such articles as salt beef and pork, pickles, preserved meats, compressed vegetables, spirits, limejuice, and generally, such articles of food as may be presented for issue on board troop-ships. A Medical Officer, particularly if a junior, would thus be enabled to give his decisions with more confidence, and to support them by irrefragable testimony.

CHAPTER VII.

Management of articles put on board by Quarter Master General's Department or Council for India—Hammocks—Blankets—Sea-kits—Remarks on Trousers—Smocks—Flannel—Forage cap—Marine Soap—Shoes—Socks—Scissors—Tooth-brush—Articles supplied by owner—Remarks on.

Government stores should be indelibly marked.

79. ARTICLES put on board troop-ships by the Quarter Master General's department or by the India House, ought to have the greatest possible care taken of them, and be placed under the charge of a Military Officer to be appointed by the Officer commanding the troops and be again taken from his charge before disembarking. A list of such articles should be given to the Commanding Officer by the Official placing them on board. It would be well if they were branded with the Government mark, to prevent loss by stealth on board ship, and it should be distinctly made known at the commencement of the voyage, who is to be responsible for articles which cannot be satisfactorily accounted for at its termination. The hammocks should be indelibly marked with the broad arrow in several places, and have one or two particoloured threads interwoven in their texture. This remark applies equally to the blankets.

Multiplicity leads to confusion and loss.

80. The substitution of a single blanket of superior quality for the present blanket and counterpane is recommended, as tending to prevent loss from the multiplication of articles with the care of which the

soldier is charged. For the same reason the mattress and pillow should form one article.

Sea-kit revised.

81. The schedule of articles put on board at the expense of the soldier, and known as his sea-kit might bear revision. One canvas smock and two pairs of canvas trousers would be a better arrangement than the present one, which is *vice versâ*. A man *may* manage in his shirt sleeves while a smock is at the wash, but would both look and feel rather peculiar *sans culottes*, while the inexpressibles were being washed. Troops at sea generally go in their shirt sleeves in warm weather, and (the smock being of little use for warmth) wear their shell jackets or great coats in cold weather. Again some regiments are served with two flannel belts, and others with none. Would not these facts seem to suggest as an improvement, the dispensing with the smocks altogether, and furnishing all corps alike with two good red or blue flannel shirts. There is no part of a soldier's clothing in any climate more necessary than flannel, but it is more especially necessary at sea, where he is subjected to such sudden and frequent alternations of temperature. If this suggestion were adopted the neckerchief might also be dispensed with.

Light flannel shirts.

A fatigue cap, required.

82. The ordinary forage cap of the infantry soldier is an article of dress quite unsuitable at sea both from its form and weight. Its form renders it liable to be blown over board, and its weight in a hot climate is utterly intolerable, and when to its own weight is added that of the peak, furnished as part of the soldier's clothing for India, it becomes a matter of surprise how men can possibly wear it. A fatigue or forage cap of some light material might advantageously form part of the soldier's sea kit.

Marine soap.

83. The quantity of *marine soap* served out for a voyage of four months is insufficient. In order to preserve proper cleanliness of person and clothing, eight pounds would not be more than enough. No fresh water soap should be served out to the men, as it only serves as an inducement to purloin and use fresh water for washing purposes, which ought at all times to be carefully discountenanced.

Shoes.

84. The *shoes* furnished to some corps are not of the most suitable description. Instead of the regular ammunition boot or a substantial laced shoe reaching well over the instep, a light slipper shoe, leaving it totally uncovered, and the foot consequently exposed to wet is supplied. In addition to the insufficient protection which this renders to the foot, it is open to objection from the fact, that not embracing the foot properly it speedily gets out of shape and into a slip-shod condition.

Socks.

85. The *socks* issued to soldiers should be either all wool or a mixture of wool and cotton. Nothing tends to blister the feet so much as marching in cotton socks under a coarse shoe, in warm weather. No part of the perspiration is absorbed by them, but is kept clogging about the foot which becomes cold and clammy so soon as the exercise has ceased, while at the same time it has become abominably dirty.

Scissors and Tooth-brush.

86. A pair of *scissors and a tooth-brush* would be a judicious addition to the soldier's hold-all. The scissors would be useful for hair-cutting, clothes-mending, &c., and a necessary accompaniment to the house-wife supplied, while the tooth-brush must at once recommend itself as an indispensable adjunct to personal cleanliness. In a sanitary point of view, it is necessary as a fœtid state of

the teeth and gums tends not a little to render foul the sleeping apartment of a number of men. This suggestion was made in August 1857, in reply to a circular emanating from the Director General of the Medical Service. It was also in the same reply suggested that an examination of the teeth and gums might form a part of Medical inspections.

87. The results of the examination of the teeth and gums of troops for the detection of scurvy, has assured the usefulness of this recommendation.

Wash-tub substituted for water-keg.

88. With reference to the articles to be supplied by the *owners* of troop-ships, it is recommended that the "keg to hold three gallons slung, with nozzle and bung attached, and with 4 iron hoops," should be struck out, and a wash-tub substituted. If it is intended to hold water it seems to be a wasteful contrivance. The simplest and most economical method of issuing water is to give out a stated quantity to the cook-houses, and to have the remainder of the day's allowance placed in barrels lashed to the bulwarks, under charge of a sentry for drinking purposes only.

89. To the same list we would add a supply of *holy stones*, fine sand, peat charcoal, lime, grinding stones, old shot, the materials for fumigating purposes specified in the Queen's Regulations, and a signal gun to be used in cases of emergency; fine sand and holy stone to clean and partially dry the decks, peat charcoal as a disinfectant; lime to white-wash the latrines, the 'tween decks, and the sides of the ship in cases of an epidemic; grinding-stones to keep the deck-scrapers sharp without which they are useless, and old shot to be used in case of a funeral at sea. The want of proper materials for sinking the body has been the occasion of some distressing scenes at sea.

CHAPTER VIII.

Relations of Officer Commanding and Shipmaster—Commandants at intermediate Ports.

The relation of Master Mariner and officer Commanding considered.

90. THE relations which the Ship-master and the Officer commanding the troops on board hold with respect to each other demand some consideration. This is a case in which the inharmonious working of two distinct governing powers, neither of whom have the limits of their authority closely defined, may lead to serious difficulties, and be attended with even danger to the lives of all on board.

91. Cases in point happily may not be easily quoted, but still there is a possibility, from the nature of the thing, that they may arise, and therefore some provision should be made to meet them.

Troops should not be treated as chartered freight.

92. It sometimes occurs that there is a disposition on the part of Masters of troop-ships to treat the Officers and men on board as if they were so much living freight, and unless there be some provision in the charter party or otherwise, to counteract this disposition, they can ignore the requests of the Commanding Officer and all on board; while it is only proper that the Master Mariner should under ordinary circumstances have the uncontrolled management of the working of the ship, and the discipline

of his seamen; still it might be well if there were a power reserved for the Military Officer in command with the consent of the Officers on board to regulate such matters as might seem imperatively to call for his interference.

Special powers to be notified to Officer commanding.

93. In case of mutiny among the crew, of habitual drunkenness or evident inefficiency on the part of the Master or any of his subordinate Officers, in case of danger from shortness of provisions or water; in case of extreme loss of sails or spars, or other damage to the ship; in spite of which it is notorious that many Master Mariners persist on continuing their voyage to the great peril of human life, for the purpose of saving expense and so standing well with their owners; in such, and many other cases which might be noted, it is conceived that it ought to be within the power of the Commanding Officer, with the concurrence above mentioned to issue an order to meet the emergency, which order it should be incumbent on the Master Mariner to obey, under protest, if he liked, but still, to obey.

Troop-ship crews amenable to Articles of War.

94. Indeed it might not be going too far, if the Officers and crews of troop-ships sailed under the Articles of War, and were for the time subject to such regulations and punishment as the Commanding Officer might issue and award. By this arrangement the Captain would assume the position of Master as in a War ship, and he might at the same time note any order which he might conceive unnecessary or prejudicial to the interests of his owners; who might if they chose institute proceedings for the recovery of any damages they considered they had unlawfully sustained.

Articles of agreement

95. Much good might result if the Commandant at any port at which troop-ships are likely

to touch were furnished with some well defined powers, enabling him to assist by his authority the Officer commanding a troop-ship, in case of any disagreement between him and the Master of the ship. There should also be at every such port a Naval Agent, and an Officer from the Quarter Master General's Department who would be authorised to settle all questions regarding the sea-worthiness of the ship, her efficiency as regards sea-stores, and the quality and amount of provisions on board.

should guarantee special powers to Commandants over troop-ships touching at intermediate ports.

CHAPTER IX.

Miscellaneous—Ventilators—Washing days—Suggestion on stowing Soldiers necessaries—Covering for bedding when on deck—Latrine—Place for Guard—Charter-Parties—Showing of arms—Ship's pumps—Senior Officers—Com' plement and rating of seamen—" Orders."

96. A FEW miscellaneous matters still remain, which might perhaps have been better introduced under the head to which they seem naturally to belong, but which it is considered better to mention out of place than to leave unnoticed.

Dank's Ventilators under charge of Military Surgeon.

97. Dank's patent ventilators, machines of the first importance on board ship, should be fixtures between decks and worked there. The state of the weather would not then interfere in any way with the comfort of the men working them.

Plenty of regular time for clothes washing.

98. Not less than *four mornings per week* should be allowed for washing clothing. When a large number of men are on board, and the hours allowed for washing limited, an accumulation of *damp* and *foul clothing* is apt to take place between decks, which is *extremely detrimental to the purity of the atmosphere there.* In drying clothes, or in towing them over board, the troops should be warned not to make use of any ropes but those

appointed for that purpose, and on no account to make use of any of the running gear.

Superfluous articles in sleeping quarters of troops injurious.

99. To prevent the *loss of articles of kit* by stealth, or by the carelessness of their owners, and also to leave as much clear space as possible between decks, all articles of clothing and accoutrements not indispensably necessary should be packed up and stowed away in the hold, in such a position however as to be immediately available if requisite. Nothing can have a much worse effect in a sanitary point of view than an accumulation of damp clothing and boots, which in spite of all orders to the contrary, will be allowed to grow mouldy.

Tarpaulin should be of ample size and under charge of a sentry to watch the approach of rain.

100. Especial care should be taken that the *tarpaulin used* for covering the hammocks in case of wet weather is sufficiently large, and properly adapted for the purpose. Otherwise the result of sleeping in wet bedding will speedily become evident in the increased number of chest and rheumatic affections.

Latrines should discharge near water line.

101. The *men's latrines* should be made to discharge themselves as near the water line as possible, and particular care should be exercised in their construction, so that under no circumstances offensive matter from them can be driven back by the wind upon the port-holes. Indeed it is worthy consideration, whether it would not be advisable to prevent altogether the use of the latrines on the weather side. To prevent as much as possible a foul smell in any part of the ship the Hospital should have a water-closet communicating with the sea, upon the same principle as those provided for Officers.

A Guard-room necessary at sea.

102. At sea the *Guard* should not be placed in any exposed situation, but rather, carefully

sheltered from sun, cold and rain. On land a comfortable Guard Room is provided with (in the winter season) abundance of fuel and light. If such are necessary on shore, surely at sea, where men are exposed at such short intervals to great alternations of temperature, a round-house on deck, or some other sufficient shelter should be provided.

Charter-parties should be equally binding.

103. Particular care should be taken that the authorities commit no act, which might by possibility render a *charter party invalid* before a court of law. No greater number of men especially, should be put on board than there are provisions stipulated for.

Attention to Rifles at sea of vital importance.

104. *The greatest care should be taken of all arms, but particularly rifles at sea.* It is questionable whether it is, under any circumstances, proper to leave these delicate weapons *exposed in open racks*; but should it be considered necessary that a portion of them should be so placed for the purpose of being ready for use upon emergency, such racks should be placed in such a position as to be perfectly secure from the slightest chance of the arms being damaged by sea-water or damp of any description. A water-proof covering should be made so as to cover and surround the whole rack, and (in proportion to the number of arms so disposed) one or two men should be told off, whose sole duty would be to take the oversight of the arms in rack, and keep them free from the first appearances of rust.

Exposure to sea-air and damp certain causes of *fouling*.

105. *Such a precaution will not appear unnecessary when the delicacy of these weapons is taken into consideration.* The very smallest particle of rust in the bore causing the bullet to strip and so render useless the skill of the best marksman. The motion of the bullet round its own axis is destroyed, and the atmosphere acting upon

the inequalities upon its surface caused by its stripping, renders its flight short in distance, and uncertain in direction. Indeed if a proportion of arms are to be kept in readiness for emergencies, it is conceived that it would be better to have that proportion properly packed in cases, and instead of being placed in racks, put away either in the Quarter Master's stores, or in the cuddy under the charge of some of the Officers. Should this recommendation be adopted, the amount of clear cubic space in the 'tween decks would be considerably augmented and an *impediment to the free circulation of the air removed.*

Unpacking of arms at sea unadvisable.

106. While upon this subject it may be remarked that experience teaches that arms having once been properly packed and stowed away should not, under ordinary circumstances, be opened from any motive of curiosity to ascertain their condition. However carefully the re-packing may be performed, some of the weapons will inevitably contract rust, and on next opening them a woeful exhibition will be presented to view.

Pump-shoots necessary.

107. The ship's pumps ought to be furnished with a *shoot* of some description to convey the bilge-water into the sea. Deluging a ship's decks every evening with bilge-water tends greatly to the production of ill health among the men, both from the fact that it keeps the decks damp, which should instead be kept carefully dried, and the pestilential smell which the fluid itself disseminates.

The presence of Senior Officers among detachments *desirable.*

108. It is a matter much to be desired for the preservation of harmony, and the prevention of irregularities that as many *senior officers* as possible should embark with detachments of Troops.

The ability as well as number of troop-ship's crew should be stipulated for.

109. In manning a troop-ship it should be seen that the *crew* comprises a fair proportion of able seamen. The Mercantile Marine merely provides *men* (not necessarily rating A. B.) according to tonnage; but an additional guarantee of the capabilities of the crew of a troop-ship would be had if the Charter party provided that a percentage of men rating as able seamen should be shipped, as well as a regular staff of quarter-masters or steersmen. A voyage may not only be lengthened, but *life may be endangered by inexpert steering.*

"Orders" should be openly promulgated.

110. In carrying on the discipline of a troop-ship it should be imperative that all "Orders" of a general nature be transcribed into an Order book and published for general information, instead of being given verbally, perhaps privately, or at best handed about on slips of paper, as is sometimes the case. A zealous Medical Officer should carefully observe and note all orders as they are promulgated, for the purpose of detecting anything which might act prejudicially on the lives entrusted to his care. It would be for the good of the service and the State, that an Officer having the Medical charge of Troops should be upheld and supported in his endeavours to keep his hospital as empty as possible, and this cannot be properly done unless he be consulted as to his opinion on a matter, previous to the issue of any orders affecting the economy of the soldier's daily life. *Many fertile causes of disease have often been recognised as such only when their effects have become fatally apparent,* and it is submitted that in many instances such catastrophies might have been prevented if the advice of the Medical Officer had been asked, *previous* to setting the cause in operation.

CHAPTER X.

Administration of Transport Service—Different departments engaged in—Objection to this—Remarks—Propriety of reducing whole matter to one responsible head—Arguments in favor of—Celerity—Simplicity— Efficiency —Suggestions as to details—Director General—Transport Service Board—How composed. Naval Surveyor—Officer from Quarter Master General's Department—Medical Officer.—Their qualifications and duties,—Subordinate Officers —Their qualifications and duties—Remarks.

Transport service administration submitted to revision.

111. The subject of the Sea Transport of troops is gaining such daily increased importance, that it demands that the greatest consideration should be bestowed on every point connected with it. The remarks contained in the preceding pages have been principally concerned with throwing out a few somewhat disconnected hints calculated for the improvement of details. In what follows, it is proposed to glance at the present system of the administration of the Transport "Service," with a view to the suggestion of some method for its improvement.

Different departments engaged in transport service.

112. As well as the subject is understood, it appears that there are at present no less than three Departments directly connected with the despatch of troops by sea, the Admiralty, the Quarter Master General with the Commandant at the port of embarkation, and the Council for India. There are also different schemes of victualling provided for the troops according as their destination may be India, or any of the other possessions abroad.

Different scales of rations for Her Majesty's Troops.

113. Leaving out of sight the apparent anomaly of having *different scales of rations*, it may be worth while enquiring whether any good purpose is served by having the despatch of troops scattered over so many Departments, and whether it might not be conducted more *simply, economically* and *efficiently* by having the whole business entrusted to *one* Department especially appointed and educated for that purpose.

A better system required.

114. Under the present arrangement it will scarcely be denied that *many ships of an inferior class are sent to sea with troops.* The frequency with which accounts appear in the public prints, of troop-ships putting back owing to stress of weather, and the equal or even greater frequency with which they are under the necessity of calling at intermediate ports during their voyage, for the purpose of taking in supplies, seem to indicate that they must have been ill found in the matter of spar and cordage, and that by some means or other they have managed to leave port without a sufficient quantity of provisions

A responsible head necessary for despatch.

115. Without for a single moment thinking to impute the slightest approach to dilatoriness in the discharge of the public business to any one of the Departments concerned, *it cannot cease to be a matter of regret that such things should occur.* Indeed, considering the circumstances under which they must undertake the duty, rather as a matter extraneous to their usual course of business, than as a part of regular duty, it is a matter of surprise that the transport service has not been even more unfortunate.

An Officer with whom to correspond.

116. Under the present somewhat complicated system, there is *some difficulty in fixing the Department to which to address any communications on subjects connected with the transport service*, a state of matters which might occasion delays highly prejudicial to the public interests.

Making the Transport service a special study causes an immense saving of public money—especially in war-time.

117. The duties required in the chartering and superintending the fitting up of troop-ships are such as to require a *special* education added to a knowledge of the requirements of troops. It cannot be fairly supposed that the Admiralty can have a very correct knowledge of, or take a very lively interest in all the requirements of the soldier, and so cannot be expected to make all the necessary arrangements for his accommodation at sea. The East India House, however able they may formerly have been to superintend the despatch of troops when only a limited number were required, and when all the transport in that direction was seldom more than the quiet relief of a regiment which had completed its period of Indian service: now, when the greater part of the available forces of the British Army is being poured into its late Dominions, can scarcely be expected with the limited staff at its disposal to be equal to the emergency. The Department of the Quarter Master General again while it may be able to decide most judiciously on every thing connected with its more especial duties, must feel that it forms a drag of no inconsiderable magnitude upon their efficient performance, to be called on to provide for and superintend all the details of the embarking and disembarking of such a large number of troops, as annually leave and return to the British shores.

The safe and expeditious despatch of Troops by sea is now so important that its close study

118. Independently of the vast amount of almost extraneous labour which the transport service entails upon the Department, it cannot be expected, that, composed as it is of Military men, the qualifications to be found in it are of such a description as to give a sufficient guarantee in every case for

should be encouraged.

the discharge of duties which imply some amount of *special education.*

119. While it is only proper that all matters affecting the comfort or efficiency of the soldier should be under Military surveillance, still it is proper that the management of details should be left to a class of Officers *thoroughly acquainted with their nature.*

120. It seems also to be a matter urgently demanding consideration that these Officers should be so placed in relation to each other, and to the Officer charged with the superintendence of the whole matter that there shall be no risk of inharmonious working, and *no delays originating from one Department requiring to wait for another.*

A new branch of the public service proposed.

121. Some such considerations as these seem to suggest the necessity of establishing a *new branch of the public service having for its duties the superintending of all details connected with the embarking and disembarking troops,* to whatever part of the Globe they may be about to proceed.

Simplicity.

122. The arguments in favour of the establishment of such a department distinct from any of the other public offices of the country, are various and weighty. The whole working of the transport service would be simplified. All the business connected with it would be performed in one office, and under one management, so that errors and abuses would be less likely to creep in than when several departments did an independent share of the duty.

Celerity.

123. The celerity with which the business of the department would be conducted forms a powerful argument in favour of its establishment. It is unreasonable to suppose that any matter can be conducted to a successful issue, or without frequent and annoying delays when there are two independent parties engaged in its performance. Neither of them are willing to consider that the onus of the matter rests with it, and so frequent delays occur from one department requiring to wait for another.

Better security.

124. But the principal argument in favour of such a department, rests in the additional security which the Government would have that ships of a proper class were taken up, that they put out to sea in good condition and well found in sea stores and provisions, and generally that all the conditions of a well conducted charter party had been fully carried out.

125. The general detail of the manner in which these desirable ends are to be effected may now be briefly sketched, more indeed with the hope that such sketch may prove suggestive, than with the idea that it at all approaches perfection.

Director General.

126. First and as the head of the administration of such a department comes the Director General, whose duties would consist in conducting all correspondence, and superintending all legal business connected with the drawing up of agreements, charter parties &c., and in receiving and deciding upon the reports of the Transport Service Board, which might be constituted somewhat in the manner indicated below.

Form of Transport Board.

127. The Board should consist of Naval Surveyor of high professional standing, an Officer from

the department of the Quarter Master General, *specially educated* for the duties which he would require in his new capacity to perform, and a Medical Officer who had devoted his attention more particularly to the subject of transport ships and analytical chemistry. Under the instructions of the Director General, these Officers would inspect and report upon all ships offered for the transport service, with reference to their sea-worthiness, general fitting up, rate of sailing, the number of troops which they could conveniently accommodate, and their general fitness in a sanitary point of view. Upon the favorable report of this Board, the Director General would take up the ship, which, when reported ready for sea, would be again inspected by the Board, and upon its favorable report, the Director General would give his certificate for its clearance. The Board of course would be present in every ship upon the point of sailing to witness the embarkation of the troops. The special duties which upon such an occasion each Member would require individually to perform, are too evident to need pointing out.

128. In case of repairs and alterations being required, they should be executed under the constant supervision of a class of Officers, whose duties have been indicated in a previous note, *viz.:*

Subordinate Officers.

a. Men practically acquainted with every thing connected with the building, fitting and rigging of wooden and iron ships, and capable of superintending any repairs required by engines or machinery.

Ship-wright.

b. Men practically acquainted with the stowing of cargo, to check stores as they come on board, and to see that they are properly placed in the hold, both as regards security from shifting and ease of access.

Stevedore.

129. Under such a department there would exist a uniformity in the relations of all troop-ships; one scale of rations,—one code of regulations, relating to duties on board ship, thus simplifying the instructions of the Officer on that point,—one head of the department, and one well drawn up charter party in entire conformity with the Queen's Regulations.

130. These suggestions, somewhat crude it is confessed, but still conceived to contain the germ of vast improvements, are thrown out in all humility as being likely to lead to the simplification of a branch of the public service which seems at present to be but obscurely understood by Military men, with whom it has principally to do, and at the same time to place it upon a tangible and recognised basis.

131. Such a department joined to the possession of a moderate fleet of transport ships or Sea-Barracks, would, it is presumed, assist materially in maintaining for Great Britain the pre-eminence which she has hitherto maintained among the Great Powers.

APPENDIX A.

A Code of specified and detailed instructions for the maintenance of discipline amongst Recruits in troop-ships, from their embarkation to disembarkation, considered a *desideratum* for junior Officers, or those who command troop-ships for the first time, as well as for obviating the necessity of a senior Officer writing, amidst a scene of hurry and confusion, a detail of duties of Officers, Non-Commissioned Officers, and Men.

The following Standing Orders of H. M. 13th (Prince Albert's) Light Infantry have been kindly furnished by Colonel, the Lord Mark Kerr, C. B., a distinguished Officer who has devoted much study to the management of Troops at sea.

Embarkation and duties on Board Ship, for Standing Orders, H. M. 13th Light Infantry.

Companies to march on Board in Single or Double Ranks, arms advanced.

Pay Sergeants to show where the Companies are to be located.

The Side Belts to be placed in the Knapsacks, Pouch Belt and Sling rolled up and placed in the Pouch,—the same to be kept in possession of the Soldier.

Rifles to be placed in Arm-racks told off to Companies,—look constantly to Locks and Barrels, which must be plugged.

Tunics to be put in packs and smocks put on.

Companies to be shown where they are to parade, or assemble in case of any sudden call, and where to put their Hammocks.

Pay Sergeants to tell off into Messes alphabetically — men in a Mess,—Corporals and Buglers included.

Hammocks for five to be slung over each table. Each man to be provided with a piece of linen or something of the kind, with his name written on it, to be sewn on his Hammock.

Hammocks to be in their places each morning by bugle sound at — o'clock, and taken down at 4½ P. M., (during Officers' breakfast and dinner hours.)

Bathing to be carefully attended to, and Soldiers constantly to be hosed.

A sail or screen to be put up in waist, for the women and children to bathe each week.

The children's hair to be kept short equally with the Soldiers.

Permanent Swab told off to each Mess, he is answerable for messing and swabbing.

Sergeants told off into Messes by the Sergeant Major. Permanent Bugler to be told off at 5½ A. M. Men to turn out at 6, breakfast at 7, parade at 10, dinner at 12, beer at 12½, supper at 4, grog after Hammocks taken down. Evening parade and orders issued at 6. Turn in at 9. Clean Shirts and Socks to be shown in hands at evening parade on Wednesdays and Saturdays, and worn at parade next morning.

No smoking between decks on any pretence whatever.

Daily watch to consist of one-third of each Mess (Non-Commissioned Officers and Men warned on evening parade by Orderly Sergeant) remains on for 24 hours, mounts at 10 A. M., told off in three reliefs, each relief remains on deck two hours at a time, other two reliefs below, if not required, will assist to pull ropes and to clean decks (about 4 A. M.)

Sentries to be taken from the watch (senior Sergeant of the watch to warn them) and to be on two hours as follows:

Officers' cabin, water tank and tubs, cooking place and meat, and women's privy.

Officers on watch 24 hours, commencing at 10 A. M. One to be always on deck, and one below to inspect decks and messes, and to be present at grog issuing, and to visit hospital and prisoners, go round decks at 9½ P. M., (with the Adjutant) to see lights out and all in order, and to visit Sentries frequently during the night, report next morning to Commanding Officer,—to see that Non-Commissioned Officers and men assist in working ropes, and to prevent irregularities and noise.

The Regimental Orderly Sergeant will tell the officer on watch when the messes are ready. The senior Sergeant on watch will tell off 2 Corporals,—one for windsails, and one to be over the Sentries on water tank or pump and tubs, he (the Watch Sergeant) will also inspect Sentries.

The Sentry over the tank to allow no water to be taken except by those authorized, neither is any water to be carried away from the tubs, but to be drunk on the spot.

Prisoners Guard to consist of 1 Sergeant, 1 Corporal, and 6 men, to mount at 10 A. M. Increased at 6 P. M. by 1 Sergeant, 1 Corporal, and 24 men.

Sentries furnished by this Guard over the lights between decks, relieved every hour, and to call "All's well" every quarter of an hour, from Tattoo to Reveille.

Sentries to be placed on hatchways, to report to Sergeant of watch that the Sentries between decks call "All's well" correctly.

Sentries are not to lounge or sit down on their posts on Board Ship, any more than in the field. Any man doing so will be tried by Court Martial. This is to be part of their orders whenever posted.

Any man drunk for embarkation has his grog stopped for the voyage.

The Band will practise by day, and take watch in their turn by night.

The Bugles and Field Bugler will also practise daily. For slight irregularities, Officers commanding Companies have power to stop grog for three days. All punishments are to be reported to the Commanding Officer on the morning parade.

One parade each day without smocks, shoes or stockings.

An Officer per Company will see that the men are clean, and a Medical Officer inspect.

APPENDIX B.

In the following Scales of rations, marked B and C respectively, the first for troops sailing to any part of the world except India; the second for troops on passage to that country only, the marked superiority of the Indian Scale will be seen.

Published in the Queen's Regulations July 1857.

"*Rules to be observed by the masters of hired freight ships in the victualling of troops and other public passengers.*

"There shall be allowed to every soldier, male passenger, woman or child, to whom passage and victualling shall have been ordered to be provided, the daily quantities of provisions shown in the following scales of allowance:—

"SCALE OF VICTUALLING.

	When to be issued.	Articles.	Troops.	Women.	Children under ten years of age.
1	Daily, ...	Biscuit or, ...	1 lb.	¾ lb.	½ lb.
2		Soft bread, ...	1¼ lb.	⅝ lb.	1/12 lb.
3		Spirits, ...	½ pint.	—	—
4		Sugar, ...	1½ oz.	1½ oz.	½ oz.
5		Chocolate, ...	⅔ oz.	1 oz.	½ oz.
6		Tea, ...	½ oz.	½ oz.	½ oz.
7	Weekly, ...	Oatmeal, ...	½ pint.	½ pint.	1/12 pint.
8		Mustard, ...	½ oz.	½ oz.	½ oz.
9		Pepper, ...	½ oz.	½ oz.	1/12 oz.
10		Vinegar, ...	½ pint.	½ pint.	1/12 pint
11	Daily, when procurable.	Fresh meat, ...	½ lb.	½ lb.	½ lb.
12		Vegetables, ...	½ lb.	½ lb.	½ lb.
13	On alternate days when fresh provisions cannot be procured, ...	Salt pork, ...	½ lb.	½ lb.	½ lb.
14		Peas, ...	½ pint.	½ pint.	½ pint.
15		Salt beef, ...	½ lb.	½ lb.	½ lb.
16		Flour, ...	6 oz.	4½ oz.	2½ oz.
17		Suet, ...	½ oz.	⅝ oz.	1/12 oz.
		Currants or raisins	1 oz.	½ oz.	½ oz.

"If it should be found necessary to issue substitutes for any of the above species of provisions:—

"1 lb. of biscuit, 1¼ lb. of soft bread, 1 lb. of flour, 1 lb. of rice, 1 lb. of sago, 1 lb. of Scotch, pot, or pearl barley are to be considered equal to each other.

"½ pint of wine, ½ gill of spirits, are to be considered equal to each other.

"1 lb. of rice, 1 pint of peas, 1 pint of dholl, 1 pint of calavances, 1 quart of oatmeal, ½ pint of split peas, are to be considered equal to each other.

"1 oz. of chocolate, 1 oz. of cocoa, 1 oz. of coffee, ½ oz. of tea, are to be considered equal to each other.

"1 lb. of butter, 1 lb. of sugar, are to be considered equal to each other.

"When the issue of salt meat shall be renewed after fresh meat shall have been served, the salt meat on the first day of issue is not to be the same species as that which may have been issued on the last day of salt meat serving.

"The before mentioned provisions are to be served out by full imperial weights and measures, which are to be provided by the Government and paid for by the owners.

"All children above ten years of age are to be considered as adults and victualled accordingly; the boys according to the scale for men the girls according to the scale for women.

"Water casks and water are to be provided by the owners in sufficient quantities to ensure that there shall be issued to each individual embarked, six pints of water per day when out of the tropics, and one gallon per day to each individual when within the tropics; and which quantities are to suffice for all purposes.

"*Admiralty, January* 1853."

"NOTE.—*A copy of this scale is required to be hung up in a conspicuous situation, in the between decks (and contiguous to where the provisions may be served out), in every ship or vessel, while troops or other public passengers may be on board her; in order that all such persons may be made aware of the particulars of the rations to which they will all become entitled while embarked.*"

l gallons, slung, with nozzle
lth 4 iron hoops.

Standard and stamped.

and 2 spare feet.
With locks and keys.

lete.

Pewter.

en they go betwixt decks;

's Troop-ships. The possession

C. J. K.

APPENDIX C.

SCALE OF VICTUALLING FOR TROOPS FROM ENGLAND TO INDIA.

FOR A MESS OF SIX MEN PER WEEK, TO BE SERVED OUT DAILY.

For Two Days,	Beef,*	12 lb.	For Seven Days,	Ground Pepper, 1½ oz.
	Flour,	5 lb.		Mustard, ½ lb.
	Suet,	1 lb.		Biscuit, 30 lb.
For One Day,	Preserved Meat,†	4½ lb.		Salt Butter, 1½ lb.
	Mixed Vegetables,	1 oz.		Tea, 1 lb.
	Rice,	3 lb.		Sugar (crushed), 9 lb.
For Three Days,	Pork,* 3 Pieces, or,	18 lb.		Vinegar, 3 Pints.
	Pease,	6 Pints.		Best London Porter, 42 Pints.
	Patent Preserved Potato,	2 lb. 4 oz.		Pickled Cabbage, or Mixed Pickles, 2½ Pints.
For One Day,	Flour,	5 lb.		Lime Juice, 21 oz.
	Suet,	⅔ lb.		
	Plums,	1 lb. 11 oz.		

Water at the rate of Seven Pints per Man per Day, for Twenty Weeks. To cover Wastage, Five per Cent. on the total quantity of water is to be shipped.

Lime Juice in Stone Jugs at the rate of Four and a half Pints per Man for the Voyage out.

Pickles to be shipped in Five-Gallon Jars for every 100 Men, and in Two-Gallon Jars if a Lesser Number than 100.

Pepper to be packed in 1 lb. Bottles.

Fresh Beef or Mutton to be issued to the Troops when procurable; 1½ lb. per Man per Day, with Vegetables and Oatmeal for the Soup. The Troops are to be Victualled for the Day of Embarkation, and the Ship is to have on board at least Two Days' allowance of Fresh Provisions and Vegetables for the Troops on leaving and every other Port.

Patent Preserved Potato, equivalent to ½ lb. to each Man of the cooked Vegetable, to be served out on Three Days in each Week when Salted Pork is issued.

Compressed Mixed Vegetables, equal to 1 oz. per Man, to be issued on the Day that the Preserved Meat is served out.

Butter to be best Second Pickled Cork Butter, each Firkin to be calculated at 65 lb. net weight of Butter.

Biscuit to be of the quality of Navy Biscuit, the net weight of Biscuit to be marked on each package, either Barrels or Cases.

* *Prime New India Beef of the cure of any country, and Prime New India Pork of the cure of any country except America. The Beef and Pork must be Fresh-cured.*

† The Preserved Meat being of two kinds,—Beef and Mutton in tins of 4½ lb. each, separately cured and packed in flat wooden Cases, to be issued alternately.

QUANTITIES FOR EACH MAN PER DAY.

	Beef.	Flour.	Suet.	Plums.	Pork.	Pease.	Preserved Meat.	Rice.	Compressed mixed Vegetables.	Biscuit.	Salt Butter.	London Porter.	Water.	Preserved Potato moulded.	Sugar.	Tea.	Vinegar.	Mustard.	Potatoes.	Pickles.	Pepper, Ground.	Salt.	Lime Juice
	oz.	oz.	oz.	oz.	oz.	pint.	lb.	lb.	oz.	lb.	oz.	pint.	pints.	oz.	lb.	lb.	Pints	lb.					
Sunday ...	16	6⅔	1⅓	—	—		—	—	—			1	7	—									
Monday ...	—	—	—	—	16		—	—	—			1	7	2									
Tuesday ...	—	13⅓	2	4½	—	A pint per Man per Week.	—	—	—	3 lb. per Man per Week.	4 oz. per Man per Week.	1	7	—	1½ lb. per Man per Week.	1 lb. for a Mess of six Men per Week	3 Pints for a Mess of Six Men per Week.	¼ lb. for a Mess of Six Men per Week.	2 lb. for each Man per Day, whenever procurable, in lieu of Flour and Suet, Pease, or Rice.	2½ Pints of Pickled Cabbage or Mixed Pickles for a Mess of Six Men per Week.	1½ oz. for a Mess of Six Men per Week.	2 oz. per day when preserved or fresh meat is issued.	½ oz. Lime Juice, mixed with 1 oz. of Sugar and 4 oz. of water.
Wednesday.	—	—	—	—	16		—	—	—			1	7	2									
Thursday...	16	6⅔	1⅓	—	—		—	—	—			1	7	—									
Friday ...	—	—	—	—	—		4	4	1			1	7	—									
Saturday ...	—	—	—	—	16		—	—	—			1	7	2									

N. B. Women receive the same rations as Men, with the exception of Porter, half that ration only being allowed to Women. Children receive half-rations.

The Porter to be in **Barrels** when the number of Persons is 60 or under, and in **Hogsheads** when the number is above 60 or under 160.

Five per cent. on the total quantity of Porter to be added for wastage.

DAILY MEALS.

Breakfast ... Biscuits, Tea, and Sugar. Dinner .. According to the above Scale. Supper ... Biscuits, Tea, and Sugar.

List of other Articles to be provided by the Owners for the Troops, viz.:

For each Mess of Six Persons, to be numbered from 1 upwards to the extent of the Messes:

- 6 Strong Iron Spoons.
- 1 Ditto Wooden Mess Kid, to hold 1½ gallon, with 2 iron hoops and iron bale.
- 1 ditto Tin Dish, 14 in. by 11, and 3 in. deep, with Wire handle.
- 1 Ditto Bread Basket to hold 5 lb.
- 1 Ditto Tin Quart Pot.
- 1 Ditto Half-pint Mustard Pot.
- 2 oz. of Salt per day, when preserved or Fresh Meat is issued.
- 1 Strong Net to hold 12 lb. Potatoes.
- 1 Ditto Bag to hold 30 lb. Biscuits.
- 1 Ditto Pudding Bag, 16 inches by 10 inches, with string no. 8 Canvas.
- 1 Ditto Keg, to hold 3 imperial gallons, slung, with nozzle and bung attached, and with 4 iron hoops.
- 1 Tin Pepper-box.
- 1 Tin Pickle Dish.

The boilers for the Troops to hold at the rate of half a gallon imperial per Man.

For every 100 Persons or under, and a proportionate quantity of each article when above 100 Persons:

- 9 Scrapers,
- 9 Swabs (of good size), 12 lb. each.
- 36 Birch Brooms.
- 3 Long-handled Scrubbers.
- 4 Horse Buckets to hold 5 gallons each.
- 1 Steep Tub, 60 gallons.
- 1 Scuttle Butt, 120 gallons.
- 2 Shovels.
- 9 Wash-deck Buckets, stropped.
- 2 Tin Quart Funnels.
- 1 Hanging Stove for drying decks.
- 1 Canvas Screen, for use of women when washing themselves, 8 yards long by 5 breadths wide, and to be No. 6 Canvas.
- 1 Set Pewter Measures, 1 Ditto Wood, 2 Ditto Tin — Imperial and stamped, and with letter M on.

What may be required for the use of the sick bay to be drawn from these articles:

- 2 Sets Iron Weights, 7 lb. to 1 oz. — Standard and stamped.
- 2 pair Tin Flour Scales.
- 2 Copper Pumps, with Screws and 2 spare feet.
- 1 Ribbon Bolt, 8 feet long, 1 Ditto 6 feet, — With locks and keys.
- 3 Pair Shackles.
- 3 Pair Handcuffs.
- 1 Tin Oil-Filler.
- 1 Pewter Bed-Pan.
- 2 Wooden Close-stools, complete.
- 5 Chamber-Pots.
- 1 Urinal, 3 Spitting Cups. — Of Pewter.

6 Large or Bull's Eye Lanterns, with Lamps, and secured with Lock and key, when Troops go on Orlop Deck; and 4 when they go betwixt decks; with 4 gallons of Oil for each lamp in tins, and cotton for wicks.

1 Rice Sieve, brass wire. 1 Bread Sieve.

Water Butts to contain 150 imperial gallons each, (as certified by an experienced Gauger.)

One-third of the number to be of	1 inch	Stave and Heading, and	1½	inch Hoop.
Two-thirds ditto	¾ inch	ditto	1½	ditto.
Porter Butts and Hogsheads	ditto	ditto	1½	ditto.

Note. The above scale of victualling for Troops, with the alterations previously noted, is recommended for adoption in all of Her Majesty's Troop-ships. The possession of one liberal uniform ration scale would be thereby ordained.

C. J. K.

APPENDIX D.

I AM indebted to the eminent physician, Dr. Martin, "for the ollowing directions for the guidance of Medical Officers, and such as may be in command of troops about to embark on board of ship, and who should attend to the following circumstances:—

1st. The condition of the transport vessel, and state of health, of the crew. When ships of war are used, a frigate to be preferred to a ship of the line.

2nd. That all old and foul ballasting be changed, and no fresh or green wood be allowed in the ship's hold, or any matter capable of ready decomposition.

3rd. State of health of the troops to be carefully examined, and cases of contagious disease, old or extensive ulcers, to be left behind.

4th. On no account to permit crowding of the men, and to see that berths are secured for the sick and married. On no account should the aggregate number of men exceed the proportion of one man to two tons of measurement.

5th. That the men are not allowed to quit the ship, or to be on deck after sunset, if navigating rivers, or along level or marshy sea-coasts.

6th. Particular examination of the provisions should be made, and that the salted meat is not old: the same in regard to the water, which should, when possible, be from springs, and be kept in iron tanks: there should be quick-lime for the purpose of purifying it.

7th. For distant expeditions, there should be hospital ships, well provided, in order to the separation of sick from the healthy.

8th. Cold and moisture in the ship's hold are to be guarded against, and the pumps to be frequently worked, so as to leave but a few inches in the well.

9th. Ventilation and cleanliness to be promoted by every means, and in bad weather, when wind-sails cannot be used, fire-pots, or portable stoves, should be carried between decks.

10th. During fair weather, the men should be made to bathe daily.

11th. Moderate exercise and amusement of every kind to be encouraged by every means, during a voyage; and an union of strict discipline, with indulgence and humanity towards the men, should characterise the conduct of all classes of officers."

APPENDIX E.

It may be well to state that Medical Officers at the termination of their voyage are expected to forward a report to the principal Medical Officer at the port of disembarkation on the following heads :—

a. Name, Tonnage and particulars of ship.
b. Strength embarked.
c. Cubic space, if sufficient.
d. Ventilation, ditto.
e. Rations, Water, Antiscorbutics.
f. Medical comforts, quality and quantity.
g. State of health of the Troops during the Voyage.
h. Number of men landed unfit for duty.
i A notice of deaths from avoidable causes.
j. Improvements suggested.
k. Atmospheric phenomena observed during the Voyage.
l. Conclusion.

To the report the following documents should be annexed.

1. A Return of Medical comforts received and remaining.
2. Ditto of Medicines, &c., received and remaining.
3. Ditto shewing the diseases of the patients, their ages, length of service, time in Hospital, and in particular cases, a short account of their previous treatment.
4. Nominal Return of deaths during the voyage.

C. J. K.

INDEX.

A.

	Page.	Para.
Auxiliary steam power, ...	7	9
Arrangement of decks, ...	8	10
——— to be made before leaving dock, ...	14	21
Awnings, ...	16	25
Authority of Medical Officer, ...	35	65
Alterations in dietary scale, ...	39	70
Articles from Quarter-Master General's Department, ...	43	79
——— supplied by Owners, ...	46	88
Arms, stowing of, ...	53	106
——— racks, to ensure the prevention of *fouling, rusting and honey-combing*, ...	52	105
——— should be packed under superintendance of an Instructor of Musketry and *not* trusted to an Armourer-Sergeant, ...	..	..
Ammunition, how to be given into and taken out of Magazine in Troop-ships, ...	..	..
Antiscorbutics, Porter and Grog considered as such and should not be stopped, as punishment, beyond three days at a time, ...	..	..
Analytical Chemistry, Medical Member of Transport Board, should be proficient in, ...	42	78
Admiralty, Officer of the, specially educated to be Member of Transport Board, ...	60	127
Appendix, ...		

B.

Butcher's shop, ...	10	11
Boats, Life, ...	15	24
Board, Transport, ...	59	127
Blankets, ...	43	80
Bedding, Tarpaulin for, ...	51	100

B.

	Page.	Para.
Beef, Ration of, ...	41	74
Butter, ...	42	76
Biscuit, ...	40	72
Buckets, to be taken care of in the *beginning* of a voyage,	..	..
Bunks, how fitted, ...	28	49
Barrels, loose, about decks, dangerous, ...	..	..
Bilge-water, to be carried off by a shoot, ...	53	103

C.

Class of vessels for transports, ...	7	9
Climates, Northern, ships trading to, ...	14	20
Caulking decks, ...	14	23
Cook-houses, ...	9	11
—— house for Hospital, ...	9	11
Clerk of Works, ...	20	35
Conducting Serjeants, ...	23	39
Cargo, stowage of, ...	21	37
Canvas-hose, ...	17	28
Cells, best place for, ...	..	..
Clothing, amount taken to India, capable of reduction, ...	44	81
Crew should be sober, before weighing anchor, ...	..	..
Cuddy stores should be examined *before* sailing, ...	..	..
Cooks, not allowed to accumulate grease, ...	..	..
Clothing, part of rigging for drying, distinctly pointed out, ...	50	98
Cots, from their construction require *less* distance between fore and aft hooks than hammocks, ...	..	..
Charter-party, copy of, to be given to Medical Officer, ...	35	64

D.

Docks, leaving, ...	14	21
Davits, ...	15	24
Drawing and distributing water, ...	16	26
Downton's pumps, ...	17	28
Dank's Ventilators, ...	50	97

D

	Page.	Para.
Duties, and positions relative, of Officers Commanding and Medical, ...	32	57
Departments connected with Transport Service, ...	55	112
Diet for Sick, ...	28	51
Decks, kept scrupulously dry, ...	53	107
—— Swept every two hours, ...	..	..
"Duties on Board-ship," pages *inter* 330 and 337 Queen's Regulations recommended to be struck out, their contents appearing in previous pages,...	..	..
—— a minute detail of discipline and duties in troop-ships a desideratum, ...	..	..

E.

Examination of ship previous to sailing, ...	20	35
Embarking Officer, ...	60	127
Exercise of paramount importance, ...	..	..

F.

Flannel, ...	44	81
Fumigation, materials for, ...	46	89
Forage caps, ...	44	82
Fire, danger of, in galleys, ...	19	32
Filter, for hospital, ...	28	49
Fatigue-men, permanent, obnoxious to illness.	..	..
Fore-castle, soldiers should not enter, ...	..	..
Fowls, to be sheltered from cold, *before* leaving Port,...	..	..

G.

Galleys, Troop-ship, ...	19	31
Guard, what sentries supplied by, and what by Watch, ...	..	..
—— should be sheltered, ...	51	102
Grog, stoppage of, for any length of time objectionable,	..	..
Grease, the keeping of, by cooks cause of quarrels, — bad smell,—*over-boiling* of meat, and finally of drunkenness, ...	..	..

H.

	Page.	Para.
Hammocks, ...	43	79
——— a certain number should be opened daily and the bedding exposed for some hours to the sun,	43	79
——— sentry on, should warn approach of rain,	51	100
——— brought up when decks washed, ...	..	..
——— should be scrubbed occasionally, ...	..	..
Hospital sergeants, ...	24	41
——— importance of, ...	27	47
——— diet, ...	29	51
——— orderlies, amount of remuneration entitled to, should be clearly known, ...	..	..
——— washing, how to be paid for, ...	..	..
——— lights, ...	28	49
——— cooking for, ...	28	51
——— Medical officer responsible for its scrupulous cleanliness, ...	33	58
Hose, troops should pass under every morning, ...	..	..
Hurricane deck, ...	10	12

I.

Insufficiency of appliance for drawing water, ...	16	26
——— of cookhouses, ...	19	31
Imperium in imperio, ...	32	56
Information to be afforded to Medical Officer, ...	35	64
Indian troop-ship dietary scale, ...	39	70
Intermediate ports, ...	48	95

K.

Kits, sea, ...	44	81
Keg, water, ...	46	88

L.

Life-boat, ...	15	24
Latrines, ...	51	101
——— should be hosed every two hours, ...	..	..
——— openings of, should extend near water-line,...	51	101
Lavatories, ...	9	*f*

L.

	Page.	Para.
Laundry, ...	9	*e*
Live-stock, ...	10	13
Lamps, ...	19	33
Liquor, highly objectionable as cargo in troop-ships, ...	..	..
Ladders, troops should ascend by one and descend by another, to prevent confusion, and at *meal times* of men being *scalded*, ...	..	..

M.

Medical Officer, his relations to Commanding Officer,	32	57
——— as Sanitary Agent, ...	33	59
——— should have authority under limitation, ...	35	64
——— to be a good analytical chemist, ...	42	78
Merchant-vessels, objections to, ...	6	6
Marine Soap, ...	45	83
Marines in troop-ships, ...	25	43
Medicine chest, ...	28	50
Medical history of soldier, or concise Register for field-service, ...	29	52
Mess saloon, ...	9	11
Magazine, attention to, of vital importance, ...	..	..
——— locality of, in troop-ships, ...	..	..
Medical comforts, should be carefully separated from all other stores, ...	..	..
——— officer as member of Transport Board, should be specially educated, ...	60	127
——— staff corps, hospital-serjeant from, ...	24	41
Milk, ...	10	14
Mess, it should be clearly known how many form one on board-ship; in the Indian scale 6 men form a mess and the ration scale is computed accordingly; a mess of 12 men would reduce the number of "orderly men," to half, and the issue of rations, now occupying the greater part of the day, would be simpler and more expeditious, ...	40	73

N.

	Page.	Para.
Night watches, ...	37	67
Naval Surveyor, ...	59	127
Notes, these, written for detachments and recruits, ...	..	..

O.

Orderly-man, responsible for the cleanliness of his mess,		
——— 's hospital wages, amount of, should be clearly known, fatigue-men as such objectionable, ...	..	..
Orderly officer, ...	36	66
Officer, Embarking, ...	60	127
——— Commanding, ...	48	90
——— s subordinate, ...	60	128

P.

Pump, ships, should not deluge decks with bilge-water,	53	107
——— s Downtons, ...	17	28
Provisions, scale of, ...	39	70
Preserved meats, ...	42	77
Pork, ...	10	13
Punishments, suitable to recruits at sea, ...	..	..
Pigs, objectionable in troop-ships, ...	10	13

Q.

Quarter-master General's Department,	43	79
——————————articles supplied by,	43	79
——————————— at Intermediate Ports, ...	49	95
——————————————— officer from, specially educated as Member of Transport Board, ...	60	127

R.

Rating of seamen, ...	54	109
Rations, ...	39	69
Rack, Arms, ...	52	104
Razor, at sea unnecessary, ...	..	..
Regulations, Queen's, as to passing ships, ...	20	36
———— as to diet, ...	..	..

R.

	Page.	Para.
Refuse, shoots for discharging, ...	18	30
Rifles, *fouling* of, ...	52	105
Rations, pages 306 and 327 Queen's Regulations, inviting a revision and compilation, ...	39	70
Rank, Temporary, or *Salt-water*, insufficient for maintaining discipline amongst recruits, ...	..	..

S.

Seamen, for hired transport ships, in war-time it may be necessary to procure them from the Royal Navy, ...	..	..
——— rating of, ...	54	109
Senior Officers, ...	53	108
Sentries, some from the Guard and some from the Watch,	..	...
——— on Windsails, on Water-barrels, Hatchways, Hammocks, Buckets, and cleansing apparatus, Meat tubs, Quarter-deck, Lights, Latrines, &c.,	..	..
Scissors, ...	45	86
Ship-master, position of, ...	47	90
Shoots, for refuse, and bilge-water, ...	18	30
Shoes, ...	45	84
Sleeping, of troops on deck, left to the judgment of Military Surgeon, ...	..	..
Smoking, for prevention of excess, restricted to certain hours, ...	..	..
Soap, marine and fresh-water, ...	45	83
Socks, ...	45	85
Small-book, addition to, suggested, ...	31	53
Stevedore, ...	21	37
Sugar ration, ...	40	73
Swabbers, permanent, obnoxious to illness, ...	..	..
Steersmen, should be engaged as such, ...	54	109

T.

	Page.	Para.
Tooth-brush, ...	45	86
Transport service, administration of, ...	55	111
Tub, for Salt meat should have lock and key, ...	38	68
Table for hospital, ...	28	49
" Turn-out" at Sun-rise, ...	..	..
Tarpaulin should be of ample size, ...	51	100

V.

Ventilating apparatus, Dank's	50	97
Vegetables, compressed mixed, ...	41	75

W.

Water-supply, ...	16	26
—— hot for Hospital, ...	28	49
Washing days, ...	50	98
——— of persons, ...	9	*f*
——— tubs to be supplied *before* leaving port, ...	46	88
——— decks, ...	..	..
Watch to mess on deck in all favorable weather, ...	..	..
Windsails, to be made and seen *before* leaving port ; a sentry to trim them, ...	..	..

THE

EDINBURGH

MEDICAL AND SURGICAL JOURNAL.

1st JANUARY 1849.

too much time to consider upon the present occasion the various practical bearings of this question. I will therefore conclude by submitting the following deductions :—

1. That in man and the higher mammalia, the brain is the sole centre of the nervous system and the source of power.

2. That the grey matter of the spinal cord and the ganglia of the sympathetic are to be regarded as reservoirs of this power for the immediate actions of the parts supplied, which speedily becomes exhausted if communication with the brain be cut off, and also as modifiers of impressions transmitted from the periphery to the brain.

3. That the automatic and instructive actions are not performed independently of the concurrence of the brain, though its influence is less direct and manifest than in the case of voluntary movements.

4. That the brain is the organ principally implicated in several disorders which have been too exclusively referred to the spinal cord.

ART. IV.—*Practical Remarks on the Endemic Fever of Ceylon.* By J. C. CAMERON, M. D., Staff-Surgeon of the 2d Class. (Communicated to the Editor by the Director-General of the Army Medical Department.)

THE following details and conclusions are drawn from the experience gathered at the bed-side, during nearly thirteen years' service in this colony, which has led me to abandon the use of bleeding and salivation as the chief remedies in the form of tropical fever prevalent here, and to substitute in their stead the free use of quinine, without any regard to exacerbations, remissions, or local complications.

This practice, although very analogous to that recommended by Clark and Lind in the last century, is, I believe, opposed to the doctrines of the modern schools, as I have generally found my newly-arrived brethren exceedingly surprised by it, and afraid that the worst results would follow the use of quinine during the hot stage of fever. A single trial has, however, generally convinced them of its efficacy in this island. And, in fact, the practice may be considered almost universal in the colony, so that I am induced to submit the results for the information of the profession, in the hopes, considering the general resemblance of tropical disease, that what has been found so great an improvement here, may, upon trial, prove successful

in other localities. Fevers are very common in Ceylon, and furnish a large proportion of the admissions in our military hospitals; and, on the whole, I am quite disposed to agree with that experienced and accurate observer, Deputy Inspector-General Marshall, that the fevers (properly so called) of Ceylon are either remittent or intermittent.

The generally-recognized elements for the production of malarious fever exist abundantly here; a great portion of the country is covered with dense forest, interspersed with swampy valleys and rice lands; other more open districts, formerly populous, but now desolate, are converted into extensive marshes by the monsoon rains, and afterwards, under the influence of a vertical sun, exhale the effluvia of decomposing vegetation; and, even in the immediate vicinity of the largest towns, rice fields and stagnant waters abound. It thus happens that fever, in certain districts, has its regular season, and is expected as surely as harvest after seed-time, from the subsidence of the floods until the soil is baked into harmless dryness, when the district becomes comparatively healthy. The natives enjoy no exemption from its ravages; indeed they are often prostrated, while the well-fed and sheltered European escapes, though resident on the same estate; but, in the former, agues are much more frequent than attacks of remittent, and this latter, though, if left to itself, very fatal, rarely presents the same high degree of symptoms, but rather saps slowly the powers of life. The immigrant Coolies from India, who, bent on saving, often half starve themselves, suffer greatly from fever; so do the Malays; but the few Negroes remaining from the old Ceylon regiments enjoy their usual comparative immunity. Old and young residents suffer alike. Perhaps the new-comers, if prudent, have the best chance of resisting the poison. One attack, so far from securing future exemption, decidedly predisposes to another. Locality influences not only the frequency but the severity of fever, as might be expected; but at times the disease will attack individuals resident on the sea-side, and surrounded by every comfort, with as much virulence as if they had been sleeping in a Kandyan jungle. I have no means of judging accurately whether elevation to a moderate height affords much security. I have been told by old residents that our detached posts, which, thirty years ago, were often posted in valleys fully 3000 feet above the sea, suffered from fever. But, from all I can learn, I am inclined to think that its prevalence is greatly lessened by residence on hilly ground above 3500 feet in altitude. At Nuwera Ellia, where the barracks are at a height of 6500 feet, fevers are very rare (though I have seen one case of severe re-

mittent there, which very nearly proved fatal); yet the "plain" consists chiefly of a deep swampy bog, and the men are quartered on the banks of a small stream, which in rainy weather overflows the ground adjacent. Such situations in the vicinity of streams in the low country are generally favourite haunts of fever.

Certain years prove much more sickly than others, without any very evident cause, and occasionally fever has prevailed epidemically with great severity; and, during field service in the Kandyan country, its ravages were often awful, exceeding even the mortality of plague.

That this is no exaggerated term, the pages of Colonel Tulloch's statistical reports abundantly prove. For we there find recorded that, in 1818, out of one detachment, consisting of 254 officers and men, 209 died of fever in a few weeks, while only 4 of the party escaped an attack. And, even during profound peace, as in 1824, the deaths under this head throughout the island amounted to ten per cent. of the white troops; and at the two stations of Kornegalle and Kandy, to 113 out of a garrison of 420 Europeans.

Reference to the older hospital records shows that the symptoms observed in the remittent of thirty years ago do not in any way differ from those of our own day; and, generally speaking, there is a remarkable sameness of cases always observable in this disease, subject of course to modifications from temperament, pre-existing local affections, or constitutional peculiarities.

In general, muscular pains, a feeling of debility, loss of appetite, and restless nights, precede the development of fever for a longer or shorter period, sometimes for several days. The joints feel stiff, the loins and thighs as if they had been well beaten, being even sore on pressure; headach and chilliness follow; sometimes severe and continued rigors take place, more frequently an intolerable sense of coldness without tremor, succeeded by alternating flushes of heat, which gradually becomes ardent. Headach next becomes intense, often lancinating and aggravated by the slightest motion, the patient holding his temples with both hands, and moaning from pain. The respiration is quickened and laboured, from a sense of weight at the *præcordia*. This is often attended with nausea, and in severe cases with bilious vomiting. Thirst is uniformly great; the tongue white, furred, and moist; the urine scanty and high coloured; the bowels often regular, but the evacuations offensive. There is frequently great soreness to the touch, and painful stiffness in moving the eye balls, but seldom

any intolerance of light. The head feels excessively hot; so generally does the stomach; but it is rare to have any localized pain except headach, unless the patient has suffered from hepatic or splenic disease; and then very often both organs, but especially the former, are complained of.

The duration of the hot stage varies according to the severity of the attack, but usually lasts for some hours, not exceeding twelve or fourteen. And then a remission takes place, commencing with perspiration, which often becomes profuse, especially if bleeding has been had recourse to. The headach abates very much; a general feeling of relief is experienced; the patient becomes cheerful, and persuaded that the worst is over. But by and by the skin begins gradually to dry, thirst returns, a degree of cold rarely exceeding chilliness is again experienced, and the hot fit recommences, very often with increased violence.

If the disease proceeds unchecked, nausea becomes a prominent symptom, and the vital forces are remarkably depressed after each paroxysm, of which there is always one, and sometimes two, or even more in the twenty-four hours; but it soon becomes impossible to distinguish any remission. The skin is either dry, and of a peculiar burning heat, unpleasant to the touch, or damp and clammy, particularly on the hands and arms; the countenance sunken, with a purple flush on the cheeks, or deeply tinged with bile; the tongue dry; teeth covered with sordes; in fact, all the appearances of European typhus are seen. Sometimes, but rarely, the patient is sensible to the last, although apt to wander, when lying quiet, talking in an unconnected strain of distant scenes or his ordinary duties, and sensible that he has been doing so, when his attention is awakened by being addressed. In other cases he will leave his bed and attempt to walk out to parade, or to see a friend, generally without noise or excitement, seldom resisting a request to lie down. But in the great majority of fatal cases, low muttering delirium takes place, with much stupor, from which the patient can be roused by shaking and loudly addressing him, and at first will probably answer rationally a question or two, uniformly declaring he has no pain; but coma speedily supervenes, with subsultus and hiccup, and in this state the patient most commonly sinks to rest. Occasionally death takes place in the hot fit; but in the few instances of the kind I have known, the patients were stout and full blooded, and cut off at an early period of the disease. Except in such instances, the course of this fever is more protracted than usual in other tropical climates, death rarely taking place before the 10th day, and some-

times not till the 20th, or even longer. It deserves remark, that deafness, which used to be regarded as a favourable symptom in typhus fever at home, is here very much the reverse; and when conjoined with an early appearance of a jaundiced tint, or deep bilious suffusion, generally fatal. But, as most truly observed by Mr Marshall, and deserving of constant remembrance by all concerned, "the fatal tendency of the disease is often not in proportion to the apparent violence of the symptoms. Sometimes cases terminated fatally without the appearance of a very violent disease. The danger was often great, although the symptoms appeared mild." This important truth should be ever present to the mind of a medical officer in Ceylon, for it is impossible to judge accurately at the beginning of fever how it will proceed, especially on the negative side of the question; we may often predict a severe and dangerous attack, but never can be sure of the contrary, however mild the commencement appears. On this head I received many sharp lessons in the early part of my service here, for it is especially in its commencement that fever is amenable to treatment. The lapse of a few days, without the use of proper remedies, gives it a fearful start.

On dissection, the general appearances afford little indication of any local affection; the surface of the body is sometimes uniformly yellow, and this tinge may extend to the fluids, so that the serum from a blistered surface will stain a cloth like turmeric.

The veins of the brain are generally congested; perhaps a small degree of effusion may be found in the ventricles, and likewise under the arachnoid, but without any traces of membranous inflammation. The lungs are found simply congested; the blood appearing dark and pitchy; the liver friable, and gorged with blood; the gall-bladder turgid with dark bile, the spleen also congested and soft.

The intestines generally present a dusky-leaden hue. The stomach often contains a dark grumous fluid (the black vomit of the West), its lining membrane being soft, and easily torn, with occasionally considerable vascularity of the great curvature. In cases in which vomiting has been a prominent symptom, the *duodenum* is generally found vascular, and tinged with bile. The other intestines seldom display anything extraordinary. The kidneys appear congested, the bladder small and contracted.

On the whole, the brain is generally the organ that seems most involved, though in none are appearances less correspondent to symptoms, or consistent with them; but it is evident that

the malady is a disease, not of any one organ in particular, but of the whole system; in fact, that the patient has died from the effects of a subtle penetrating poison.

The treatment pursued in this malady, from the date of our conquest of the island till within the last eight years, as far as I have been able to ascertain, was pretty much that so forcibly inculcated by the late Dr Johnson in his widely influential work on Tropical Diseases. Mr Marshall, speaking from his experience here, between the years 1808 and 1821, states, that "when bleeding, purgatives, and cold ablution failed to arrest the progress of the disease, all that could in general be done, was to endeavour to alleviate symptoms;" he neither alludes to mercury nor bark. But I have the best reasons for believing that the former potent agent for good or evil was most freely used in fever, and indeed regarded as the sheet-anchor in its treatment during the fearful ravages of the disease before adverted to. Certain it is, that I found it so esteemed on my arrival in 1836, and being then quite a Johnsonian practitioner, relied on the lancet and calomel as the sovereign remedies in tropical fever, never feeling secure of my patients till salivation proclaimed their safety. When that could not be brought on, the cases were generally deemed, and proved hopeless.

Certainly, when this practice is successful, nothing can be more brilliant. The disease is attacked *au pas de charge*, and its strongholds carried. But reading such cases is very like reading the gazette of battles. Dwelling only on the victory, we are apt to overlook the cost, to forget the bloodless faces, the shattered frames, and broken constitutions. Experience, however, will soon teach the young medical officer, especially in the tropics, how necessary it is to think, not only of curing his patient, but of curing him with the least possible expenditure of strength and constitution, and this I fear is often overlooked. In warm climates great losses of blood are very slowly repaired, and convalescence tedious; and if a soldier is drained in this way again and again, his frame soon becomes too weakened for service in the East. Salivation also is too frequently regarded as a trifling matter; but setting aside the sufferings of many patients under it, and the length of time they are necessarily rendered ineffective thereby, the free use of mercury is highly injurious to many constitutions, and cannot be resorted to again and again with impunity, even in the strongest. It ceases to salivate such subjects, and brings on instead a febrile state, during which the vital actions are seriously depressed, and the progress of destructive disease, such as dysenteric ulcerations, &c., rendered fearfully rapid. It may be doubted too,

whether salivation is not often more a consequence than a cause of the disease yielding, for which mercury has been administered. Every one must have seen it supervene after amendment has set in, and even in cases where, from apparent inefficacy, the mineral had been discontinued. That it is often of the greatest utility no one will dispute; but I recommend every young officer to do without it when he can. I am writing solely from experience, and therefore do not presume to pronounce an opinion on its use in other countries beyond what may be drawn from analogy. All I can say is, that I manage now to cure my patients without the use of mercury, in either fever, liver disease, or dysentery, in all the branches of which tropical triad, I used to employ it most freely, and with very tolerable results too; for there are various modes of curing the same disease, —a fact that medical bigots are prone to overlook.

From the description given above of the onset of fever, bleeding from the arm will naturally suggest itself as a means of relief; and if practised when the patient is burning hot, and complaining of severe headach, its good effects will appear remarkable; the pulse will fall, the pains disappear, and the heat of skin be relieved by general relaxation of the capillaries, and copious perspiration,—the patient declaring that he feels quite another man; but all this apparent amendment may be said to be mechanical; the return of the paroxysm puts an end to it, to the great annoyance of the medical attendant. A fresh abstraction of blood again gives relief, at the expense, however, of great debility, and it can rarely ever be attempted a third time. Bleeding from the arm, then, must be looked on as an expensive auxiliary, occasionally necessary, perhaps, in full-blooded subjects, but only to prevent mischief during the hot fit, or when a decided local affection exists, as in a man subject to acute hepatitis. It cannot be expected to cure a fever, which does not depend upon any inflammation, but on the presence of a sedative poison in the system.

Leeches are far more useful, and should be applied freely to the temples in cases where headach persists, or is remarkably severe; but when I say freely, I mean with due precaution, *first*, as to our patient's frame and sex; *secondly*, as to the period of fever,—a very small loss of blood in its latter stages being apt to produce fatal sinking; and, *thirdly*, as to the stage of fever when they may be applied,—the danger being extreme of abstracting, at the close of a paroxysm, the same quantity of blood which might have proved beneficial during its height. As this is a point of the utmost consequence, and one that is often wholly overlooked, I beg to refer to Mr Twining's remarks on the subject, in his work on diseases of Bengal (page 652 of the

edition of 1832), where he gives several cases of death ensuing from mistakes of the kind now specified; and to which I can add an instance where a stout, plethoric, fat, European gentleman, bled largely from the arm, during the stage of free perspiration, on the second day of remittent fever, died, unaccountably, as it was considered, within a few hours after.

With the above precautions, the use of leeches will be found the best mode of abstracting blood, in all the local complications of fever, taking care to have their effect watched by a competent person, with directions to remove them if collapse seems approaching, and forbidding any flow of blood to be encouraged from their bites. In practice, I have found a discretionary authority on this head so mischievous, that I always direct a proper number of the animals to be applied, and the bleeding stopped as soon as they fall off. In the more advanced periods of fever, a very small number only—four or six—should be used; for they are exceedingly large and active. I have more than once seen the use of this number over the epigastrium, or to the temples, as the symptoms indicated, decide the favourable issue of the case, when the fever had continued long in a low form.

To sum up, then,—I would recommend the avoidance of general blood-letting if possible. When practised to moderate the vascular excitement of the hot fit, it should not be carried farther than to accomplish that end, which the loss of sixteen ounces will generally effect.

If fever attacks a stout man, who perhaps lives freely, and has sustained one or two smart attacks of hepatitis, it will generally be attended with marked determination to the liver, sharp pain on deep inspiration, &c. Here we must not run risks with such a treacherous organ engaged; but, unless there be some strong reason against it, bleed boldly till we free the breathing, and conjoin the necessary treatment for liver disease with that essential for the remittent.

Headach will not require more than free leeching, and, where the patient is strong, it is wise to be on the safe side, and use it early, although it is at first surprising to note what severe headach will subside without any depletion. We must always be on our guard as regards cerebral congestion, and carefully distinguish between the delirium of vascular action and that of nervous excitement. In the latter, the use of a solution of tartar-emetic and opium, as recommended in typhus by my old teacher Dr Graves, will be found most efficacious. Sleeplessness is a marked feature in this fever; even in its slightest cases, we will find patients unable to close an eye for two or three days and nights successively; this yields to the

use of quinine; but if unusually prolonged, and unattended with headach, or other suspicious symptoms, morphia administered in a full dose, say half a grain of the muriate of morphia, will give relief.

One of the most embarrassing symptoms is gastric irritability, for which reason I never use emetics in the treatment. This symptom must be combated by leeches and blisters applied to the epigastrium, ice internally when procurable, and small doses of morphia in soda-water or effervescing draughts.

Purgatives are useful in the commencement of the disease, but must not be over-valued or given too largely. Hypercatharsis is apt to come on and prove troublesome. The bowels must be well cleared out at an early date, after which ordinary attention will suffice.

I have never practised, or seen tried, the cold affusion; but sponging with very hot water often produces relief to the heat of skin; and the tepid-bath at 92° seems still more efficacious, particularly with children. I have seen immersion in it for fifteen minutes lower the pulse forty beats, and procure refreshing rest when other means completely failed.

I come now to speak of the employment of quinine, which I regard as the most important agent in the treatment, and one to which all the measures above-discussed must be considered in a great degree subordinate. I believe I am correct in stating that its employment, during the height of fever, is opposed to all the rules laid down in standard works of the present day on such matters; for, on reference to the article "Remittent Fever," in Dr Copland's unrivalled Dictionary, I find the learned author expressing himself as follows, speaking of the exhaustion of the advanced stages:—"In such cases, suitable means are devised with great difficulty. If the exhaustion be attended by a distinct remission, the pulse falling in frequency, and the tongue remaining moist, the irritability of the stomach having subsided, the exhibition of bark or quinine should not be delayed, for by it chiefly are we to hope to prevent an accession of the febrile action, and to preserve the powers of life from the noxious influence of the surrounding causes. But the effect of this substance should be carefully watched; as long, however, as the tongue is dry or rough, with the papillæ erect, the pulse hard or irritable, and the skin hot and harsh, the remains or unfavourable consequences of the previous morbid action are still unsubdued, and these the exhibition of bark would increase." These were exactly my own ideas on commencing acquaintance with tropical fevers; I had, in common with my brethren, a dread of running the least risk of giving quinine as long as any local or high febrile affection

was present; feeling assured that if such a mistake were committed, the result would certainly be to aggravate it; and not a few cases have I known lost in this way, amid deep regrets that there was never an opportunity of giving quinine, there being no remission. Another firmly rooted idea, and one which I believe to be very general, was, that a certain amount of antiphlogistic treatment must needs have been undergone, before the system could bear the use of quinine, so that the idea of giving it was seldom at all entertained till the third or fourth day of fever; and then it was timidly ventured upon in grain doses, and stopped the moment the least exacerbation set in.

My first glimpse of what could be done with this remedy was obtained as follows, in the case of a European of irregular habits recently from England, attacked with high fever, in an elevated cool station. This person was freely bled, dosed with purgatives, and saline antimonial mixtures, followed, as the disease persisted, by the use of calomel and James' powder; but all to no purpose: the mercury would not affect his gums, he had no apparent local disease, but his skin remained burning hot, at all hours alike, with great thirst, and a dry tongue, which finally become quite black, his pulse being generally 130. After some days in this state he seemed fast dying, and about the middle of the night, which I thought would be his last, having gone to the hospital for a final visit, I was surprised to find his pulse had fallen fully 40 beats, and immediately thought of quinine, but hesitated when I considered his hot skin and rough dry tongue; however, the case being desperate, I shook about ten grains of the sulphate on the tongue, and washed it down, leaving a similar dose to follow soon after, with some curiosity, but very little hope as to the result. Morning nevertheless found him decidedly better; the fever soon remitted with perspiration; quinine was continued in such intervals, and the man escaped from the jaws of death, after a long convalescence.

I pondered over this case a good deal, but chiefly on the strangeness of a remission appearing so late in the disease, and at such an unusual hour, and my good fortune in stumbling upon it. I mused upon the state of skin and tongue too, so unfit apparently for the action of quinine, but put it down as an anomalous case, irregular every way; and went on bleeding and using antimony to begin with, and getting my patients under the influence of mercury as fast as possible, whenever their fever persisted, till the year 1840, when remittent was very prevalent and fatal about Kandy, where I happened to be on leave, and was requested to see the following case:—

A. D., a European girl aged 20, stout and healthy, had been

resident with her family upon a coffee estate in the neighbourhood, and there contracted fever, which had carried off all her relatives. Her brother-in-law, hearing of their deaths, came up from Colombo, and finding her given over in the same disease, by the officer who had kindly attended the whole family, came begging me to go and see the case. I found her rolled up in a heap near the bottom of the bed, picking at the bedclothes, in a state of low delirium, with all the appearances of bad typhus. The skin was parched and burning; the cheeks tinged with a livid flush; the lips and tongue black and dry; while the senses were offended with an intolerable fetor of person and breath, partly proceeding from deep sloughing ulcers of the cheeks and gums, caused by the use of calomel, which, however, had not induced salivation. The pulse was very small and sharp, 144. The patient had been ill about a fortnight. I entirely coincided with her attendant as to the hopelessness of the case, and told her friends so; but as they implored me to try something to save her, I proceeded to the quarters of my friend, a young officer lately arrived in the colony, and inquired the particulars of the case. He told me its history, the usual symptoms of remittent; how he had bled, and purged, and tried to salivate her, but in vain, and finally gave her up in despair, as her relatives had just run the same course, ending in death. On suggesting the use of quinine he was quite surprised, considering it wholly inapplicable; but, on my relating the case given above, readily consented to try it, and ordered five grains to be given every third hour, beginning directly, as all traces of remission had long ceased. The amendment this produced seemed almost miraculous,—so marked and speedy was its appearance. The low delirium went off, and some quiet sleep was obtained; a purgative now brought away some very fetid discharges; and with occasional repetitions of it, and the continued use of quinine, the case went on to a favourable termination, though with much delay and suffering from the mercurial ulceration in the mouth, which nearly perforated the cheeks, and after healing caused such contraction, that the poor girl was obliged to live on fluids, till I succeeded in dilating her jaws by the use of a series of cork-wood wedges.

The circumstances of this case quite shook my faith in the received doctrines about the dangers of using quinine, and I began cautiously to try its effects in the earlier stages of fever. The subject was warmly taken up by my esteemed friend Dr Templeton of the Royal Artillery, who suggested the addition of James' powder to the quinine, as favouring its action, and having febrifuge qualities of its own, which, in his opinion, lessened the chance of quinine producing any mischief, for it

was a long time before we shook off all fears on this head. This combination seems advantageous where the stomach is not irritable, but in such cases I have often discontinued the antimonial, and used the quinine alone with perfect success.

My general plan of treating fever now is as follows:—I begin with a good purgative (for a stout man, some fifteen or twenty grains of a mass of colocynth, scammony, and gamboge), and order, at the same time, twenty grains of quinine, with an equal quantity of James's powder, to be divided into eight doses, and one given every third hour regularly. This, in general, soon relieves the violent headach, pains in the loins, &c., and is steadily continued without any regard to exacerbations. As symptoms arise, they are met in the way formerly indicated; but on no account is the quinine stopped if the stomach can be made to bear it, the James's powder being omitted if necessary, and the chief remedy given in pills or solution, as may be easiest for the patient to take.

Treated in this way, the vast majority of fever cases, if early attended to, will give very little trouble, and are cured at such a small expense of strength, that the patients are but a short time rendered non-effective,—a point of great consequence in military medicine. If, on the other hand, the disease is neglected, and allowed to gain ground unopposed for some days, it often becomes very difficult to manage; hence the danger of the slow insidious form in which it occasionally makes its approaches. A patient may complain principally of loss of appetite and debility,—the latter, in his opinion, solely consequent upon the former. His tongue is furred; bowels confined; he has slight headach, which he terms bilious; rests very badly, and complains of tossing about all night; his skin and pulse are perhaps natural, or even below par in the morning, at the usual hour of doctor's visits in the East. Probably he has been living irregularly, and ascribes his indisposition to that cause. Purgatives are prescribed, which bring away offensive stools, and afford great relief; so from day to day expectations are entertained that to-morrow, or in a day or two, he will feel much better and be all right, till at last he is found some morning in a state of stupor, sinking into coma. It then comes out, on cross-questioning a stupid native servant, that for nights past his master has been talking a great deal to himself, and sometimes speaking nonsense. A blister is applied forthwith, calomel administered, &c., but all to no avail; the patient is never roused from his deadly stupor; and on dissection, all that is seen is more or less serous effusion within the head, with congested veins. I remember a case of this nature in a young captain who died five years ago. He had taken nothing but

colocynth and soda during ten days' indisposition, and the day before he died laughed incredulously at the idea of danger, saying he was only a little weak, and would be out again in a few days.

Before proceeding to give some cases illustrative of the above statements, it occurs to me that my sketch of treatment is incomplete, without a few words on diet,—a part of the management of fever,—which I fear is often greatly neglected, particularly among the many sojourners in the East, who are necessarily left to be nursed by strangers and servants. It is essentially requisite that the medical attendant should enforce the use of sufficient nourishment. Patients have frequently a dislike to the very idea of food, and if not looked after will starve themselves for days—nay, I think I may add, to death,—for I have certainly witnessed cases where a fatal result was clearly due to neglect of giving food.

A little arrow-root or gruel may always be taken twice a day, and after the fifth day, chicken soup in small quantities, thickened with bread. The greatest difficulty will often be found in getting this complied with; and the doctor must often see it done, and even feed the patient himself, where no other person possesses sufficient control over him.

As my chief aim, in drawing up this paper, has been to contrast the results of two different modes of treating the same disease, and to induce a trial of that which I advocate, wherever fever may be found of the same character as here described, I shall commence my selection of cases by giving two which proved fatal,—one in the year 1818, and the other in the year 1840,—in order that the reader may compare their details with those that follow, and judge for himself of the identity of the malady, and the effects of remedies upon its progress. The first is quoted from Mr Marshall's work on Ceylon, and given by him as an average example of the fever which caused such fearful mortality, and of the mode in which it would best be combated.

Case 1.—Robert Bruin, 45th Regiment, aged 28, of a spare habit; has been seventeen months on the island, and has generally enjoyed good health. Admitted into hospital on the forenoon of the 11th November; said that he had been attacked that morning after he had been relieved off guard, with headach, pains, and weakness of the extremities. Pulse was quick; tongue foul; skin natural. Was bled on admission to the extent of three pounds, and a purgative administered; towards evening he was attacked with urgent febrile symptoms and renewed headach; a blister was applied to the nape of the neck On the following morning the symptoms had remitted, and he

was quite free from headach; the purgative was rejected; he was allowed an acidulous drink; febrile symptoms recurred that evening with less severity, but accompanied with great irritability of the stomach; he continued from that date (13th) to have an evening accession of fever, and was almost constantly affected with nausea and vomiting. Purgative remedies were daily administered, which produced free purging. During the increased heat of the body, cold ablution was used, and acidulous drink prescribed. On the 19th the fever recurred with increased violence, and the vomiting continued almost incessantly; at that period he became much exhausted; pulse quick and small; tongue dry and brown. Saline diaphoretic draughts, with a few drops of *Tr. Opii* in each, were now ordered. He was allowed two gills of wine.

On the evening of the 21st the usual accession of fever took place; he expired next morning at three o'clock.

Appearances on Dissection.—*Cranium.*—*Dura mater* preternaturally red; *pia mater* natural; substance of the brain apparently healthy; half a drachm of fluid was found in each lateral ventricle; half a drachm in the base of the cranium.

In the thorax all the viscera were natural.

In the abdomen the viscera were healthy; liver weighed four pounds thirteen ounces; spleen one pound three ounces.

Case 2.—John Jackson, aged 20, 90th Light Infantry, 18th March 1840. (Reported by Staff-Assistant Surgeon Dr Kelly). This lad was taken into hospital on arrival from England, as not quite recovered from a slight catarrh. On the 20th at evening visit he complained of pain across the loins and in his limbs, slight headach and giddiness. Skin hot; tongue furred; thirst; pulse small and quick.

Ordered a dose of castor oil.

March 21*st*.—Passed a good night; feels better in every respect; had two very large feculent motions from the oil; pain of the back removed; no headach; pulse slower; tongue moist.

Ordered a saline diaphoretic mixture.

22*d*.—Feels somewhat better this morning, but complains of debility. No headach; tongue slightly furred, and moist; bowels acted several times very freely; stools feculent and very offensive; thirst diminished; skin not so hot.

A pill, consisting of half a grain of the blue pill mass, one grain of compound powder of ipecacuan, and three grains of extract of gentian, was directed to be taken three times daily.

Vespere.—Increase of fever this afternoon, with some slight cerebral excitement; had an attack of vomiting since last visit.

Twelve leeches to be applied to the temples, and the head to be shaved.

23*d*.—Passed a restless night; feels his head relieved by the leeches; skin moist and perspiring; tongue furred; pulse small and weak; bowels open twice during the night; stools dark-brown and feculent. Does not complain of pain anywhere; says his head is quite free from it, but that he feels great debility.

Chicken broth. To continue the pills,—cold lotion to the head.

Vespere.—Reports himself better; the bowels have been acting frequently during the day.

24*th*.—Passed a restless night, and was delirious; skin moist; pulse quick, small, and weak; tongue slightly furred; bowels open; coughed frequently during the night; thirst; no headach.

A mixture was ordered, consisting of two drachms of antimonial wine, and half a drachm of spirit of nitrous ether, in two ounces of camphor mixture, two ounces of mucilage, and two ounces of water; and this the patient was directed to take in the course of the day.

Vespere.—Restless, and very talkative all the afternoon.

A blister to be applied to the nape of the neck.

25*th*.—Passed a very restless night, and was delirious; tore off the blister, which, however, has acted well. Pulse extremely small and weak; skin rather cooler and moist; tongue moist; white in the centre; red at the edges; less thirst; bowels opened twice during the night; stools feculent; is anxious, talkative, and restless in manner.

Continue the mixture as yesterday.

26*th*.—No improvement; was extremely restless and delirious during the night; talks incoherently now. Skin dry and hot; pulse small and very quick; no intolerance of light; tongue moist and furred; thirst; bowels open; skin assuming a yellowish tinge.

Ordered a blister to the occiput; calomel and James's powder at intervals.

From this date it is needless to pursue the case; although the patient survived till the fourth of April, no change took place in the symptoms, delirium and debility being the prominent features.

On dissection, the usual venous congestion was observed in the brain and membranes, but no inflammation or effusion; the organs in the thorax were healthy; the stomach congested, and the mucous membrane generally dark-greenish coloured. The only disease was in the cœcum, where were some small patches of ulceration.

This was a distinct case of remittent, though returned as Febris C. C. From this disease the regiment lost in 1843

fifteen men, most of them within a few weeks, during the period the disorder prevailed in the interior.

Case 3.—William Church, aged 34, admitted 4th May, a healthy man, seven years in the island, was attacked while on guard yesterday with rigors, muscular pains, and headach, but managed to do his duty; and feeling better, did not report himself this morning. His symptoms, however, returned severely about 10 A. M., and he fell in the ranks, attempting to go to church. Complains of severe headach, with great giddiness, and general debility; severe aching in the loins and thighs; pulse moderate, rather full; skin warm; tongue moist and furred; bowels open.

Ordered a brisk purgative.

May 5.—Bowels very freely purged; he shivered all night, and is now exceedingly hot. Pulse 102, and full; intense headach, darting through from side to side.

To take three grains of quinine, with three of James's powder, every third hour.

Vespere. Headach diminished, and feels rather easier.

6*th*.—Passed a restless night, without any sleep. No headach, but much confusion of thought; skin tolerably cool; pulse small, 104; feels considerably better on the whole.

Ordered to continue his powders as before.

Vespere. The fever returned, with severe headach and continued vomiting; he is now very hot; pulse 96, full; bowels three times moved

Apply twelve leeches to the temples; continue the powders as before.

7*th*.—Much relieved by the leeches; headach gone; some giddiness remains. The lumbar pain has disappeared; he had some sleep; is now quite cool, and his pulse down to 84.

To have a purgative draught; continue his powders every fourth hour.

8*th*.—Doing well, no return of fever; bowels freely moved.

Continue his powders every sixth hour.

9*th*.—Had a little fever yesterday; did not sleep well; is now quite cool.

Repeat the purgative, and continue the powders as before.

From this date there was no return of fever; bark was substituted to save quinine; and on the 17th he was discharged to duty.

This is a specimen of the ordinary attack of remittent, very similar to that detailed in Case 1, and of which my hospital records would furnish scores. I shall now give an instance of more severity.

Case 4.—Lieutenant W., aged 24, dark-haired; sanguineous

temperament; stout and muscular; a free but not intemperate liver; of very active habits; has been shooting in the swamps frequently for the last three weeks, during the noon-day heat; was attacked on the 14th February 1846 with languor, muscular pains, and general chilliness; spent a miserably restless night, during which he grew hot, and vomited a good deal. Seen at 1 P. M. on the 15th. Complains of intense headach, and great pain and stiffness along the cervical spine, muscular soreness and aching all over the body, especially the loins and legs,—which latter are so cramped and tender to the touch, that he can hardly use them. Face flushed; skin very hot; breathing oppressed; pulse full and bounding, above 100; great thirst; furred, moist tongue; bowels not open last two days.

Ordered full doses of purging mixture till the effect is produced.

15*th February*, 7 P.M.—The bowels have acted freely, with slight relief to the headach; all other symptoms are unchanged.

One scruple of disulphate of quinine was mixed with the same quantity of James's powder, and the whole was divided into eight parts, one of which the patient was ordered to take every third hour.

16*th*.—Spent a bad, restless night. His headach is very great, and attended with much confusion, so that he cannot attempt to think on any subject without a sensation bordering on delirium. The pain shoots through both temples, and is aggravated by turning on his pillow, however gently. Is in a high state of fever; pulse 126; skin hot and dry; complains greatly of the distressing stiffness and aching in his neck, as well as over his body,—his legs being so much affected that he cannot stand. The bowels acted freely in the night; has taken three powders; feels squeamish, and complains of weight at the epigastrium and oppressed breathing.

Apply ten leeches to each temple; cold wash to the head; and continue the powders as above.

Being unable to bear his head raised at all, the leeches were applied first to one temple only, and though the bites were stanched as soon as possible, he became very faint, and sent for me. His pulse being very rapid, and the feeling of debility great, it was thought advisable to defer the application of the second ten leeches. The pain in one temple was quite relieved, but continued severe in the other.

4 P.M.—Ten more leeches now applied, and with great relief; the pain no longer felt except on moving the head. Muscular pains continue; has taken his powders regularly; pulse down to 100.

17*th*.—Had a good deal of sleep, and feels better; headach gone; heaviness remains, and much pain in the neck; muscular pains less; bowels free; sweated copiously last night; pulse 90, and soft; complains of thirst; tongue foul.

Continue the powders.

Vespere.—Had a sharp exacerbation of fever about noon, with return of headach; it is now subsiding.

Continue the powders, and let him take a purgative draught at daylight to-morrow.

18*th*.—Vomited a good deal of bile last night; the exertion brought on some headach. Slept pretty well afterwards at intervals, but took his powders regularly. Has been freely purged by the draught; fainted repeatedly; pulse soft, 90; tongue very foul; a good deal of thirst remains.

Vespere.—The febrile exacerbation to-day was much less marked, and later in appearing. His skin is now moist, and pulse 96.

19*th*.—Was again sick at same hour last night; ascribes it to drinking too much lemonade, &c. Had rather a restless night, and is slightly feverish this morning. Pulse 92; tongue very foul; considerable thirst; the pains in the body and joints are nearly quite gone.

Continue the powders as above.

About noon was much annoyed by vomiting; could not retain anything on his stomach. A mustard cataplasm was applied, and gave great relief. After its removal, he took, at slow intervals, a cup of arrow-root, and retained it.

Ordered to take three grains of quinine every fourth hour, omitting the James's powder.

20*th*.—Doing well; tongue cleaning; retains his food; had a little headach to-day, with slight heat of skin.

Continue the quinine every sixth hour.

21*st*.—Slept very well; tongue much cleaner; thirst gone; pulse 76; convalescent.

Continue the quinine twice a day.

From this date he progressively improved; and not having to contend against the debilitating effects of loss of blood and salivation, was very soon able to resume his duty. It will, I think, be readily admitted that this was a sharp fever, and that its whole history speaks strongly in favour of the quinine treatment,—even admitting that the patient would have recovered under the Johnsonian plan of treating such symptoms as he displayed. I had one very good opportunity of contrasting the results of the two plans in the same individual,—a young, dark-complexioned, melancholic, staff-officer, of bilious habit and slender frame. He was attacked with fever, from sleeping naked in the land-wind, after drinking more than usual at a

mess-dinner, soon after his arrival in the colony. His case gave me much anxiety; and after being bled and salivated, he had to go to the hills for three months, and recovered his strength but very slowly. He had no similar attack for nearly two years, and had shaken off his fears of the climate, when, after shooting in the swamps, under a burning sun, he was attacked with the premonitory symptoms of fever, lassitude, depression of spirits, &c., and disregarded them for some days. A severe paroxysm then set in, with great headach and irritability of stomach. For this I prescribed on my new system, to the great astonishment of a young brother officer, who had seen the case in my absence, and who, having served in Africa, remarked to me, "that if at Sierra-Leone, I should be regarded as about to murder my patient;" intimating that fever there set in much in the same way. The result made a convert of him, as my patient was convalescent in four days, to the astonishment of himself and his family.

I shall say no more regarding the advantages of this mode of treating Ceylon fever. Its superiority has caused its universal adoption throughout the colony by all who have ever tried it. A more interesting inquiry is, whether it would prove equally successful and applicable elsewhere?

From the circumstance of my present station being the rendezvous of Eastern steamers, I have had a few opportunities of treating *imported* fevers; and as far as they go, these cases certainly encourage my hopes. I shall here only give one of them, which was very deserving of remark, not only from its serving to contrast the two systems in question, but from its showing that quinine can be freely given with the greatest safety and advantage, notwithstanding the existence of decided visceral disease.

Case 5.—Lieutenant D., Royal Navy, aged 27. 16th February 1847. Summoned to go on board a steamer just arrived, and visit an officer reported to be dying. Went at 8 A. M., and found an emaciated sallow subject in a state of general fever, with his head shaved, having been delirious all night; a blister on the nape of his neck, and another on the epigastrium. His symptoms as follows:—skin hot and dry, especially the scalp; pulse small, sharp, and weak, 108; tongue furred; thirst intense; much irritability of stomach and some hiccup; complains principally of sharp pain through the liver, much increased by pressure or deep inspiration. General history:—was invalided for dysentery and liver from this station some years ago; returned to it last year, and, in the month of May, at Madras, had a severe attack of hepatitis, and has never since been wholly free from it; has had repeated

attacks of fever; got remittent severely on the coast of Borneo last August, for which he was salivated, and has never been well since. Was invalided at Penang a few days ago, and strongly dissuaded from attempting the overland route, but embarked five days ago, after fatiguing himself considerably. Three days since, fever set in with sharp pain in the side, for which a few leeches were applied, but gave no relief, and weakened him fearfully. He appears to have had a marked remission of fever yesterday afternoon, but was very bad last night, requiring to be kept in bed by force; can only speak now in a whisper, and expresses his conviction that he is dying. The treatment, in addition to the few leeches above-mentioned, has been the application of blisters to the head, side, and stomach, and the use of ten-grain doses of calomel at short intervals, which the surgeon states have been given at the patient's urgent request, he having been told that his only chance of reaching England was to keep his mouth sore all the way. No symptom of salivation at present; bowels rather loose; stools dark and fetid.

Ordered to take three grains of quinine in pill every third hour, beginning immediately.

He was now removed on shore.

Vespere.—Fever has remitted; pulse 88; has taken nine grains of quinine; some hiccup, but no vomiting; great thirst, which he is prohibited from gratifying. Two fetid black motions.

Ordered to continue the pills every third hour.

17*th.*—Had some broken sleep, and was not at all delirious; perspired very freely; skin soft and moderately cool; pulse 84. Complains much of thirst and pain in the right side; cannot bear pressure over the liver; the conjunctiva is quite yellow.

A purgative draught, consisting of one scruple of powder of rhubarb and one drachm of sulphate of potass, with ten grains of compound cinnamon-powder suspended in ten drachms of cinnamon-water, was ordered to be taken immediately.

To continue the quinine as before.

Vespere.—The draught produced three free motions, the first of which was very dark and offensive. He has not had much exacerbation of fever to-day beyond general increased heat about noon. The irritability of stomach has quite subsided, and he has taken a little arrow-root and jelly.

Continue the quinine to-night.

18*th.*—Rested badly, and complains much of his liver, as he cannot lie on his left side from the pain and weight in the right hypochondrium. Thirst great; tongue moist, but much furred.

The purgative draught, with one drachm and a-half of sulphate of potass, to be repeated.

Let him take two grains of quinine in solution every third hour, as he dislikes the pills.

Vespere.—Has had more fever to-day; the skin is now hot, and pulse 92; is very desponding, having parted with his homeward-bound friends; feels extremely weak, obliged to be lifted in bed, speaks in a whisper, and says he is sinking fast. Has taken some soup and custard-pudding.

10 P. M.—The fever has remitted; pulse 88, and some moisture on his skin; feels disposed to sleep; has taken his quinine regularly all day.

19*th.*—Had a good night, and is cheerful. Pulse 76, soft, but weak; skin cool; tongue moist; thirst less; the bowels have acted three times, and the discharges are much improved; the side is certainly easier.

Repeat the purgative, and continue the quinine every fourth hour.

From this date the fever gave no farther trouble, the quinine being gradually lessened, and omitted altogether on the 25th, when the liver claimed attention. As his strength improved, leeches were repeatedly used, followed by blisters, and a constant steady purgation maintained, under which system he gradually gained ground till the 15th March, when, having got chilled, fever came on severely with intense headach, and pains all over the body, the symptoms, according to his statement, being identical with those of the Borneo remittent. Quinine and James's powder were immediately had recourse to, and, by these alone, conjoined with purgatives, the fever was completely conquered in five days. I was particularly careful in watching the effect of this remedy, and noted with much satisfaction the relief gradually given by it to the "splitting" headach (as he termed it), and that painful tightness and sense of constriction in the head, for which, a few years ago, I should have at once ordered the application of leeches, and which I should have regarded as most positively forbidding the smallest quantity of quinine.

After this the hepatic symptoms gradually yielded to local treatment and constant free purgation. The patient's constitution being, in my opinion, half ruined by mercury, I never allowed him to use it in any shape, as he had been salivated again and again, taking calomel in fifteen grain doses, as he declared, till his tongue hung out of his mouth. Few things in my professional career have afforded me such heartfelt satisfaction as witnessing this fine young man's embarkation for home with renewed hope and spirits. The hot season was so far advanced, that I made him go round the Cape. He recovered perfectly, and a few weeks ago I saw his appointment to a sloop of war.

I have been favoured with the details of some fatal cases of fever which occurred in the Ionian Islands within the last few years, and under the care of an officer who has since been serving in this command, where he has had ample opportunities of seeing and practising the quinine treatment. The details of these cases are precisely similar to those so common here; and my friend assures me that he considers the treatment he now follows would be found perfectly applicable in his former station, and adds that a knowledge of it would have enabled him to save many lives. The means he employed unsuccessfully were those commonly used,—depletion, purgatives, diaphoretics, and mercury. The use of quinine was considered, he states, inadmissible in patients presenting such high febrile action,—the very state of things which, in Ceylon, it is given to remedy.

If the perusal of the cases I have given above (to which, did not my limits forbid, I might add many more) should induce* others to follow the plan, I beg to remind them that no delay should take place in giving the quinine boldly. It is not an infallible remedy; and where I have seen it fail, the general cause has been the allowing the fever to get a-head for some days before employing it. Of course I do not advise any empirical blind use of it; due regard must be paid to circumstances which may aid or oppose its taking proper effect. Pure air, and plenty of it, with careful nursing, are great auxiliaries.

During some years, although a great many fever patients have passed through my hands, and been treated on this plan, I have only failed with it twice; in one case, a man of broken constitution (not from intemperance), and who had had ague so constantly, that he cared nothing for it. Quinine had no effect whatever in averting the fatal result, the patient's whole body became deeply yellow, and he died in coma on the seventh day. This gentleman, it must be added, had fever upon him for some days, but neglected it, expecting it would end, as he said, "in a good shake." He never had the slightest headach, or any pain whatever, beyond an aching in the loins and thighs.

In another case, which occurred to me this year, the patient was also a man who had lived hard, and done a great deal of work in the West Indies and other hot climates. His fever began with very mild symptoms, and was attended to from the first. Under the use of quinine, he seemed free from every ailment but debility, and yet no entreaty could prevail on him to

* Judging from my recollections of fevers at home, I think I have seen many cases to which this treatment would be applicable. The remittent type is often seen in autumnal fevers, I believe.

take food. Gradually fever crept on, till it became ardent and continued; extreme debility, stupor, irritability of stomach, and a hot, dry skin, were the prominent symptoms, and quinine seemed powerless to save him. Under these circumstances, I gave him a bottle of Warburgh's fever drops (which I had had in my possession for nine years nearly), according to the directions laid down for its administration; a free perspiration followed, during which I still continued the quinine, and from that day amendment commenced, and he slowly recovered. What share the quinine had in this I do not know; it was steadily continued; but certainly, when the other means were used, it seemed highly improbable that the patient would survive forty-eight hours; and my opinion is, that without them the case would have been fatal. I have heard it reported several times that the remedy in question proved efficacious in such cases, but never had any personal experience of its effects before. It may, however, be useful to bear it in mind. The perspiration was evidently due to its action, for, when administered, the skin was perfectly hot and dry, and had been so for some days.

Point de Galle,
Ceylon, 14th August 1848.

Monthly
Journal of Medical Science
—NO. XXXIX. MARCH 1853.

these senega, squill, ammoniacum, and the different balsams and oleo-resins are in vogue. The pathological condition of the membrane, however, indicates, in addition, the necessity for the exhibition of a generous diet, in order that the vital force of the system may be increased, the power of expectoration maintained, and a reparative process instituted and sustained by the affected membrane.

Other important indications, alike applicable to this and epithelial bronchitis, are expressed in the treatment of the second pathological stage of the latter variety, to which the reader is referred. Other, yet minor, indications will in most cases arise out of the urgency of individual symptoms, as cough, all of which should receive the judicious attention of the physician.

(To be continued.)

ARTICLE II.—*Report of an Attack of Colic, which occurred as an Epidemic, among the troops at Newera-Ellia, Ceylon, in the commencement of* 1852. Communicated to the Superintendent of the Army Medical Department, by Assistant-Surgeon ALEXANDER SMITH, M.D., Her Majesty's 37th Regiment.

SIR,—In reply to your letter of the 16th November 1852, I beg to forward, for your information, the following notice of an epidemic of colic, which prevailed among the troops at Newera-Ellia, in the island of Ceylon, between the 12th February and the 20th June 1852.

The period, during which I was in medical charge of the troops at the above station, extended only from the 5th May to the 31st July of the present year, but included the period in which the epidemic prevailed with greatest severity; and, previously to the 5th May, I had an opportunity, at Kandy, of witnessing several of the more severe cases sent from Newera-Ellia to the Head-Quarter Hospital. From the observations I was then able to make, as well as from subsequent examination of the Medical Records, I have every reason to believe that the epidemic maintained the same character throughout; so that, without impropriety, the following may be considered a description of it in its whole course.

Newera-Ellia is situated in the interior of the island, within about six and a half degrees of the equator, at an elevation of 6000 feet; and, from the latter circumstance, it has a mean annual temperature under 60°. It consists of a small native village, the barrack, and European residences—all widely scattered over a space of ground several miles in extent, and which may be described as an irregular table-land, intersected by water-courses. The

more elevated parts are wooded, whilst the lower are covered with a coarse prairie-grass, and an occasional tree or bush of the Rhododendron species. The soil, where free from jungle, is of a very dark colour, and bears much the character of an inferior variety of peat, and, excepting in the hollows and by the streams, is rendered exceedingly dry by resting immediately on a layer of fine gravel, a few inches in depth, which acts the part of a universal drain.

From April to October, during the prevalence of the south-west monsoon, there are high winds and almost constant rain; but during the remainder of the year, the weather is dry and very enjoyable, and Newera-Ellia becomes the resort of all the European inhabitants who can possibly find means to leave the lower and more warm parts of the island.

During the time the epidemic lasted, the weather did not appear to present any character differing from that of other years at the same season, which included parts of both the wet and dry monsoons.

From the 12th February to the 5th June—at which latter date their numbers were reduced by thirty-two of the sick being sent to Kandy—the troops at the station consisted of a company of H. M. 37th Regiment, together with a few sickly men from head-quarters, and numbered, in all, about 100 men. Their duties were light, and consisted of the usual barrack guard and parades, a small night guard on the treasury, and an occasional escort. A few of the men were also employed as artificers in the engineer department, for which duty there was an extra allowance of pay. Their leisure hours were chiefly employed in the cultivation of vegetable gardens, in which they raised large quantities of cabbages and potatoes, and in rearing pigs and poultry.

The barracks are built on a dry bank of considerable elevation, round the base of which a rapid stream of very pure water runs over a pebbly bottom. They are commodious, clean, and well drained, and are not provided with cistern or other means for collecting rain-water. The whole of the water used for drink, cooking, etc., is drawn from the stream already mentioned, in unpainted wooden buckets or tubs, and the cooking utensils are of untinned iron.

The rations of the troops consist of a coarse variety of brown bread, and, for that country, remarkably good beef; for the supply of both which articles the commissariat department receives tenders from the trades-people of the place. A ration of English salted pork is also occasionally issued from the stores of the same department; from which also each man daily receives an allowance of arrack. In lieu of the latter, when not drawn, there is made a small allowance in money; a privilege often claimed at other stations in the island; but in Newera-Ellia, probably from the mild temperature, the arrack allowance is in almost every instance drawn

in kind. The other articles of diet, consisting of coffee, sugar, potatoes, potherbs, and salt, are daily purchased by a "marketing party," at whichever of the village stores the corporal in charge may consider he can best do so with advantage to the company; and I have ascertained, that during the whole of the period embraced in this report, the sugar was supplied by one store, and that it was throughout part of the same stock.

Until the commencement of the present year, Newera-Ellia was considered the most healthy spot in Ceylon; the troops returning from a residence there having always presented a striking contrast in complexion and general condition to those stationed at any other part of the island; and the duties of its medical officer had always been exceedingly light.

On my assuming charge of the detachment, the cases of colic under treatment in hospital—which was calculated to contain only twenty patients—and in barrack, where the remainder lay, numbered twenty-six; and, on medical inspection of the remainder of the detachment, I found the general appearance of the men very unhealthy, and that, with scarcely an exception, they presented on the gums, at their junction with the teeth, a distinct line of a grayish-black colour, the mark varying from the slightest trace on the gums of the second molar tooth of the upper jaw, where it could invariably be first detected, to a fringe of nearly one-eight of an inch in depth, extending completely round the gums of both jaws, and seen, although less marked, as well on the inner as on the outer surfaces of the teeth. When seen in the highest degree, it was very often accompanied by dark-gray coloured patches of irregular form, in the mucous membrane of the lips, at the points in contact with the discoloured part of the gum; and that appearance was not in any way connected with either the number of blood-vessels, or the quantity of blood in the part. In the most marked cases, the gums were spongy, and appeared, where they touched the teeth, as if ulcerated; and, in such cases, a disagreeable taste was complained of, and likened to that of "rotten wood;" and this in cases where mercury had not been administered.

The symptoms of the complaint, and their order of occurrence, were in general nearly as follows:—About a month before admission into hospital, the appetite became impaired, and there were frequent headaches, with pains referred to between the shoulders, loins, and lower limbs, but especially to the insides of the thighs, and to the knees. The bowels then became irregular, generally tending to constipation, although in a few cases there was diarrhœa. There were occasional twisting pains in the abdomen, and the evacuations, when observed, were always of a very dark colour. At length the bowels became completely constipated,—an occurrence always accompanied by excruciating abdominal pain of a twisting character, and chiefly referred to the regions of the umbilicus and hypogastrium, and more rarely to the epigastrium. The patient

was compelled to seek relief from his agony in constant change of posture; but the positions which seemed to bring most ease were, either lying on the face, or sitting up in bed, and clasping the knees with both arms, so as to press the abdomen against them. The pain was increased by sudden and partial, but much relieved by steady and uniform pressure, and was in the majority of cases attended with great retraction of the abdominal parietes, the muscles of which were contracted and felt very hard. In a few cases, however, the abdomen was much distended, and in these the escape of flatus afforded marked relief. There was, at the outset, almost constantly more or less vomiting, generally of matters tinged with bile, but never of stercoraceous matter; and there was much anxiety of countenance, with great irritability of manner. The face was generally flushed, and the skin hot and dry, and emitting a peculiar earthy odour. The tongue, towards its base, was much loaded with a creamy fur; but there was not much thirst. The urine was scanty and high-coloured. The pulse, during the violence of the abdominal pain, was reduced in frequency—in general to about 60—and was rather hard; but, as the pain abated, it rose to between 80 and 90, and became more soft; and in some cases it attained a considerably greater frequency. The nights were invariably sleepless, and, even after the abdominal pain had nearly ceased, there was an almost constant complaint of watchfulness from the intolerable gnawing pains experienced in the limbs, and especially in the knees, which, however, showed no signs of local affection. Under treatment, the abdominal pain generally began to abate on about the third day; but it was not until the fifth or sixth, and in many cases not until considerably later, that there was an evacuation from the bowels. The evacuations were always of a very dark colour, and were at first much indurated. On the bowels once acting freely, the abdominal pain, as a general rule, ceased, but the appetite remained impaired, and the strength much reduced,—the patient continuing to suffer from pains in the back and limbs for a considerable time after all other symptoms, with the exception of the mark in the gums, had disappeared, and he had returned to duty, after being about a fortnight in the hospital.

The disease showed a great tendency to relapse in the course of a few weeks, and a return of its symptoms was generally observed to follow either exposure to wet, or a night guard. In a few cases, there were as many as four attacks in less than as many months; and in all these the emaciation and reduction of strength became extreme. In four men who had been thus frequently attacked, and who had been among the first to suffer, there was an almost complete paralysis of the arm, but especially of the muscles of the forearm, which made its appearance gradually, and first attracted notice by the growing inability to button the clothes,—a loss of power which, at length, advanced so far as to render it impossible to raise

the arm from the side, or, unassisted, to perform the most trifling office. When, with assistance, the arm was raised and held out, the wrist "dropped;" but, although the extensor muscles seemed most affected, so little power remained in the flexors, that, on requesting the patients to grasp the hand, scarcely any pressure could be felt. In all the cases under treatment, the dark mark in the gums was to a greater or less extent visible. From the time of admission it did not appear to increase; and although it never entirely disappeared, yet in some cases, under treatment, it seemed to undergo a marked diminution.

Between the 5th May and the close of the epidemic, five cases proved fatal. In the first death was sudden, from the bursting of a vomica, the disease having supervened in the last stage of phthisis pulmonalis. The symptoms of colic had been well marked, and the gums presented the dark markings; but before death the bowels, which had been much constipated, acted regularly. On examination, however, the ileum presented, in two portions, well marked intussusceptions; and in one or two other positions, for the space of three or four inches, it was contracted to nearly the size of a large goose quill, the contracted portions being of a deeper colour than that presented by the rest of the intestine. There was no ulceration of the bowel, and beyond evidence in the lungs of advanced phthisis, there was no other unusual appearance. In two of the fatal cases there had been before death paralysis of the fore-arms, and in all, with the exception of the first already mentioned, the mode of termination was the same—death by coma supervening in a sudden attack of violent convulsions, which bore much the character of epilepsy, and which continued to recur, at short intervals, until the patients sank into profound coma, and at length expired. In all these cases, there was considerable effusion of serum into the subarachnoid spaces and ventricles of the brain; and the inner layer of the arachnoid membrane, on the upper surface of the hemispheres, to a considerable distance on either side the longitudinal fissure, and as far forward as the anterior lobes, was covered by what appeared to be a very remarkable development of the glandulæ pacchioni, which, in many positions, were placed so closely to each other as to resemble a continuous granular false membrane. The gums, in all, presented a broad dark line, and in one the mucous membrane of the lips was stained. The colour, which in life had been a grayish black, had after death, from the contrasting blanched surrounding tissues, a bluish tint. On removing a portion of the gum, the seat of colour was found to be close to the surface of the tooth, where the dark matter appeared to be deposited in the gum in a fringe of minute radiating lines, in their direction corresponding, or nearly so, to the long axis of the tooth.

In all the cases, the mucous membrane of the stomach, at its large extremity, presented a diffused patch of a dark gray colour, and close inspection showed it to depend on a deposit of innumerable small dark points, which, in colour, resembled the lines seen in the gums; and in two of the men, who had been during their lives addicted to hard drinking, and who, before death, had suffered considerably from epigastric tenderness, there was, near the pyloric orifice, a small oval ulcer, the surface of which was in both cases of an intensely black colour. The portions of the liver and spleen in contact with the stomach, presented surfaces the colour of which was much darker than usual, and contrasted strongly with the other portions of these organs. In all, there was more or less contraction at different points in the ileum, and in one there was a slight intussusception—so slight, however, that it became unfolded in the course of careful handling. Similar appearances could with the greatest ease be produced by gently pushing the natural portion of bowel forward upon the contraction, or by pressing the latter into the more natural portion beyond. In one instance, where there was no intussusception, the contraction was so complete as to require slight pressure to be made on the upper portion of bowel, in order to cause the contained gas to pass the narrow part, which it did with a slight explosion. At all the points of contraction, the bowel was of a slightly pink hue, and contrasted strongly with the more natural contiguous tissues. The corresponding mucous surfaces presented no unusual appearance, beyond an increase of colour corresponding to that seen on the peritoneal surface.

The colon contained a considerable quantity of very dark-coloured fæces, and in nearly all, presented several points near the sigmoid flexure, where the caliber seemed much smaller than is usually seen in examinations after death.

In all the cases, the mucous membrane of the caput cœcum was found, after careful washing, to be nearly black—the colour gradually disappearing in the mucous membrane of the ascending portion, into which it did not extend beyond a few inches. The colour arose from a deposit, in the mucous membrane, of small dark gray points, of a character similar to those seen in the stomach, but differing in degree, being more marked than in the latter situation. With the exception of a partially adherent pericardium, which one of the cases presented, and which was not the result of recent disease, no other unusual appearance could be detected.

As the symptoms above enumerated appeared to bear an exact resemblance to those described as proceeding from poisoning by some salt of lead, and did not approach in character to those of any other disease of which I had ever read, the treatment adopted was in accordance with the belief that they arose from that cause. On the supposition, therefore, that the epidemic arose from some article of the food or drink of the troops containing a salt of lead, sulphate of magne-

sia, acidulated with sulphuric acid, was daily administered to each individual in barracks, and, although the adoption of that plan did not arrest the disease, yet it was evident that soon after it was commenced the attacks became much less violent in character.

In the treatment of an attack in hospital, various plans were at first adopted; but experience soon indicated a few remedies, to which all others gave place. Of these, the following were among the most efficacious:—

Large enemata of water, as hot as could be borne, were introduced by means of the œsophagus tube of the stomach-pump passed as far as possible, and forced up until the patient could no longer bear the distention,—which was, in general, when a washhand basinful had been injected. Within the first few days, no approach to an evacuation was ever produced by these means, but the relief following its use was often very marked, and in cases where there was much distention from flatus, the temporary ease it afforded was striking.

Alum in half-drachm doses, combined with opium in large quantity, and given three times a-day, proved a valuable remedy, and together with hot water enemata and the early application to the abdomen of a large blister, generally within a couple of days rendered the pain endurable. Both blood-letting and leeching were tried at the commencement, and certainly afforded much relief, but it was found that whilst these proceedings much reduced the strength, the same good effects followed the application of a blister, without the resulting depression, an occurrence if possible to be avoided, when the liability to frequent relapses was taken into consideration.

When the above course had been followed for a few days, the abdominal pain very much abated; and at length, in from five to eight days, the bowels acted slightly—a result soon followed by comparative freedom from pain, so far as the abdomen was concerned; but an occurrence which seemed to be rather retarded by the administration of purgatives in any form. When there had once been a slight evacuation, castor oil, guarded by a small quantity of tincture of opium, generally caused the bowels to be several times moved, and from that time recovery commenced. More active purging seemed to do harm.

When the bowels had again acted and the pain abated, the opium was omitted; but the alum, given in infusion of calumba, and where the patient had previously suffered from remittent fever, with the addition of sulphate of quinine, was continued for a few more days.

In order to procure sleep and allay the intense aching pains of the back and limbs, which, after the abdominal pain had ceased, continued for some time to cause much suffering, large doses of morphia were found necessary.

Calomel and opium were found to be remedies of much value in removing pain; but the system appeared to be peculiarly liable to the occurrence of severe mercurial action; and it was remarked, that patients so treated, although the first amendment was rapid, ultimately recovered slowly, and long remained sallow and emaciated.

In order to ascertain if any article of food or drink supplied to the troops contained traces of lead, I examined specimens of everything used by them; but only in arrack and sugar could I detect any appearance calculated to excite a suspicion of the presence of that metal.

On passing a stream of sulphuretted hydrogen through arrack contained in a tube about one inch in diameter by about four in length, a slight brownish black discoloration was instantly produced, and was very apparent when the liquid was examined through the long axis of the tube. On one occasion, after a few minutes, the precipitate was deposited on the sides of the tube in the form of a dark waving line, and on another I succeeded in collecting a small quantity on a filter; but, from want of the necessary apparatus, its examination could not be pushed to the necessary extent. On dropping a small crystal of iodide of potassium into a wine glassful of arrack, or adding a strong solution of the same salt, and allowing it to stand for a few minutes, a decidedly yellow colour was produced; and the same result followed after the slightly acid re-action of the arrack had been removed.

As it only occurred to me to treat the sugar in simple solution in water, which remained unchanged when submitted to sulphuretted hydrogen and hydro-sulphate of ammonia, and as filtering did not render the solution colourless, neither the effects of sulphuretted hydrogen, nor of iodide of potassium, could be judged of; but on adding hydro-sulphate of ammonia, and gently agitating the tube, a dark brown cloud formed at the junction of the test with the solution, and gradually increased as the hydro-sulphate descended the tube. On submitting to similar treatment a specimen of English loaf sugar, and a finer variety of brown sugar used in the family of one of the European residents which escaped the epidemic, I failed to detect any appearance of a precipitate.

From want of sufficient apparatus, I was unable to attempt carrying the examination of the suspected articles to that extent which would have removed all doubt; but feeling satisfied that the appearances seen indicated the presence of one or more of a few metals among which lead is classed, and the symptoms and history of the epidemic having indicated poisoning by lead, I felt justified in believing, that there existed more than a probability that the precipitates arose from the presence of lead in either the arrack or sugar, or in both.

From my statements on the subject, the issue of arrack was dis-

continued, and a native sugar called jaggery, obtained from the juice of the cocoa-nut tree, was substituted for that previously used by the troops. The issue of arrack ceased on the 28th May, and the suspected sugar was discontinued two days later. On the 10th June the last case of colic was admitted into hospital, and on the 20th of the same month there was no longer any case of that disease under treatment. Within a week of the date on which sugar and arrack ceased to be used, the appearance of the troops began to improve; and from the 10th June until the 31st July, when I left the station, there had been no return of the complaint, neither had there been any admissions into hospital for other diseases, with the exception of one or two cases of chronic ophthalmia, sent from head-quarters for the benefit of change. And when, on the day previous to my leaving the station, I inspected the detachment, I found that the men had regained much of their former robust and healthy appearance. The dark line, however, still remained visible in the gums—faintly in many, but in all sufficiently well marked to be easily recognised.

Whilst the epidemic prevailed among the men in barracks, the women and children suffered in a like degree, and two officers, whose residences were distant about a quarter of a mile from barracks, were also attacked; whilst, at a distance of more than a mile from the same place, individuals in two families were similarly affected. In all these cases I ascertained, that sugar from the same stock which supplied that used by the troops, had been used in some part of the food; but I could not discover that, among the natives who use jaggery alone, any case of colic had ever occurred.

I was also able to learn that, in the other resident families who entirely escaped the complaint, the sugar used had been procured from quite a different source, and had in appearance nothing to identify it with that on which my suspicions rested.

It may be interesting to mention, as perhaps tending to throw some light on the origin of the dark line in the gums, that, in the only three cases under my notice, in which the tooth-brush was regularly used, there was no trace of a dark mark in the gums, although the symptoms of colic could not be mistaken; and that I fancied I could trace a distinct relation between the quantity of "tartar" on the teeth, and the intensity of the marking in the gums.

The accompanying return is intended to show the numbers of admissions and discharges for colic, during the prevalence of the epidemic; but the column of deaths is inaccurate, as five cases terminated fatally between the 5th May and 20th June, and there was one death in April.—I have the honour to be, etc. etc.

Return of admissions and discharges for Colic in the Detachment Hospital, H. M. 37th Regiment at Newera-Ellia, from the 12th February to the 20th June 1852.

Strength.	Date.	Admitted.	Discharged.	Died.	Remained in Hospital	Remarks.
87	February 12	1	...	...	1	
...	... 13	...	...	...	1	
...	... 14	1	...	...	2	
...	... 15	...	...	...	2	
...	... 16	...	1	...	1	
...	... 17	...	...	...	1	
92	... 18	...	...	...	1	
...	... 19	...	1	...	...	
...	... 20	...	...	...	...	
...	... 21	1	...	...	1	
...	... 22	...	...	...	1	
...	... 23	1	...	...	2	
97	... 24	...	1	...	1	
...	... 25	...	...	...	1	
...	... 26	1	...	...	2	
...	... 27	1	...	...	3	
...	... 28	1	...	...	4	
...	... 29	...	1	...	3	
...	March 1	...	...	...	3	
...	... 2	1	...	...	4	
...	... 3	...	...	...	4	
...	... 4	...	2	...	2	
...	... 5	2	...	...	4	
...	... 6	...	...	...	4	
...	... 7	...	...	...	4	
...	... 8	1	...	...	5	
...	... 9	...	...	...	5	
...	... 10	...	5	...	...	
...	... 11	...	...	...	...	
...	... 12	...	...	...	...	
...	... 13	...	...	...	...	
...	... 14	1	...	...	1	
92	... 15	...	...	...	1	
...	... 16	1	...	...	2	
...	... 17	1	1	...	2	
...	... 18	...	...	...	2	
...	... 19	...	...	...	2	
...	... 20	1	...	...	3	
...	... 21	...	...	...	3	
...	... 22	1	...	...	4	
...	... 23	1	...	...	5	
...	... 24	1	...	...	6	
...	... 25	...	...	...	6	
...	... 26	...	...	...	6	
...	... 27	...	2	...	4	
...	... 28	1	1	...	4	
...	... 29	1	...	...	5	
...	... 30	2	...	...	7	

Return of admission, etc.—continued.

Strength.	Date.		Admitted.	Discharged.	Died.	Remained in Hospital.	Remarks.
92	March	31	...	1	...	6	
...	April	1	1	...	...	7	
...	...	2	...	...	...	7	
...	...	3	...	2	...	5	
...	...	4	3	...	...	8	
...	...	5	1	3	...	6	
..	...	6	...	...	...	6	
...	...	7	...	...	...	6	
...	...	8	...	...	...	6	
...	...	9	1	2	...	5	
...	...	10	1	2	...	4	
...	...	11	...	...	...	4	
...	...	12	1	...	...	5	
...	...	13	1	1	...	5	
...	...	14	1	...	...	6	
...	...	15	...	1	...	5	
...	...	16	3	...	...	8	
...	...	17	5	...	...	13	
...	...	18	2	...	...	15	
...	...	19	2	3	...	14	
...	...	20	1	1	...	14	
...	...	21	4	5	1	12	
...	...	22	4	...	...	16	
...	...	23	2	4	...	14	
96	...	24	...	3	...	11	
...	...	25	...	2	...	9	
...	...	26	...	3	...	6	
...	...	27	...	...	...	6	
...	...	28	3	...	...	9	
...	...	29	...	3	...	6	
95	...	30	...	...	...	6	
...	May	1	4	...	...	10	
...	...	2	6	...	...	16	
...	...	3	4	...	...	20	
...	...	4	4	1	...	23	
...	...	5	3	...	...	26	
...	...	6	1	1	...	26	
...	...	7	1	...	...	27	
...	...	8	...	...	...	27	
...	...	9	2	...	...		
...	...	10	...	...	...	29	
...	...	11	3	2	...	30	
...	...	12	3	2	...	31	
...	...	13	1	1	...	31	
...	...	14	...	5	...	26	
...	...	15	3	3	...	26	
92	...	16	1	3	...	24	
...	...	17	...	2	...	22	
...	...	18	3	2	...	23	
...	...	19	1	...	...	24	
...	...	20	2	2	1	23	

Return of admission, etc.—continued.

Strength.	Date.		Admitted.	Discharged.	Died.	Remained in Hospital.	Remarks.
92	May	21	...	1	...	22	
...	...	22	2	...	1	23	
88	...	23	3	...	...	26	
...	...	24	...	...	...	26	
...	...	25	1	1	...	26	
...	...	26	9	...	...	35	
...	...	27	12	...	...	47	
82	...	28	1	...	1	47	
...	...	29	4	...	...	51	
...	...	30	4	3	...	52	
...	...	31	2	...	...	54	
...	June	1	...	8	...	46	
...	...	2	...	...	...	46	
...	...	3	...	3	...	43	
...	...	4	...	...	...	43	
...	...	5	...	32	...	11	32 sick sent to head-quarters at Kandy.
56	...	6	...	8	...	3	
...	...	7	...	...	...	3	
...	...	8	1	...	...	4	
...	...	9	...	...	...	4	
...	...	10	1	...	...	5	
...	...	11	...	...	...	5	
...	...	12	...	...	...	5	
...	...	13	...	...	...	5	
...	...	14	...	...	...	5	
...	...	15	...	...	...	5	
...	...	16	...	1	...	4	
...	...	17	...	1	...	3	
...	...	18	...	1	...	2	
...	...	19	...	...	...	2	
...	...	20	...	2	...	...	

The actual number of deaths was six; but the mistake cannot be corrected without a communication from Ceylon.

ARTICLE III.—*Analysis of the Cases of Scarlatina that occurred in James Donaldson's Hospital during the Autumn of* 1852; *with some Remarks on the present state of our Knowledge of that Disease.* By J. D. GILLESPIE, M.D., F.R.S.E.[1]

(*Read before the Medico-Chirurgical Society,* 19*th January* 1853.)

SCARLET FEVER has prevailed so extensively in Edinburgh during the last few years, and has occasionally committed such ravages among the younger branches of the community, that no opportunity should be neglected of adding to our knowledge of this very preva-

[1] These observations were made when acting for Dr Gillespie, senior, who has the medical charge of the hospital.—J. D. G.

ON

ACUTE OPHTHALMIA,

AS IT OCCURRED IN

THE LEFT WING OF H.M.'s 37TH REGIMENT

DURING

1851-52,

Whilst stationed at Colombo, in Ceylon.

BY

J. W. FLEMING, F.R.C.S.
SURGEON TO THE REGIMENT,
FELLOW OF THE ETHNOLOGICAL SOCIETY,
MEMBER OF THE EPIDEMIOLOGICAL SOCIETY OF LONDON, ETC. ETC.

LONDON:
HENRY RENSHAW, 356, STRAND.
MDCCCLXI.

"*Ophthalmia* is, in my estimation, one of the most important "subjects to which the attention of a Military Surgeon can "be directed."

BALLINGALL.

LONDON:
SAVILL AND EDWARDS, PRINTERS, CHANDOS STREET,
COVENT GARDEN.

ON

ACUTE OPHTHALMIA,

ETC.

THE 37th Regiment embarked in November, 1846, and landed at Ceylon in the following March. They were stationed at Colombo in 1850, when acute ophthalmia appeared for the first time in the left wing of the corps. Up to that period the entire regiment had enjoyed an almost complete exemption from ophthalmia for a number of years, and hence it became a matter of much interest to discover the cause of the sudden outbreak of a complaint which has often proved a source of regret and of much anxiety to commanding officers, and of vexation and disappointment to surgeons. It has, even on more than one occasion, led to the breaking up of garrisons, and affected the efficiency of whole battalions.

A. It is right to state, *in limine*, that no disposition existed on the part of the men to decline reporting themselves when attacked by the disease. The non-commissioned officers and privates had strict injunctions to report immediately any case of

sickness or indisposition that might come to their knowledge; and close observation of the various cases enables me to state, with every confidence, that no reasonable grounds exist for suspicion that the disease was produced or aggravated by design. In a word, the *morale* of the regiment was unexceptionable.

A circumstance added additional obscurity to the investigation into the causes of this sudden outbreak of ophthalmia in the left wing of the 37th Regiment. The artillery and H.M.'s 15th Infantry, their cotemporaries and co-residents in the place, enjoyed a comparative exemption from the disease, all the more remarkable that the native population suffered a good deal from it at the time. This circumstance of its being all but confined to four companies of a single regiment did not tend in any way to clear up the difficulty as to its origin; and, in the absence of other data, it may be interesting to know the various causes assigned by the men themselves.

CAUSES ASSIGNED BY THE MEN THEMSELVES.

14 ascribed the disease to exposure to the night air.
12 to the sun's rays.
5 to sitting in the wind or currents of air.

3 to dust blown into the eyes.
2 to the barrack-room door being left open at night, and thus getting cold.
1 to dust from breaking stones.
15 to catching cold.
24 to no particular cause.

Of these patients,

33 first felt the affection at night.
43 „ „ during the day.

And 35 while on guard.
1 on parade.
5 whilst in hospital.
1 „ on orderly-room duty.
34 „ in their barrack-room.

In 31 it first appeared in the right eye.
40 „ in the left eye.
5 „ in both eyes.

For my own part, I experienced the usual difficulties all, I believe, have experienced in their inquiries into the cause of the disease. The barrack-room accommodation as to lavatories was by no means good;* but as to the other blameable causes, they were such as existed elsewhere without giving

* The lavatories, particularly of the Hospital, have been greatly improved since the above was written.

rise to the same results. The men themselves have described or named them in their enumeration of the causes to which they ascribed the disease. To these I have nothing to add. In respect of the influence exercised by seasons and climate, the following tables give all the information I could collect:—

INFLUENCE OF SEASON.

I. The order of admission of patients to the Hospital, keeping in view the important fact of the largest numbers, was—

In April were admitted		15	In January . .		3
June	„	10	February .		7
February	„	7	March . .		6
July	„	6	April . .		15
May	„	6	May . . .		6
August	„	6	June . . .		10
March	„	6	July . . .		6
September	„	5	August . .		6
October	„	3	September .		5
January	„	3	October . .		3
November	„	2	November .		2
December	„	1	December .		1*

The disease then showed no curve or line having a reference to season. The cases amounted to

* A glance at the table will best explain the influence of cool weather over the disease.

seventy-six in all, of whom six remained from the preceding year. Even the companies composing the wing showed a capriciousness, in respect of the disease, admitting of no explanation; for

Company D presented 40 cases.
„ G „ 31 „
„ L „ 4 „
„ F „ 1 case.

II. During the period referred to, the extreme range of the

		Thermometer		and	*Barometer*	
In April	was	67°	to 86°	„	29·35	to 30·29
May	„	80°	to 83°	„	29·95	to 30·02
June	„	78°	to 82°	„	30·2	to 30·28
July	„	78°	to 81°	„	30·01	to 30·28
August	„	79°	to 80°	„	30·2	to 30·29
September	„	78°	to 81°·50	„	30·3	to 30·29
October	„	78°·50	to 82°	„	30·2	to 30·31
November	„	78°	to 82°·50	„	30·2	to 30·33
December	„	77°	to 81°	„	30·3	to 30·35
January	„	77°	to 84°	„	29·30	to 29·85
February	„	78°	to 86°	„	29·30	to 29·85
March	„	81°·50	to 88°·50	„	29·30	to 29·85

The average annual fall of rain at Colombo is about seventy-two inches.*

* The monsoons obviously influence the disease; the N.E. monsoon (from December till March) is comparatively healthy—the S.W. monsoon (from April to September) the reverse.

III. No military surgeon who has served in tropical and hot countries generally, will feel surprised on learning that, whilst the average admission for ophthalmia is in the British Islands nineteen per thousand of the mean strength, the ratio prevailing in Ceylon is seventy per thousand of the mean strength; but even in this there exists, if one may so say, a caprice which seems to defy all inquiry into the cause of such differences. The following table will best exhibit my meaning:—

AVERAGE OF ADMISSIONS FOR OPHTHALMIA TO THE MEAN STRENGTH IN VARIOUS CLIMATES.

Annual Admissions per 1000 *of the Mean Strength.*

Sierra Leone	12	per 1000.
United Kingdom	19	,,
Mauritius	32	,,
Cape of Good Hope (Town)	32	,,
St. Helena	35	,,
Cape (Frontier)	43	,,
Canada	45	,,
Ceylon	70	,,
Leeward Command	89	,,
Jamaica	90	,,
Gibraltar	97	,,
Bermuda	99	,,
Malta	102	,,
Ionian Isles	102	,,

In Ceylon the setting in of the south-west and north-east monsoons are considered as particularly inimical to health; and by a reference to the table it will be found that the largest number of admissions occurred in April and June; after which they gradually decline, and again increase in October and until after December.

TREATMENT.

B. Seeing that the inquiry into the causes of ophthalmia as it occurred turns out so unsatisfactory, it is pleasant to be able to record that this cannot be said of the treatment. Notwithstanding the large number of cases treated, not one man, with a single exception, left the Hospital with loss or even impairment of vision, nor with a speck upon the cornea; a most gratifying result, considering the severity and extent of occasional corneal ulcerations of many of the cases. This success, I think, may be fairly attributed to the careful consideration of the requirements of each individual case, and the absence of the common routine practice too often followed in the management of this class of diseases, ending generally in disappointment to the surgeon and misery to the patients.

Except in severity, persistence, or complication,

the chief symptoms varied but little in each case. Those most complained of were a feeling as if some foreign body, as a grain of sand, or dust, were in the eye, increased lachrymation, great intolerance of light, and a hot, burning sensation when the eye-lids were separated, occasional headache, especially at night. The vascular injection was generally found to commence in the palpebral, and gradually extend over the ocular layer of the conjunctiva. The congestion, though slight at first, became afterwards so great as to obliterate all trace of the vessels. The most common complication was the occurrence of one, two, or more, and for the most part three, small ulcers, situated almost always around the edge, or within the upper half of the cornea, and very rarely indeed were these found in the lower half. These are described by Morgan as "healthy ulcers of the cornea, not attended by discoloration nor loss of transparency in the part," and "appearing as transparent spots or depressions frequently only to be seen in a side view." In all the cases where the cure was slow, it arose from the constant recurrence of these ulcers almost immediately after the healing of their predecessors. In one case only, that of a highly scrofulous young man, did an ulcer of this description degenerate

into what may be called an unhealthy, sloughing state; which, however, by appropriate treatment,* did well, and left no trace behind.

The only case of loss of vision occurred in the person of an old, worn-out and free-livings oldier, who had previously lost his right eye in the West Indies. When admitted, the symptoms appeared slight, but during the night they had much increased, and by the next morning the cornea was found to be in a high state of inflammation, complicated with iritis. The most active remedial measures failed to make any impression, and unfortunately, the cornea gave way the following morning. This patient was eventually sent home as an invalid.

In the treatment of these cases my great object was to reduce speedily the *local* inflammation at as little expense as possible to the *general* strength. To attain this, lowering or antiphlogistic measures were employed with the greatest caution, and merely long enough to overcome the more acute symptoms; and instead of "the application of a large number of leeches round the orbit," a constant and regular drain upon the congested vessels was maintained by the daily application of one or two, seldom more

* Chiefly the daily instillation into the eye of pure cod-liver oil.

than three, and generally only one leech, to the inner canthus of the affected eye. If the cornea was free from irritation, a saturated and strained solution of acetate of lead was instilled into the eye every night and morning. When small ulcers or specks were present, the following collyrium was substituted:—

℞ Gum. Opii, gr. iv.
Sulph. Zinci, gr. x.
Aquæ Bullient. ℥j. M.

This, when cool, was also used twice a day. Small doses of rhubarb, carbonate of soda, and quinine were administered with the very best effect. Two very obstinate and protracted cases of strumous ulceration of the cornea eventually yielded to a course of iodide of potassium and tincture of iodine, and applied locally in the proportion of two grains of the former and half a grain of iodine to one ounce of distilled water.

To relieve the intolerance of light, ever a most distressing symptom, the extract of belladonna was rubbed around the orbit, and always afforded perfect relief, attributable probably to the sedative influence on the retina possessed by this substance.

Mercury was given only in two cases of iritis,

and one of severe corneitis, and of course with the usual marked effect on the inflammatory symptoms.

Each man was supplied with a separate basin, and had his own towel. All were given to understand that on the assiduity with which the warm-water fomentations were used depended the shortness or protraction of the cure, and the consequence was, that nearly the whole day was occupied in applying this valuable adjuvant, and with corresponding advantage over the disease and comfort to the patient.

The bowels were regulated by occasional doses of infusion of senna with sulphate of magnesia and quinine. All evacuants, emetics, indiscriminate use of mercurials, violent purgatives, general bleedings, blisters, setons, irritating ointments, and such like "heroics" were avoided; with what result the cases best show.

As soon as the more acute symptoms subsided, which generally took place in two or three days, the spoon diet was changed to low, and if this agreed, to half. The men, with one exception, were not confined to bed, nor yet to the ward, but exposure to moderate light and the cool, refreshing air, with gentle exercise during the mornings and

evenings, was permitted; and with the increased diet, &c., certainly did more good than "black draughts, leeches, and green shades" could have done.

When the patients, from long confinement or otherwise, became weak, or the appetite failed, and when the conjunctival membrane showed a disposition to assume a soft, velvety, and relaxed condition, solution of quina, or the muriated tincture of iron, was administered twice a day. I have not met with a single instance of what is termed "granular conjunctivitis."

COMPLICATIONS.

C. What forcibly attracted my attention in the history of so many of these cases of ophthalmia was the occurrence of that peculiar complication occurring so frequently in northern countries, and nowhere, I believe, more so than in the British Islands. The complication I allude to was the frequency of phlyctenæ and of excavating colourless ulcers of the cornea—destructive ulceration, without much, or indeed any appearance of inflammation; a disease which in Britain much more frequently attacks children and young persons than adults. Here

in Ceylon it attacked the adult. It has sometimes been called the "transparent" ulcer of the cornea,

as it represents a transparent pit or depression of the cornea: and sometimes it has been called the "healthy" ulcer of the cornea—an appellation not strictly applicable to any spontaneous ulceration. Be this as it may, it gives rise to a trough or ulcer, always requiring very careful treatment. The ulcers have been usually considered as the sequelæ of phlyctenæ, but they are not invariably so. Whilst undergoing the process of filling up with a bluish lymph, the surgeon must be careful not to interfere with this process. On its success depends the safety of the eye. It is a critical moment for the patient, and an anxious one for the surgeon.

It is interesting to trace the steps adopted by nature to repair the loss in the cornea with the least detriment to the eye. At a certain moment,

which the constitution can alone determine, acted on by what Mr. John Hunter would probably have called "the stimulus of necessity," it commences the work of reparation—one or two pencils of fine vessels carrying red blood, shooting from the circumference towards a centre, that centre being the ulcer itself. A mass of pale bluish lymph is seen to fill up the excavation to a level with the healthy cornea. These vessels must on no account be interfered with. After a time they become pale, red blood ceases to circulate in them, and they finally disappear. By this time, or soon after, the lymph filling up the ulcer has lost its bluish colour, becoming as transparent as the healthy cornea, and the eye recovers its natural appearance. The frequency of these complications no doubt materially influenced my treatment of the disease. Four years' residence in Ceylon had not acclimatized the regiment in respect of the ophthalmia, nor so affected the European constitution as essentially to alter the character of a complication which many might be disposed to think peculiar to cold, or at least to temperate climates.

THE END.

ART. IX.—*The Causes and Treatment of Imperfect Digestion.* By ARTHUR LEARED, M.D., Physician to the Great Northern Hospital, &c. Second Edition.—*London*, 1861. pp. 218

THIS little work is a useful one, and though not containing much that is actually new, places what is already known before the reader in a pleasant, practical, and suggestive manner. We will allude to one statement made by the author (pp. 126 and 193), to which we cannot at all assent—viz., that sarcinæ ventriculi almost invariably indicate the presence of organic disease of the stomach. We are aware that this opinion prevails, but we are quite sure, from actual observation, that in a great number of healthy stomachs these vegetable organisms are to be found. This fact was made known four or five years ago to the Pathological Society of London. In the appendix, some interesting observations are given on the proximate cause of copious flatulence, on heartburn, and on the use of pepsin as a remedy.

ART. X.—*On Acute Ophthalmia as it occurred in the Left Wing of H.M.'s 37th Regiment, during* 1851–52, *whilst stationed at Colombo, in Ceylon.* By J. W. FLEMING, F.R.C.S., Surgeon to the Regiment.—*London*, 1861. 8vo, pp. 16.

THE symptoms noted by Mr. Fleming were vascular injection, commencing in the palpebral and extending over the ocular portion of the conjunctiva, slight at first, but afterwards so great as to obliterate all trace of vessels; a feeling as if of a foreign body in the eye; lachrymation; intolerance of light; a hot, burning sensation when the eyelids were separated; occasional headache, especially at night; with phlyctenæ, followed by one, two, or more small transparent ulcers round the edge of the cornea. The acuteness of the symptoms subsided generally in two or three days. Not one man, with the single exception of an old worn-out soldier who had previously lost an eye in the West Indies, left the hospital with a speck on the cornea, or impairment of vision. Nor did Mr. Fleming encounter a single instance of granular conjunctiva.

The causes of the disease assigned by the patients were, catching cold, exposure to the night-air, exposure to the sun, sitting in the wind or currents of air, dust blown into the eyes, and dust from breaking stones.

Mr. Fleming speaks of the cases which he met with as a "sudden outbreak of ophthalmia." The whole number of cases amounted to seventy-six, six of these were remaining over from December, 1851. The numbers occurring in 1852 were, in January, 3; February, 7; March, 6; April, 15; May, 6; June, 10; July, 6; August, 6; Sept., 5; October, 3; November, 2; December 1. The progress of the disease through the four companies forming the left wing, the numerical strength of which is not stated, scarcely vindicates the names of a "sudden outbreak," and the occurrence of 70 cases in twelve months is trifling, when compared with what has happened in other instances. Edmonston, for example, in the course of sixty-five days of February,

March, and April, 1802, met with 133 cases in the 2nd Regiment of Argyleshire Fencibles; while Vetch, in the 2nd battalion of the 52nd Regiment, which numbered somewhat above seven hundred men, from August, 1805, till August, 1806, had 636 cases, including relapses.

In regard to the treatment, Mr. Fleming tells us that he made it his great object "to reduce speedily the *local* inflammation at as little expense as possible to the *general* strength. To attain this, lowering or antiphlogistic measures were employed with the greatest caution, and merely long enough to overcome the more acute symptoms." (p. 11.) One, two, or three leeches to the inner canthus, a solution of acetate of lead dropped on the eye night and morning, a collyrium of sulphate of zinc with opium, extract of belladonna round the orbit, warm-water fomentations assiduously used, and occasional laxatives, made up the general treatment. With the exception of the acetate of lead and the sulphate of zinc, which are or ought to be discarded, as we think, from ophthalmic practice, all this was judicious; as was the occasional exhibition of rhubarb, carbonate of soda, quinine, and muriated tincture of iron. We have not much faith in solutions of iodine or iodide of potassium applied locally. We believe that in such cases of ulcers of the cornea as Mr. Fleming met with, the plan he adopted of bringing the eye under the anodyne influence of belladonna is the safest and the best; and that saline solutions, especially those of lead and zinc, are apt to produce only additional irritation, and to lead to opaque cicatrices. The instillation of pure cod-liver oil, which he used in one case in which the ulcer assumed a scrofulous character, is comparatively innocent. "All evacuants," says Mr. Fleming, "emetics, indiscriminate use of mercurials, violent purgatives, general bleedings, blisters, setons, irritating ointments, and such like "heroics," were avoided." (p. 13.) We have no doubt that his success "may be fairly attributed to the careful consideration of the requirements of each individual case, and the absence of the common routine practice too often followed in the management of this class of diseases." (p. 9.)

On taking up this pamphlet, we were naturally led to suppose that under the name of "Acute Ophthalmia," we should meet with an account of an occurrence of the contagious inflammation of the conjunctiva, commonly called the Egyptian ophthalmia, and which has so often proved the scourge both of British and of Continental armies. Of this disease every one knows that a purulent discharge from the inflamed membrane is an early and a leading symptom. As no mention, however, is made by Mr. Fleming of this symptom, nor of the chemosis by which it is attended, and as he expressly states regarding one of the most remarkable, as it is the most intractable of the sequelæ of purulent ophthalmia—namely, granular lids—that it did not occur in any of his cases, we must conclude that what he met with in the left wing of the 37th Regiment at Colombo, during 1851–52, consisted merely in catarrhal, phlyctenular, and traumatic conjunctivitis. This conclusion is supported by the symptoms mentioned by Mr. Fleming, and to which we have already referred. Fifty or sixty years ago, military surgeons might have been forgiven for such a title as "An

Account of an Ophthalmia," or "On Acute Ophthalmia," but now that the nosology of the eye has been so carefully studied, and so many treatises and manuals published on eye-diseases, the distinctions observed in which are founded on anatomical diversities of texture and on pathological phenomena of easy recognition and indubitable importance, we should as little excuse the surgical writer who should reject the precision of modern ophthalmology, and go back to the vague nomenclature of bygone days, as we should some dabbler who, ignorant of the technicalities of botany, should attempt to describe to us a tree by saying it was of a middle size, its fruit nearly as big as an orange, containing seeds extremely bitter and poisonous, and that it grew in Ceylon; all which description he might avoid by using, if he knew it, the scientific name of the tree he meant, while he would convey to us a meaning which could not possibly be mistaken.

Art. XI. — *The Anatomist's Vade-Mecum: a System of Human Anatomy.* By Erasmus Wilson, F.R.S. Eighth Edition.—*London*, 1861. pp. 732.

In issuing this edition, the author takes occasion to thank friends for several suggestions and contributions. Additional illustrations, rendering this volume more complete than the preceding edition, will contribute to the extension of its popularity.

Art. XII.—*The Natural History Review:* a Quarterly Journal of Biological Science. Edited by Professors Carpenter, Busk, Huxley, and others. Nos. 1, 2, and 3.—*London.*

Considerable attention has been attracted by the new series of this review, which has lately made its appearance under the above distinguished editorship. The general character of the critical and original papers contained in the numbers which have already appeared augurs well for its future position in scientific literature, and promises a fulfilment of the design of the editors, who announce it as intended to stand in the same relation to naturalists, and other persons interested in biological inquiries, as that which is occupied by the ordinary quarterly reviews in respect of men of letters and the general public. Amongst that portion of the contents which bears more directly on human anatomy and physiology, is a series of three papers from the pens of Professors Huxley and Rolleston, and Mr. J. Marshall, "On the Cerebral Characters of the higher Apes as compared with those of Man." The great interest which this subject has lately excited induces us to lay before our readers some of the conclusions arrived at by the authors. Professor Huxley's essay is avowedly an impugnment of one of the propositions enunciated by Professor Owen in his Classification of Mammalia founded on cerebral characters. It will be known to most that the latter eminent naturalist has placed man in a separate sub-class "archencephala," because his psychological powers, in

association with his extraordinarily developed brain, entitle the group which he represents to equivalent rank with the other primary divisions of the mammalian class of vertebrates. The structural difference which Professor Owen considers the main point of distinction between the brains of the ape and man, is the presence in the latter of a third or posterior lobe, which not only overlaps but extends backwards beyond the cerebellum, and the internal anatomical structure of which is characterized by the posterior horn of the lateral ventricle and the hippocampus minor. Professor Huxley cites a number of authorities to prove that no one of the three characters thus specified is distinctive of, or peculiar to, the genus *Homo;* and he further asserts that the points of differentiation between the brains of man and the higher apes are of far less importance than those cerebral characters which separate *Pithecus* or *Troglodytes* from the lowest quadrumana—e.g., the *Lemuridæ*. As Mr. Huxley's paper is not so much one of original research as a compilation of previously existing evidence, having indicated its tenor, we proceed to notice the two more important essays by Professor Rolleston of Oxford, and Mr. Marshall of University College Hospital; that by the former observer giving an account of the examination of the brain of a young orang (*Pithecus Morio*); that by the latter of the dissection of the brain of a young chimpanzee (*Troglodytes niger*). On what may be called the external anatomy of the orang's brain, Dr. Rolleston's examination has brought to light the following facts: When the brain is *in situ*, before the removal of the dura mater, the superior surface of the cerebellum is entirely covered by the cerebral hemispheres, which moreover project a little beyond it posteriorly. In the instance examined, the cerebral mass did not project laterally beyond the boundaries of the cerebellum, as in man; but that this is at least not a constant point of difference the author proves by reference to the brain of another orang, of a chimpanzee, of several *Cercopitheci*, and an *Inuus* preserved in Christ Church Museum. His investigations, however, have led him to the belief that the cerebral hemispheres in the apes are, as a rule, more wall-sided—that they bulge less laterally than in man. A greater importance is due to the curtailment in the simious brain of the downward growth of the posterior lobes, a line drawn along the edge of the cerebral hemisphere where that hemisphere overlies the cerebellum being much less horizontal than in the human subject, the cerebrum appearing to a certain extent encroached upon by the cerebellum. Diminished upward extension of the posterior and anterior lobes, shown by the line bounding the superior edge of the hemispheres, describing a much more even curve than in man,—the diminished antero-posterior growth of the frontal lobe evidenced by the more vertical direction of the Sylvian fissure and its parallel convolutions,—the smaller antero-posterior extent of the corpus callosum, which permits the corpora quadrigemina to come into view on the removal of the brain from the skull, are also most important points of difference.

Professor Rolleston considers that the difference in the absolute weight of the orang's and human brain is a more sharply differentiating

PRACTICAL REMARKS

ON

THE ENDEMIC DYSENTERY

OF

COLOMBO,

ISLAND OF CEYLON.

BY

J. W. FLEMING, F.R.C.S.

Surgeon, H. M's. 37th Regiment.

BENARES:

MEDICAL HALL PRESS.

MDCCCLX.

" It will not be disputed, that there occur few
" diseases in Military life which may not be arrested
" by means of art, if the means be applied with
" skill at an early period; and that there are few
" which do not imply danger, if they be left to
" themselves, or if they be feebly treated."

JACKSON.

[Reprinted from the "Indian Lancet" of March 16th, 1860.]

PRACTICAL REMARKS
ON THE
ENDEMIC DYSENTERY OF COLOMBO,
ISLAND OF CEYLON.

Dysentery may be considered the Endemic disease of Colombo, and on reference to the valuable "Statistical Reports," it will be seen how constantly prevalent, and frequently fatal, it is not only there, but throughout the Island generally. It seems to assume a more severe form during the variable weather which precedes the commencement of either monsoon; the nights at this period being generally calm, and the atmosphere loaded with moisture; whereas in the dry portion of the N.E. monsoon not only are the cases more rare, but the patients in hospital appear to recover at this period from states which would be hopeless at any other season of the year.*

To account satisfactorily for the production of this disease has always been considered a very difficult matter. The following are, therefore, merely enumerated as probable *causes* for its appearance amongst the class of Europeans with whom the military medical officer has to deal:—

1*st*.—Exposure to cold and moisture, when relaxed by the use of intoxicating liquors, or profuse perspiration, or when overheated, or asleep, in a close barrack or guard room.

---

* The S. W. Monsoon prevails from April to September, during which period the greatest amount of Rain falls. In October and November the weather is very variable and often wet. The N. E. begins in December and continues till March, but blows most steadily in January and February.

2*ndly*.—To the same causes, more especially aided by habitual intemperance, errors in diet, and the use of unripe fruits.

3*rdly*.—Inattention to the bowels, and inactivity or weakness of the digestive organs.

4*thly*.—To cold, rain, dews,* &c., while on sentry at night.

5*thly*.—To some specific cause?

The influence of season on the prevalence of this disease appears to be tolerably well established, for of 50 Epidemics occurring in Europe, and of which we have authentic accounts, 36 appeared in Summer, 12 in Autumn, 1 in Winter, and 1 in Spring. Annesley and more recent writers have shown that the hot and moist season in Bengal nearly doubles the number of attacks, and the same observation holds good in Ceylon.

The symptoms and Anatomical characters do not materially differ from those usually observed in tropical dysentery, and as these are so well known, I need not give a mere enumeration of them here. There is one peculiarity, however, which I do not find mentioned in the works of Davy, Marshall, and other writers on the diseases of the Island, though it had not escaped the observation of my very talented predecessor Dr. Browne. I allude to the very low specific gravity of the urine, particularly in cases of long standing, which will be found to

* At page 5 of the "Statistical Report" it is stated that "dew is rarely "deposited in any quantity owing to the equality of the temperature of the day and night," but this is an error, for whenever the conditions favourable to its production are present it may be observed in abundance at Colombo; except when the dry "land wind" prevails in the nights during the N. E. Monsoon, or during the S. W. when the Sky is much clouded, and a strong breeze often blows for 24 hours. During the former Monsoon the "dew point" will be found to vary from 8 to 11 degrees below the temperature of the air; while in the wet portion of the latter it is uncertain, varying from 3° and 8° below the temperature.

vary from 1002 to 1014, rarely reaching so high as 1018, the average being 1009; and to diminish as the purging increases, and attain a higher standard as the purging abates, or fever comes on. The acid reaction of the lighter specimens of the secretion is feeble, of the denser more marked, unless in the chronic disease; and the quantity of urea small, even for that low specific gravity. In many instances the nitric or muriatic acids produce a distinct purple tinge, but seldom any visible iridescence when treated in the manner directed for the detection of bile. Of Albumen I have never been able to discover any trace even where the patients were affected with Ascites, or other form of dropsy.

The disease, as it occurs at Colombo, may be considered as primarily an inflammation of the mucous membrane of the intestine, having its seat for the *most part in the colon*, or rectum, and not uncommonly in both, or along the whole course of the canal; accompanied in almost every instance by fever of the distinctly Remittent or purely Intermittent type; a fact frequently overlooked, particularly by those but recently arrived in the Island; yet it is one of the utmost necessity to remember while treating such cases; for unless this complication be combated at the same time that we attack the local or dysenteric symptoms, these latter can *not* be effectually overcome, and will terminate in distressing and often protracted disease, or perhaps end fatally.

The Dysentery of Ceylon appears to be much more frequently complicated with Remittent or Intermittent fever, and not unfrequently with Scurvy, than with any well defined or special lesion of the Liver, as is the case in Bengal and elsewhere.

Nor is it of less importance to apply our remedies with vigour, and as soon after the commencement of the

attack as practicable, for what Hunter remarked of the dysentery of the West Indies is particularly applicable here. "The dysentery, like the fever," says he, "requires to be taken care of early, for the means that will either overcome, or greatly mitigate the disease at the beginning, will not be able to make any impression upon it, after it has continued some time."

In the *Treatment* the indications to fulfil are :

1*st*.—To subdue the inflammatory action, by evacuating the matter contained in the intestines, and, when present, to remove the fever.

2*nd*.—To lessen the irritation of the canal, and produce a healthy state of its secretion.

To answer the first, the remedies most to be relied on, provided the case be seen early enough, are general and local blood-letting, *a very rigid attention to diet*, the cautious use of mild oleaginous purgatives, and above all the exhibition of warm water Enemata. General bleeding is very rarely required, except in the strong, robust, and recently arrived Europeans, and ought, almost as a rule, to be avoided in old soldiers, and others of long residence in the low country. The advantages of depletion will, for the most part, be obtained by the free application of leeches over the seat of pain, on the perineum, or over the lowest part of the sacrum, and repeating them as often as may be necessary until the pain is extinguished. After the employment of these means, a dose of Castor oil with Tincture of Henbane should be administered, and followed in about two hours by large warm water injections, to the extent of four, five, and even six pints, by which the bowels will be "effectually opened and accumulated fæces removed, while the warm water rather soothes than irritates the inflamed membrane," and "moreover the effect is produced much more speedily than by purgatives

given by the mouth." Warm water Enemata, in cases of dysentery, diarrhœa, and colic, are unquestionably powerful and valuable adjuvants to other remedial measures. The good effects of their use cannot be overstated and daily experience and observation, extending over a service of nearly thirteen years in Ceylon and Bengal, confirm this opinion; "for a patient who before has had frequent small stools, accompanied by pain and tenesmus, after the enema has a copious fæculent motion without tenesmus, and from this time the evacuations become less frequent, contain less blood, and by daily repetition of the injection with scarcely any other remedy a cure is produced.*"

In chronic cases, however, I have not found these enemata of any service, as little fluid can be retained, and by the distension seem rather to irritate than otherwise. On the other hand, the relief afforded in the acute or more recent forms is so great, that it is by no means uncommon for the patient himself to solicit the repeated exhibition of them; and in the dysentery and other intestinal diseases of children they are equally valuable.

The second object, or the diminishing the irritation, and creating a healthy state of the bowels, I have almost uniformly found to be best attained by a persistence in these measures, and the administration, after the bowels had been cleared out, of a powder containing

Pulv. Doveri, grains, three.
„ Ipecacuanæ, grains, one or two.
„ Cretæ ppt. vel.
„ Sesquicarb. Sodæ, grains, four.
„ Catechu, grains, three.

every two, three, or four hours, according to the urgency of the symptoms. Whenever there is a tendency to feverishness, one, two, or more grains of sulphate of Quinine

* Vide Edinburgh Medical and Surgical Journal, No. 178.

should be added. In many cases where the remittent or intermittent fever ran high, as is witnessed perhaps oftener at Kandy than elsewhere, I have not infrequently increased this to twenty and thirty grains twice a day, with a success over the disease as satisfactory as it was gratifying. If the *tormina* and *tenesmus*, or the calls to stool, prove troublesome, after the use of the warm water injections, these should be aided by one composed of a drachm of finely powdered Acetate of Lead and the same of Tincture of Opium, or ten grains of Nitrate of Silver and three grains of Opium. Occasionally a large *hot* poultice of rice flour, or the like, may be laid over the whole abdomen with advantage.

The employment of *Mercurial preparations*, as appears to me too indiscriminately recommended by Indian practitioners, is very rarely needed, and requires the greatest caution, in consequence of the scorbutic tendency of many of the cases, particularly in the older soldiers, and those debilitated by long insular residence; for unlike India there is no "cold season," in Ceylon whereby to recruit the lost health of the enervated "exotic European."*

The only cases in which the "Mercurial treatment" can be advantageously used are those occurring amongst the strong and plethoric recruits, but recently arrived, with whom, the treatment by Calomel, Opium and Quinine, with general blood-letting, and the daily use of the warm water injections, will often act "like a charm," but cannot, or very rarely, be repeated a second time, at least after the third or fifth year of residence, without serious, if not permanent injury to the patient.*

* "Perpetual Summer may be said to prevail throughout the year, "varied only by the occasional difference of a few degrees in temperature, "or by a change from dry to wet weather, or the reverse." The difference of temperature at Colombo rarely exceeds 16°, and is very seldom so much as 10°. A Fahrenheit's Thermometer exposed to the full influence of the sun indicates a range from 135° to 140°.

During *convalescence*, a course of mild tonics, generous diet, and attention to proper clothing will conduct the cases to a successful termination.

The *Chronic states* of this disease, into which however the acute forms should seldom be permitted to run, are often cured, and always very greatly benefited, by the steady internal use of a combination of Cod Liver oil, Liquor Potassæ, Quinine and Morphia, assisted by the above enemata. With children pure Glycerine may be substituted for the Cod Liver oil with corresponding results.

Change of climate will always be followed by rapid improvement, for this often appears to be the sole condition on which either life can be prolonged, or recovery expected.

As the history, causes, and various modes of treating this disease have been discussed by far abler writers, I have confined myself to a brief account of a method of cure which unremitting clinical observation has taught me to consider practically the best, and I have done so, *not* "as undervaluing the labours of others; but from a conviction that in physic, as in all other branches of natural knowledge, he who shall content himself with narrating what he has seen, will perform a work more likely to be useful towards the improvement of knowledge, than if he endeavoured to add to the value of his own labours, by collecting the opinions of others, which there is some danger of his mistaking or misrepresenting."

* In cases of simple Diarrhœa, arising from relaxation of the mucous coat of the intestine, and unaccompanied by organic change, the native Cingalese remedy, known as the "Wood Apple," "Bele Fruit," or the Œgle Marmelos, mixed with Quinine, is invaluable; but in Dysentery, properly so called, it is productive of no advantage beyond slightly improving the appetite.

THE

HEALTH OF THE ROYAL NAVY CONSIDERED,

IN

A LETTER

ADDRESSED TO THE

RT. HON. SIR JOHN S. PAKINGTON, BART.,
G.C.B., M.P.,

BY

GAVIN MILROY, M.D., F.R.C.P.,

MEDICAL INSPECTOR UNDER THE GENERAL BOARD OF HEALTH FROM 1849 TO 1854; MEDICAL COMMISSIONER TO JAMAICA IN 1851; AND MEMBER OF THE SANITARY COMMISSION TO THE ARMY IN THE EAST IN 1855-56.

"I conceive it to be the duty of every educated person to closely watch and study the time in which he lives, and, as far as in him lies, to add his humble mite of individual exertion to further the accomplishment of what he believes Divine Providence to have ordained."—*Speech of the Prince Consort in the City*, 1850.

"It is only by clearly and distinctly pointing out the causes which affect health that we can hope to avert disease, and reduce the rate of mortality in the Naval service."—*Statistical Return of the Health of the Royal Navy for the year* 1858.

LONDON:
ROBERT HARDWICKE, 192 PICCADILLY.
1862.

Price, Two Shillings.

T. RICHARDS, 37, QUEEN STREET, W.C.

TO THE RIGHT HONOURABLE

SIR JOHN S. PAKINGTON, BART., M.P.

SIR,

The active interest you evinced when First Lord of the Admiralty in all that concerns the thorough efficiency of the Navy — in regard, not only of the ships, their armaments and supplies, but also, and not less, of the hands which are to wield them— leads me to address the following observations to you, in the hope that they may thus possibly attract the notice of others besides the members of my own profession. Far too important is the subject to need any apology for seeking to bring it under the attention of all officers, the administrative and executive as well as the medical officers, of the service, and indeed of the public generally. It is now admitted, on all hands, that the strength and virtual efficiency of an armed force, whether afloat or on shore, is to be measured, not by the mere number of the names on the ship or regimental roll, however complete may be all the material equipments of the force, but really and truly by the actual number of hearty vigorous men who are, from day to day and from month to month, continuously available for fatigue duties of all sorts. Every man put on the doctor's list is so much power withdrawn from the full effectiveness of the living machine. Nay, it is more than this, for each such

loss forthwith becomes the occasion of extra duty being cast upon the well men to supply the void; and then, too, there is the time and labour of those who have to act as the attendants upon the sick to be taken into account. These consequences become a serious matter when sickness prevails to any considerable extent among a ship's crew. The energies of the well men are overtaxed, their hours of meal-time and sleep are interfered with, continued extra fatigue creates weariness and discontent; and this is the very state of system in which the health is liable to suffer from influences which it has hitherto resisted. Sickness thus gives rise to sickness in more ways than one; and this, too, is apt to go on in a progressively increasing ratio. Obviously, therefore, the necessity of averting or preventing to the utmost all disease, and of preserving as far as can be done uninterrupted health among a ship's crew, cannot be overestimated as one of the main objects to be aimed at by all who have at heart the duty of maintaining a powerful Navy, ready at all times for the defence and honour of our country. And the importance of the subject is yearly becoming greater, from the acknowledged difficulty that has often been experienced in recent times of promptly manning a large fleet upon an emergency, in consequence of the enormous demands of our mercantile marine for able-bodied hands in these days of increasing commercial activity.

My attention having been drawn, at various periods of my professional life, to the state of health of seamen, and specially on two occasions of official employment in the West Indies, and in the Black

Sea and Mediterranean,* along with numerous opportunities of converse with naval officers both at home and abroad, will plead my excuse for taking upon me, though not belonging to the service, the task of inviting public notice to the subject; and the extended inquiries which I have recently conducted into the general operation of quarantine have also brought to my knowledge much valuable information on the hygienic condition of ships, both of the royal and of the mercantile marine of different countries.† The very unconnectedness of my position may possibly not be without some advantage; but be that as it may, the truth and fairness of the following statements must be the best test of their value or otherwise.

Before proceeding to treat of the existing state of health of the Royal Navy, which is the special object of this letter, it will not be amiss to glance at its condition in the early part of the present century.

After the close of the great continental war, the distinguished veteran Sir Gilbert Blane, long one of the most eminent medical officers in the service, published his dissertation "On the Comparative Health of the British Navy, from the year 1779 to the year

* Report made by Dr. Milroy to the Colonial Office, on the Cholera Epidemic in Jamaica in 1850-51, &c. *Printed by order of the House of Commons*, May 1854.

Report to the Minister of War of the Proceedings of the Sanitary Commission, dispatched to the seat of War in the East, 1855-56. *Presented to Parliament*, March 1857.

† Papers relating to the Laws and Practice of Quarantine in Foreign Ports and in British Colonies, prepared by a Committee of the National Association for the Promotion of Social Science, and communicated to the Board of Trade. *Printed by order of the House of Commons*, Aug. 1860, and August 1861.

1814, with proposals for its farther improvement." He there pointed out the immense saving of health and life in ships of war that had been effected during his time, in consequence of successive ameliorations in the construction and sanitary arrangements of the vessels, and in the general condition and care of the men. For the last three years of the war, the annual death-rate from all causes throughout the different fleets he reckoned to average about 33 per 1000 of the entire strength, the aggregate of which for each year being put down at nearly 138,000 of all ranks and ratings—an enormous force certainly, in the gathering together of which but little attention could possibly have been paid in the selection of lives, more especially at a time when impressment was in vogue. Thirty years previously, the ratio of mortality had been far more than double, probably two-thirds, this proportion. Nor will this be wondered at when it is known that at that time ships were often like the then jails and prisons, with their holds so foul and noisome that "the air used to become so contaminated as in innumerable instances to produce instantaneous and irremediable suffocation";—and when the newly raised men were so huddled together on board filthy receiving vessels that fever was never absent from them, and numbers were cut off before they were even distributed among the ships of war, while hundreds perished of the same disease and of putrid flux before they had been many months at sea. Sailors died off in those days at a greater rate than even the troops, miserably bad as the condition of the latter was. Scurvy was then, from the bad provisions served out to the men, a

desolating scourge to the Navy; and such continued to be the case down to 1796-7, when lemon-juice was first regularly supplied to our ships of war, and the diet of the crews was improved. Yet twenty years before that time, Captain Cook had convincingly shown not only how this disease may be prevented, but also how, by the simple expedient of furnishing wholesome and suitable provisions and pure water, and by unremitting attention to the thorough cleansing and ventilation of a ship, the health of her crew may be so preserved that, in a three years voyage round the world, out of a company of one hundred and twelve men, but five in all should be lost—four from accidents, and one only from disease. Sanitary practice then, as now, advanced but slowly long after its benefits were demonstrated.

As scurvy was got rid of by improving the diet of the men, so fevers and fluxes were, if not got rid of, immensely kept down when ships were kept clean and better aired in every part, and when the crews were better treated and cared for in respect of their accommodation, clothing, and medical supplies.

By the great reduction in the death-rate of the Navy at the close of the continental war, compared with what it had been at its commencement, it was estimated that "two ships of war are now (1815) capable of more service than three of the same rate in former times"; in other words, one-third had thus been added to the effective force, and moreover an enormous expense, inevitably consequent on sickness and death, had been saved. Still the ratio of mortality in the Navy was justly considered by Sir Gilbert Blane as excessive; from disease alone, and

exclusive of all losses from accidents, drowning, and the casualties of war, it was in his opinion nearly double that among persons of the same ages in civil life. In his day, and for a good many years afterwards, there did not exist the means of determining with sufficient accuracy the vital statistics either of our general population or of the Navy. It was not till 1837 that the Registrar-General's department was instituted; and about the same time the Government first recognised the necessity of digesting and tabulating the returns of sickness and mortality in the two public services. The first issue of the statistical reports of the health of the Navy was in 1840; they embraced a period of seven years, commencing with the year 1830. Subsequently, but at long intervals, other reports for the septenniad from 1837 to 1843 were published. These bulky and unreadable Blue Books have of recent years been superseded by annual reports, which are infinitely more useful and instructive. The change was introduced after the late Russian war, and great praise is certainly due to the medical department of the service, and especially to Dr. Bryson, for the ability with which they are prepared. "The Medical Statistical Returns of the Baltic and Black Sea Fleets during 1854 and 1855" were issued in the early part of 1857; and these were followed by the "Statistical Reports of the Health of the Navy" for the year 1856, in the summer of 1858; for the year 1857 in 1859; and for the year 1858 in the spring of 1861.* It is from these more recent documents that the facts and data in the following

* The report for 1859 will, it is understood, shortly appear.

pages are mostly derived, and on which any opinions that may be expressed will be chiefly based.

The first point to be ascertained is, of course, what is the ordinary

Rate of Sickness in the Navy.

It may be necessary to premise that 1856 was nearly a year of peace; for, although the Russian war was not completely over till the early part of the spring, our fleet was not engaged in any hostile operations, at any time, either in the Black Sea or the Baltic; and it was not till the very close of the year that hostilities broke out in the Canton river. In 1857, our differences with China required a considerable increase to be made in the naval force on that station; most of the ships were long anchored in the Canton river, and their crews were much exposed to the malarious influence of its shores, besides having frequent sharp encounters with the enemy. The fleet of mandarin war-junks was destroyed on the 1st of June. On the 28th of December, the city of Canton was attacked; and next day, the walls were scaled, and the city and adjacent heights were taken. This year, too, the great Sepoy revolt took place, and the Naval Brigade, formed by detachments from the *Shannon* and the *Pearl*, joined the military force before Lucknow.

In 1858, the East India and China squadron was still further increased, and was actively engaged throughout the whole year both against the Chinese, and against the Indian mutineers. Three battalions of marines were for several months quartered in and around Canton, and had most severe and harassing

duties to perform in that unhealthy climate. The expedition against Tien-tsin on the Peiho took place in May; the defences in the river were taken by assault on the 20th, and the town was captured on the 26th of that month. The active aid given by the Naval Brigade in India is well known.

In 1856, when the aggregate mean force of the Navy was 51,730, the average number of men daily on the sick-list throughout the service was 3,132, or in the proportion of sixty-two men in every thousand; in other words, a seventeenth part of the whole force was continually off duty from the effects of sickness or injury, either on board ship or in hospitals on shore.

In 1857, the daily sick-rate was very nearly the same, being only a fraction less. The aggregate force that year was 42,470.

In 1858, the rate was higher, being in the proportion of sixty-six sick men in every thousand. The number at all times ineffective, out of a total force of 43,120, averaged 2,859, or about one in every fifteen men.

The sick-rate varies much, of course, in the different fleets into which our Navy is distributed, according to the stations where they are employed, viz.:—the Home, the Mediterranean, the North American and West Indian, the Brazilian, the Pacific, the West African, the Cape of Good Hope, the Australian, and the East Indian and China. To these nine fleets must be added the Irregular force, engaged on various stations, as the exigencies of the service require.

The amount of sickness is usually lower in the

Home, the Mediterranean, the Pacific, and the Australian stations than in the other fleets; but the rates vary so much in nearly all of them, from year to year, that no very positive or uniform statement can be made on this head. One year the North American and West Indian squadron is very healthy, the next year it is extremely sickly. The same thing may be said of the Brazilian squadron of recent years; formerly, it was invariably one of the most healthy. Two only of the fleets uniformly exhibit a high rate of sickliness, namely, that on the West Coast of Africa, and still more that on the East India and China station, which of late years has always stood highest on the list. The Irregular force also generally exhibits an unfavourable return.

The following table shows the mean strength and the average sickness-rate of the different fleets for the three years 1856, '57, and '58, taken together, and will suffice to give a pretty fair idea of the relative importance both as to numbers and the comparative healthiness of our naval forces employed in different parts of the world, however much the exact numbers, etc., vary from one year to another.

FLEETS.	Mean strength for the three years.	Average daily Sick-rate for the three years.
East Indian and China	7263	93 per 1000 men.
Irregular	7117	69 " "
West Coast of Africa	1707	68 " "
Cape of Good Hope	1030	59 " "
North America and West Indies	4365	58 " "
East Coast of South America	1323	55 " "
Pacific	2387	53 " "
Mediterranean	7867	52 " "
Home	11,814	50 " "
Australian	437	46 " "

The number of days spent in the course of the twelvemonths on the sick-list, either on board ship or in hospital on shore, affords another means of showing approximately the loss of effective service on each of the various stations, and also over the entire aggregate force. Without going into details, it will be sufficient to state that in 1856 the total number of days' sickness throughout the Navy was such as to give twenty-two days off duty to each man employed; that in 1857, the proportion was a trifle more; and that in 1858 it was still higher, being rather more than twenty-four days on the sick-list to each man.

From the sick-rate, or amount of constant temporary loss of effective strength arising from disease or injury, I now pass on to note the amount of the permanent losses caused by death and by invaliding.

The Rate of Mortality in the Navy.

This varies, as might be expected, very considerably in different years, not only on separate stations, but throughout the service generally; and this, too, quite independently of the casualties of war and of all other accidents, including drowning, to which seamen are specially exposed.

In 1856 the general death-rate from all causes was 15·5 in every thousand men. In 1857 the proportion was 22 per thousand; and in 1858 it was 25·8, or nearly 26, per thousand. As these rates include the deaths from violence and drowning, as well as those from sickness, it will be better for the present to leave the former out of consideration, and attend only to the amount of mortality from the effects of disease, as a better standard will thus be

afforded for comparing the health of the Navy with that of other bodies of men about the same period of life.

In 1856, the deaths *from disease alone*, throughout the service, were in the proportion of 12.1 in every thousand of the force; in 1857, it was in the proportion of 14·7; and in 1858, it was in the proportion of 20·2. The general average for the three years was therefore between 15 and 16 per thousand men. From the following table, which gives the mean total and the disease death-rate for the three years, the reader will be able to judge of the relative fatality of the different stations on which our ships of war are engaged.

STATIONS.	Mean Death-rate for the three years.	
	From Disease alone.	From all causes.
Home	7·8	10·3
Mediterranean	8·4	11·6
North America and West Indies	19·8	24·
Brazilian	21·	25·2
Pacific	6·9	8·7
West African	14·3	20·5
Cape of Good Hope	10·2	16·3
East Indian and China	37·7	47·6
Australia	3·6	9·9
Irregular	8·3	12·4

The extremely high death-rate of the East Indian fleet will be noticed. It has been seen that two of the three years were years of war, both in China and in the East Indies. In 1856, the death-rate was only 27 per thousand from disease, and 34 from all causes. In 1858, it was 51·9 from disease, and 62·5 from all causes.

The Rate of Invaliding in the Navy.

The other cause of permanent loss to the service, from year to year, is the discharge of all the men who are hopelessly unfit for future duty in consequence of grave organic disease, or of some incurable infirmity.

In civil life, the annual death-rate is our only available test in estimating the healthiness, or otherwise, of the community, or of any large portion of the community. No means, as yet, exist for ascertaining, as in our army and navy, the Statistics of Sickness among the population of our towns and rural districts. And as to any elimination of invalids among civilians, the only discharge of them is by death. This circumstance alone presents a marked difference in the elements of any comparison instituted between the ratio of mortality in naval and military life on the one hand, and among working-men of the same ages in civil life, on the other; greatly, of course, to the advantage of the former by so many incurable sailors and soldiers having been discharged, and whose deaths on shore go to swell the mortuary returns of the latter.* What addition should be

* Keeping this observation in view, the reader may compare, in the following table, the death-rates in different bodies of men at sailors' ages among our civil population, with that, from all causes, in our home fleet, as given above :—

London Fire Brigade - - - -	7·	per 1000 of strength.
Metropolitan Police - - - -	7·6	" "
England (healthy districts) - - -	7·7	" "
Agricultural Labourers - - - -	8·	" "
Out-door Trades in towns - - -	8·5	" "
City Police - - - - - - -	8·9	" "
England - - - - - - - -	9·2	" "

The signal reduction in the death-rate among our troops at home,

made to the death-rate from disease in the Navy to bring it more upon a par with the death-rates in civil life, for the purpose of comparison, it is not easy to determine. It cannot be less, I should think, than six or seven per thousand of the strength at the least.

In 1856, the number of men invalided was 998, or in the proportion of rather more than nineteen in every thousand of strength. In 1857, the number invalided was 1460, or rather more than thirty-four per thousand; and in 1858, the number was 1763, or nearly fifty per thousand. The mean rate for the three years together, in the entire Navy, was therefore between thirty-one and thirty-two in every thousand men. To show how much this varied in different fleets, it may be stated that on the Home Station the rate was twenty-three, while on the East India Station it was fifty-two, per thousand.

By putting together the number of deaths, and the number of men discharged as invalids, in the course of the twelvemonths, the yearly total permanent loss to the service is ascertained. In 1856, this amounted to 1799 men, out of an aggregate strength of 51,730. In 1857, it amounted to 2404, out of an aggregate of

within the last three years, has been such as to bring it nearly to that in the healthy districts of England. Formerly, it was more than double. That this marked decrease may be in part the effect of greater care in the selection of the men, and of a larger proportion of the force consisting of men recently enlisted, is not unlikely, as the same result has been observed in the case of other bodies of men. Thus with the Fire Brigade, the deaths, for the first thirteen years of its establishment (as Dr. Guy has told us in his valuable paper on the *Mortality of the British Army*) were at the rate of 9.6 per thousand; while for the last twelve years they have fallen to 7—a result due, he thinks, mainly to the more careful selection of the men.

42,470; and in 1858, out of an aggregate of 43,120, it amounted to 2878, or a loss equal to the combined crews of three of the largest line-of-battle ships in the Navy.

To put the facts in another way; the proportion of total permanent loss to strength in 1856 was, throughout the Navy, 34·8 per thousand men; in 1857, it was 53·8 per thousand; and in 1858, it rose to 66·7, or a full fifteenth part of the whole strength. If we take one or two fleets by themselves, we find that, on the Home Station, the mean rate for the three years of the total permanent loss was thirty-three per thousand; or, deducting all the losses attributable to violence and accident, that it was at least 28 or 29 per thousand of the strength. In the East India fleet, the mean total loss for the trienniad was at the rate of 95·9 per thousand, or little short of ten per cent. of the force per annum.

Diseases, &c., most prevalent in Ships of War.

Having now determined the general facts as to the absolute and relative amount of Sickness, Mortality, and Invaliding among the seamen of our Navy, the next point is to find out the principal causes which contribute to the production of the temporary, as well as of the permanent, losses sustained by the service from one year to another. Avoiding all minute details, as suited for the professional rather than for the general reader, it may be stated that about one-half of all the entries on the sick-list are due to ailments of a slight, or at least non-serious, nature, and consist mainly of venereal complaints; or of boils, ulcers, and skin diseases; or of trivial wounds and

contusions. This moiety of the sickness occasions but a fraction of the losses by death and invaliding (considerably more by the latter than by the former), and may, therefore, be passed over with the single remark that the extensive prevalence, in some fleets, of the first named group, is a subject which seems to call for some attention on the part of the authorities in sea ports, not only in consequence of the serious amount of temporary loss of service thus occasioned, but also from the consideration that the constitution of many men is thereby gravely damaged, and rendered doubly or trebly susceptible of some other diseases, which cause much of the permanent losses from one year to another.*

The diseases which occasion by far the greatest amount of mortality in the service are (1) fevers, (2) diseases of the bowels, and (3) diseases of the lungs, etc. It is, therefore, these three groups of sickness which demand our special attention, more particularly in regard to the causes which favour their production and enhance their fatality. But before going into particulars, a preliminary remark or two requires to be made.

Some Ships more Sickly than others.

The first point, which must strike every inquirer,

* "That a disease so destructive of health and happiness, which, by an acquired constitutional taint, may be transmitted to generations yet unborn, should be allowed to go on increasing in our large sea-ports to an extent unknown in any other part of the world, is greatly to be deplored; but so long as the municipal authorities of those towns, where it is most rife, refuse to cooperate with the Government in establishing hospitals for the cure of the degraded creatures that swarm along their pavements, it will be in vain to hope for any abatement of the evil."—*Report on the Health of the Navy*, for 1856.

is the marked difference between different ships of the same squadron in respect of healthiness, or otherwise. While some ships are very sickly, others similarly employed, and apparently exposed to like external or atmospheric influences, are at the same time comparatively healthy. When such an occurrence is observed in a dwelling or cluster of dwellings on shore, the idea at once suggests itself that the difference must be due to some local cause—either to the good or bad sanitary condition and arrangement of the houses, or to a difference in the constitution and hygienic peculiarities of the occupants, arising from diversity of age, diet, occupation, etc.

It is not always easy at once to discover the chief cause or causes of the insalubrity, and mistakes are often commited by men who, under the influence of a favourite doctrine, are apt to confine their attention to one set only of agencies and overlook the effect of others. A house may, to the outward eye, be a picture of neatness and beauty, it may be as trim and clean as hands can make it, it may have been well constructed, with drains and sewers which are carefully looked after to prevent all obstruction, its sitting rooms may be well aired and as fresh and sweet throughout the day as can be desired;—and yet in such a dwelling some of the inmates, whose health previously had been good, are constantly ailing; with head-ache, loss of appetite, and general malaise and debility, if not with bowel and febrile complaints. And all this may be owing to some overlooked and unknown old cess-pit under or close to the basement; or to the foundation being damp and unaired; or to a stagnant pond or manure heap close by; or it may

be that the doors, windows, and register stoves of the principal bedrooms are so carefully fitted, that not a breath of air can pass in or out of the rooms at night; or that too many of the domestics may be sleeping in one chamber, and this may be on an ill-ventilated basement floor, or over a stable or outhouse where dust and other refuse are allowed to lodge. Or failing any of these evils, the water supply may have acquired some taint or noxious impregnation, which slowly but surely affects the health. However obscure at first may appear to be the cause of the mischief, we may be assured that in sanitary problems, just as in the problems of other physical sciences, a solution of most phenomena may be confidently looked for from exact and patient inquiry. What has been said about a house equally applies to a ship, which is only a floating detached dwelling, often moored in an unhealthy site, and in frequent communication with other separate dwellings of the same sort, and with the villages and towns on shore.

The greater sickliness of some ships over others may be for one season or year only, or it may continue for two or three years in succession. Occasionally a ship has been so uniformly unhealthy, whenever it has been put in commission, that she acquires a thoroughly bad name in the service.

I will give two or three examples of notably unhealthy ships.

The *Hannibal* was in 1855, and again in 1856, very sickly. When in the Black Sea in the former year, besides suffering from bowel complaints more than the rest of the fleet, no fewer than 207 cases of typhoid fever occurred among her crew of 830,—"while

other ships of the same size and similarly engaged had not a fourth or a sixth part of the number." The fever continued to infest the ship in the following year, when stationed in the Mediterranean; it appeared to be but little influenced by the locality where she was, or by the duties in which the men were engaged. As suggested in the Returns, this sickness must have depended "upon a cause within."

The *Conqueror* and the *Centurion* were commissioned about the same time at Devonport, and served in the Mediterranean during 1857 and 1858. The former had a crew of 900, and the latter one of 740; both seem to have been similarly engaged during the whole period. Yet, in both years, there were more than ten times as many cases of low fever (besides a great excess of bowel complaints, erysipelas, and ulcers, as well as of chest and throat complaints) in the *Conqueror* as in the *Centurion*. "It is obvious," Dr. Bryson remarks, "that there existed some radical defect in the sanitary condition of the former, or that the physical condition of the one ship's company was far inferior to the other."

The *Dauntless* frigate while on the West India station in 1852-3 lost nearly seventy of her crew, within a few weeks, from yellow fever, which went on attacking the men as long as they remained on board, and only ceased when the whole ship's company were landed at Barbadoes. Throughout the Russian war, she served first in the Baltic and then in the Black Sea. Her sick-rate was high throughout the whole time; and the number of cases of fever, in each year, was very much in excess of what occurred in other vessels of her class.

It is quite true that when a ship has got a bad name on the score of health, more may sometimes be made of any future sickness on board of her than of other vessels to which no black mark may be attached; nor can we wonder at this, as it is scarcely possible for any one sailing in her to divest his mind of her health antecedents, and it is well known that the mere suspicion or dread of a sickness will often go a great way in inducing it, and certainly in aggravating its nature—a strong proof, by the way, of the value of a good repute, and of the necessity of preventing to the utmost any tendency to mental depression or alarm among a ship's company. Nowhere is panic from a pestilence so dreadful as on board ship at sea. But that there was some hurtful physical cause present in the *Dauntless* is, at all events, highly probable, when the history of the *Rosamond*, formerly the *Eclair*, is considered. Besides the disastrous loss of so many of her crew from yellow fever, in 1845, and the reappearance of a similar disease on board a year or so afterwards, when commissioned under a new name, she again proved an extremely sickly ship in 1852 on the West India station, and again in 1854 when employed in the Baltic, being there infested more than any other ship of the fleet with low fever and other zymotic maladies, and her daily sick-rate averaging the enormous proportion of 8 per cent. of her crew, throughout the whole period. The ventilation in her between-decks is stated to have been most imperfect, besides other causes of insalubrity to be afterwards noted.

Causes of Insalubrity in Certain Ships.

It is, obviously, of primary importance to determine the probable causes of the marked unhealthiness of some vessels in a fleet over others, seeing that it must be mainly on a solution of this very point that the question as to the improvability of the health of our Navy turns. In some instances the causes appear sufficiently palpable; in others they can only be surmised; while, not unfrequently, they seem to have hitherto eluded research. In the Navy as in the Army, and in civil life too, the subject of the causation of diseases, and, consequently, the only secure ground for their prevention, has not uniformly been appreciated as its great importance demands. Every year, doubtless, the matter will be more and more attended to, not only by medical men without exception, but also by all executive officers in command of our ships and troops, as well as by municipal and other authorities on shore.

One simple truth may be confidently stated, viz.—that the liability to disease is in general greatly dependent upon, and often is commensurate with, the purity of the air which is breathed throughout the four-and-twenty hours. There is no exception to this law, in any climate or under any condition, at sea or on land. Now there is a two-fold source of impurity in the respired air to be always guarded against. The one source is extrinsic or arising from something external to us, it may be from a marsh, or a foul gutter or drain, or any collection of decomposing matter, which gives off a noisome moist effluvium. The second source is intrinsic, and is unceasingly being supplied by emanations from our own

bodies, independently of any external cause of malaria or miasm. The second of these evils is much the more dangerous of the two; the poison so exhaled is more injurious to health, and its presence is infinitely more common, following us wherever we go, and only avoidable by unceasing vigilance in maintaining the renewal of fresh air around us.*

That both these sources of atmospheric impurity are at times apt to affect mischievously the crews of our ships of war, appears from the following brief instances out of others, cited in the recent official reports. And first as to some of the effects of overcrowding and defective ventilation.

Fever.

Forty cases of fever occurred in the *Eurotas* frigate, while in the Mediterranean, between April and June 1856. Her medical officer "was unable to account for the disease, unless it arose from the extreme lowness and closeness of the deck on which the men were berthed."

In the *Valorous*, an outbreak of fever took place in May 1858, on the passage from Ferrol to Plymouth, where fresh cases continued to occur for some

* "Air contaminated by foul and stagnant exhalations, particularly those from the living body, is the ascertained cause of typhus fever, which has been a more grievous and general source of sickness and mortality in the navy than even the scurvy. * * * The infection of fever is generated by the breath and perspiration of men, crowded for a length of time in confined air, and without the means of personal cleanliness."—Sir G. Blane.

The case of the Egyptian frigate, which arrived last year at Liverpool with her crew in such a wretched condition, and occasioned so much alarm at the time in that city, was one out of many instances of the truth of these remarks.

weeks after her arrival. Three proved fatal. "With the exception of a somewhat imperfect ventilation, in consequence of the main deck ports having been caulked in, previous to her departure for Ferrol, no cause (of the sickness) could be discovered" by a board of executive and medical officers appointed to examine the ship.

Thirty-four cases, six fatal, occurred among the crew, 825 in number, of the *Princess Royal*, while conveying a portion of the 11th regiment from Malta to Alexandria, between the 4th and the 17th of January 1858. The first case was on the sixth day after leaving Malta, and the rest within the next fortnight. As to the cause of the outbreak it is stated that, in consequence of the boisterous weather, "it was necessary to keep the ports, both on the main and lower deck, barred in during nearly the whole of the passage." The spread of the disease seems to have been checked by removing the men from the lower to the main deck. Other ships of the line carried a larger number of troops without detriment. Thus the *Majestic* conveyed 800 troops from the Crimea to England in the summer of 1856, and not a single case of fever occurred among her crew. But the previous history of the *Princess Royal* shews that, though a new ship, she was very sickly in 1855 while in the Black Sea. She then lost more men from fever than any other ship in the fleet, or than even the Naval Brigade serving before Sebastopol, notwithstanding all their exposure to wet and cold and their incessant toil in the trenches. In 1857 also, a bad form of fever broke out on board of her at Corfu; 3 out of 17 cases proved fatal. As the *Royal*

Albert, which was lying there at the same time, remained free from any febrile attack whatever, the disease must have been owing rather to some cause connected with the ship herself, than with the locality. Her crew had, moreover, in the early part of the same year, while at Lisbon, suffered much from ulcers, and phlegmonous disease.

It will be afterwards shewn how much the malignant fever of the West Indies, etc., is aggravated by defective ventilation on board ship.

Cholera, &c.

Three or four days after this disease appeared in the *Megæra*, at Calcutta in 1858, she put to sea. The next day the number of attacks had increased. Subsequently, the boisterous state of the weather requiring that the main deck ports should be kept closed, all the sick, etc., were put on the upper deck under an awning. From that time, the disease subsided and soon ceased entirely. Within a fortnight, nearly an eighth part of the crew had perished.

About the same time, the *Pylades* was attacked on her way from Calcutta to Trincomalee; "the sick were discharged into the receiving ship (on her arrival there), where, under the influence of better ventilation and a more suitable diet, the disease soon ceased entirely."

The most memorable instance on record of the effects of defective ventilation on the fatal progress of cholera occurred in 1854, in the *Britannia* while in the Black Sea, and just before the sailing of the expedition to the Crimea. Within five days or so, no fewer than 229 out of a crew of 920 were at-

tacked (besides nearly 400 with diarrhœa), and of these 139 died. The ship had put to sea in the hope of getting rid of the disease, which had begun to appear on board of her and some other ships of the fleet at Varna. For a day or two the change appeared to have done good; but the weather became boisterous and all the lower deck ports had to be closed. Thereupon, the pestilence broke out in its full fury in the course of the following night. On returning to Baljik, the whole crew were removed into some empty transports; and there was an end of the disease. The total loss of life from this short outbreak was considerably more than double all the fatal casualties, on board the whole fleet, from the fire of the enemy in the attack against the sea batteries of Sebastopol. None of the officers of the *Britannia* died from cholera. Such a fact is always significant.

The tendency to diarrhœa and dysentery is always observed to be much increased, and their obstinacy and severity to be greatly aggravated by defective ventilation on board.* These are generally the most common and fatal diseases on board crowded troop and emigrant vessels; ships of war also have often suffered most severely from their prevalence. The same thing may be said of another occasionally most troublesome and disabling set of maladies in long voyages, viz., ulcers and erysipelas. Several of the large ships of our Baltic fleet in 1855 suffered seriously from this cause. The surgeon of the *Colossus* considered that "the crowded state of the decks and

* "The dysentery, which stands next in order (to fever) in point of fatality, is also generated and propagated by the want of cleanliness and ventilation."—Sir G. Blane.

the want of personal cleanliness among the newly-raised men, combined with imperfect ventilation on the orlop deck (where most of the attacks occurred) were the principal causes of the disease."

The *Calcutta*, the admiral's ship, on her voyage out from England to Hong Kong in 1856, had an unusual number of cases of ulceration on board. "I have no hesitation in saying," writes the surgeon, "that the sick berth is manifestly the head quarters of the disease, where large numbers of suppurating sores have been congregated together in a confined and overcrowded place." When a portion of the crew was landed, and better ventilation of the decks established, together with an ampler supply of fresh provisions, the tendency to sloughing ulceration ceased.

The preceding instances of the evil effects of Overcrowding on board ships of war entirely accord with the experience of the army and of civil life, in close unwholesome barracks, workhouses, etc.

Effects of Impure Holds.

The other cause of atmospheric vitiation occasionally on board ship is the admixture of malaria from impurities in the hold, etc., of the vessel, or from her own timbers in a state of decay. The following recent instances from the Navy Returns illustrate this point.

The great sickliness of the *Rosamond* in 1854, previously mentioned, was ascribed by her surgeon to the state of her hold. "Several cases" (of typhoid fever) "occurred in men employed in cleaning the bilges; there was a considerable accumulation of filth

under the magazine. Whenever the hatches were kept closed for a time, a foul smell was perceived on opening them." A like state of things was reported of this vessel eight years before.

In 1856, the *Herald*, on the Australian station, suffered much from alvine flux, while cruising among the Feejee Islands. "The greater number of the cases occurred amongst the men berthed on the port side of the lower deck. The gunner's store-room was therefore cleared out, and some very offensive matters were discovered, which produced nausea and faintness in one or two of the men employed on that duty." With the thorough cleansing of the hold, the disease seems to have subsided until the following year.

The *Hecate*, one of the West African squadron in 1858, had sixty-three cases of fever (which in several instances had the character of the less aggravated form of yellow fever) among her crew of a hundred and thirty-two, during the more healthy part of the year between February and May, and chiefly while she was at sea, cruising between the coast and the island of Ascension. Her surgeon was of opinion that the sickness was mainly due to fœtid exhalations, so offensive as to cause nausea and headache, from the hold, which was found to be exceedingly foul from the accumulation of a quantity of rubbish and black mud. "But the most offensive effluvium seemed to come from the wood lining the inside of the hull, which was in a state of decay, and in some places covered with fungi, so that it crumbled away before the common iron scraper."

Another of the African squadron that year, the

Hydra, was similarly affected. Forty-two in a crew of a hundred and twenty-five were attacked, while at sea. Large quantities of black stinking mud were taken out of her hold.

In the course of the same year the *Boscawen*, the admiral's ship on the Cape of Good Hope station, had thirty-six of her crew smitten with fever; "the cause of which appears to have been connected with the state of the hold." Five of the cases were fatal. Besides fever and bowel complaints, boils and ulcers were rife among the crew; out of six hundred and eighty men, eleven died and twelve were invalided from disease alone in the twelve months.

To what extent the two causes of insalubrity above-mentioned operate in the production of sickness in our ships of war in the present day, it is not possible to say with any degree of certainty. That, as compared with what existed in the Navy sixty or seventy years ago, they are now feeble and infrequent is known to all who are acquainted with the medical history of the service. Even since the close of the great continental war in 1815, a notable reduction in the losses from disease among our seamen has taken place in consequence of various improvements, sanitary and hygienic, on board ship; and still more recently, the death-rate in some stations appears to have been lower than it used to be in previous years.

These general facts suffice to show how much the effective strength of our Navy is dependent on the due observance of the established laws of health, and should serve to encourage us in pursuing a like philanthropic course of carrying into effect, to the utmost, every amelioration which the progress of science may indicate.

Diseases most Disabling and Fatal in the Navy.

I will now briefly analyse the recent mortuary returns of the Navy for the purpose of determining the relative mortality produced by different classes of disease, so that the reader may understand what are the principal causes of the permanent losses sustained by the service from year to year. Out of the 2,125 deaths from disease alone during the three years 1856, '57, and '58 (the total loss from all causes amounted to 2,735), 559 were due to fevers, chiefly of the continued type; 715 were due to diseases of the bowels, chiefly alvine flux and Asiatic cholera; 440 were due to diseases of the respiratory organs, especially to consumption. On each of these three classes I shall make a few remarks; and first of

Fevers.

This class of diseases varies much in frequency and fatality in different years upon all the stations, so that the experience of any one year alone might give a very illusory idea either of their local or of their general prevalence.

Fevers occasion but little of the sickness or mortality in the Home fleet. The annual number of deaths from this cause does not average more than eight or nine. Very many of the attacks are the result of intemperance and exposure to wet and cold, when the men get leave to go on shore. As might be expected, a large proportion of these cases occur in some of the ships at Portsmouth and Devonport. Occasionally, however, the fevers contracted there are of a more serious character, being of a decidedly

typhus or typhoid type. Thus, in 1857, the *Blenheim*, the steam guard-ship at Portsmouth, had nineteen cases of this sort among her crew; the attacks occurred "at the same time that a severe epidemic prevailed among the marines at Fort Monkton and at Forton barracks." The fever in the *Blenheim* was preceded by a prevalence of diarrhœa, in some cases of a choleraic character, on board. In 1858, forty-one cases of fever occurred in the *Victor Emmanuel*. The extensive mud-banks around that harbour are said to be but little, if at all, productive of any febrific malaria, or of other noxious effects upon the health of the crews in the port. The same remark is made, in the official reports, as to the mud-flats along the line of the Southampton water. Very different, however, is the case with the estuary of the Medway, which is decidedly the fever locality on the Home station, and where not only a considerable number of cases of fever, but also much other disabling sickness, annually occur among the crews of our ships of war and the workmen in H.M. dockyard, as well as among the civil population of Sheerness and its neighbourhood, from malarious agency. The fevers are generally more or less periodic or agueish in their type; occasionally they are attended with severe gastric and bilious symptoms, and then they are usually more typhoid in their character. The ships anchored high up the Medway generally suffer more than those off Sheerness, which lies open to the winds from the German Ocean. The extremely insalubrious state of that town and of the country round, as affecting the health of the population both afloat and on shore, was brought before the attention of the Privy

Council in 1859; but whether any improvement has since been effected, I am unable to say. In the Appendix are given some of the details respecting the amount of sickness in the ships of war and among the workmen in the naval dockyard, which seem strongly to call for the attention of the Government.

Fevers are generally three or four times as frequent and as fatal in the Mediterranean as in the Home fleet. The majority of the cases are of a mild continued or remittent type; a fifth part or so are intermittent. The average frequency of febrile attacks of all sorts in our ships of war on that station seems to be about seventy in every thousand men, during the twelve months. The annual death-rate from this cause has averaged about two in the thousand. On this, as on other stations, the fever-sickliness of certain ships, while others remained exempt, was very marked in each of the three years.

I now pass to the West India station, where, of recent years, by far the greatest amount of fatal fever has occurred in our naval force. Fully one-half of all the deaths from fever throughout the service, in the three years under consideration, were caused by that fatal pestilence know as yellow fever. Much instructive evidence may be gathered from the details, although in many respects these are insufficient, given in the official reports respecting its history on ship-board.

In 1856, it prevailed with virulence in four ships of the West India squadron, which numbered thirty-seven vessels in all. In one ship, the *Malacca*, it raged with such violence that no fewer than fifty-six

out of a crew of one hundred and sixty-five perished within six or seven weeks. Many of the vessels of the squadron escaped altogether, while others had only two or three sporadic cases of the disease.

In 1857, out of a squadron of twenty-five vessels, two only suffered to any considerable extent. One, the *Brilliant*, lost thirty-four out of a crew of two hundred and thirty in five or six weeks; and the other, the *Orion*, had fifteen deaths; and the notable fact in the case of this ship was that most of the fatal attacks occurred after leaving the West Indies, and during her voyage to England; three actually occurred in the naval hospital at Plymouth.

In 1858 the squadron suffered much less severely, the total mortality from the disease that year being only eighteen. Seven of the deaths occurred in the *Leopard*.

This very fatal form of fever appears to have been, at times, more destructive in our ships of war within the last fifteen or twenty years than was ever known before. All the vessels which have been smitten most severely have been steamers. No sailing ships in former times seem to have sustained such terrible losses as the *Eclair* in 1845, the *Dauntless* in 1852, the *Malacca* in 1856, and the *Icarus* in 1860. This fact is very suggestive. That the excessive heat on board, without adequately free ventilation, has had much to do with the increased malignancy of the distemper is more than probable. It would seem, too, that the accumulation of dirt and other offensive rubbish under the machinery, etc., has in several instances added not a little to the impurity of the close hot air in the between-decks. Reference is fre-

quently made in the surgeons' reports to both these evils. On some occasions, particular parts of a smitten ship appear to have been the especial focus of the poisonous action. Thus, in the cases of the *Argus* and the *Virago*, it was "about the after part of the lower deck and in the fore-part of the engine-room," and the mortality was greatest among the men berthed near these parts; and, in the *Leopard*, nearly all the attacks occurred among the men living in the steerage, where they had been more exposed than the rest of the crew to "an offensive effluvium which had for some time previously issued from the hold and spirit room." On examination much black mud, mixed with half-rotten chips, which had been accumulating for a long time, was found in the limbers. "The exhalations from that part of the ship, the surgeon believed, were the cause of the yellow fever, as the malarious influences from the shore were the cause of the cases of remitting fever."

The prompt abatement, and often the complete cessation, of the disease when the crew of an infected vessel have been moved out of her into clean, airy quarters on shore or afloat, afford conclusive evidence how much the ship herself is apt to be the chief cause of its malignancy and persistence. One or two instances may be quoted. In the case of the *Argus*, the disease all but ceased at once after the crew, sick and well, had been landed at Bermuda. The surgeon was of opinion that "the fever was contracted from local causes exterior to the ship, but that the morbific poison became localised within her. Not one of the attendants at the hospital on shore

was attacked, whilst nearly all those who attended the sick on board became the subjects of the fever." In the case of the *Dauntless*, fresh cases continued to occur for weeks among the portion of the crew left on board, after the sick had been sent to the military hospital at Bardadoes, where they were placed in the same wards with other patients, without a single instance of the spreading of the disease. The same thing occurred in the case of the *Highflyer*, at Port Royal in 1852, and also in more recent instances.

For almost all practical purposes of prevention and arrest, yellow fever may be regarded in the same light as the typhus fever of our own country. All know how much the virulence and diffusion of the latter are under control by wise sanitary precautions; and nearly the same thing may be said of the former. Both are liable, in a confined impure atmosphere, to spread by contagion from the sick to the well; whereas the risk of such an accident is reduced almost to zero in the airy wards of a clean hospital. The inference from this fact clearly is that, by the simple expedient of securing an ample circulation of pure air at all times, but more especially from sun-down to sunrise, to everyone without exception on board a sickly ship, the virulence and extension of the disease would be greatly controlled. The not unfrequent increase of the disease for the first few days after leaving harbour is doubtless owing to the impeded circulation of air in the between-decks, principally at night, from the closing of port-holes, etc. Whenever the sick have been treated in tents or under an awning on the upper deck, instead of in the usual sick bay, and the between-decks have

been kept freely ventilated, salutary effects have been always obtained.

The marked influence of a high temperature in favouring the development and progress of yellow fever, and of a cool climate in mitigating and arresting its course, is a point of much practical interest, as indicating the advantage to be derived by the removal of a sickly ship from the tropics to a higher latitude, when, notwithstanding the adoption of every available precaution, the disease continues on board. By increasing to the utmost the continuous circulation of air throughout the ship, and dispersing the men as much as possible, chiefly on the upper deck or decks, a certain amount of benefit is sure to be obtained. Instances, however, will occur where the only safety is in leaving the West India station as quickly as possible, and moving to the northward. Much fresh sickness, and even considerable mortality, it is however to be remembered, may take place during the passage, and before the vessel is able to reach a sufficiently cool climate, if the crew continue to occupy the close and infected between-decks as hitherto. Thus, the *Malacca* had eleven deaths on the passage (eleven days) from Port Royal to Bermuda, and thirty-eight fresh cases of the fever. The *Firebrand* lost ten men on the passage (twelve days) between Port Royal and Halifax, and had on arrival no fewer than seventy-nine of her crew laid up. The *Spiteful* took seven days in going from Nassau to Halifax; eleven men had died on the passage, and there were forty-six cases of fever on the sick list when she reached that port. Occasionally, from stress of weather, the voyage from the West Indies

to the North is rendered very tedious, occupying as many as twenty days to Halifax; and in a few instances, the sick ship, being unable to reach even Bermuda, has been forced to bear up for England.*

These circumstances serve additionally to shew how much this subject—the outbreak of yellow fever in our vessels of war—calls for a thorough inquiry into all the circumstances which may, on the one hand, favour, and which, on the other hand, may mitigate or arrest its virulence on board ship. The necessity for such inquiry is strongly urged in the last published Statistical Return, that for the year 1858, in consequence of the very disastrous loss of life in several vessels of the squadron during the past year, —so disastrous that Admiral Milne has recently given orders for the more prompt abandonment of the tropics by all infected ships in future.

The West Indies is not the only station which has suffered from yellow fever. The fleet on the east coast of South America sustained serious losses from

* H.M.S. *Barracouta* sailed from Jamaica for Bermuda on the 24th October, 1860. Yellow Fever appeared during the passage; besides her ordinary crew, she had upwards of a hundred supernumeraries on board. On arrival at Bermuda, "the civil authorities, dreading the introduction of the fever into the island, would not permit any communication, or allow the sick to be landed. Medicines, fresh provisions, and other necessaries were, however, sent on board." While making for Halifax, she encountered a violent gale which compelled her to shape a course for England, where she arrived on the twentieth day after leaving Bermuda. Of twenty cases of fever on board, six proved fatal.

If the above statement, respecting the conduct of the civil authorities at Bermuda, be correct, this was most reprehensible, and surely calls for official explanation. It may seem strange that the naval authorities did not insist upon the sick being landed, especially as there is a separate naval hospital on one of the islands, and as the *Barracouta* was also very much over-crowded at the time.

this disease in 1856-57-58, as well as in some previous years. Formerly, the Brazilian station was singularly healthy and exempt from all malignant fevers. From 1830 to 1843, the yearly death-rate in the fleet there did not average more than a trifle over seven per thousand of the strength—a ratio less than that upon the Home station. But for the last ten or twelve years it has been very much higher; and this in consequence of the yellow fever, which first appeared in Brazil in 1849-50.

On the Pacific, the Cape of Good Hope and the Australian stations, fevers are comparatively rare and mild. In our West African squadron, there has been a great reduction for a good many years past in the mortality from this cause, the annual death-rate therefrom not having exceeded during the trienniad under notice five per thousand of the strength.

This reduction has been owing in part to the absence of the malignant form of yellow fever from the African coast in that period, and for three or four years previous; in part also, to the salutary changes which have been introduced, mainly on the recommendation of the medical department of the service, into the mode of conducting the duties of the station. "By a wise and humane regulation, the deadly practice of sending boats away on detached service, to watch or intercept slavers, has been interdicted, or, at all events, greatly restricted. Prize crews are no longer turned adrift to wander through the streets of Sierra Leone, where the vessels they navigate from distant parts of the station are delivered up to the authorities of the mixed commission court; the orgies of 'the barn,' which lowered the character of the

white man in the eyes of the black, have long since ceased; and last, though not least, the introduction of quinine wine as a preventive of fever has not only reduced the number of febrile attacks, but has lessened the severity of those which do occur; and thus the mortality has also been reduced to a level which does not materially exceed the death-rate from fever on some of the more healthy stations."

Eruptive Fevers.

This class of diseases is, as might be expected, comparatively rare among seamen. Occasionally, measles and scarlatina appear in particular ships, chiefly on the Home Station. But the only exanthematous fever requiring notice is the small-pox.

The extent to which this disease has of recent years existed in the Navy will be seen from the following facts. In the Black Sea fleet in 1854 and 1855 there were eighty-one cases, of which five proved fatal. In the Baltic fleet during the same years, three hundred and three cases occurred (eighty-five in the *Neptune* line-of-battle ship alone), and of these eighteen were fatal. In the majority of instances, the disease seems to have been caught in Portsmouth or Plymouth before the ships sailed.

In 1856 the total number of cases of small-pox throughout the entire service was thirty-nine. They occurred chiefly in the Home and Mediterranean fleets. Three of the cases ended in death. Whether the patients had been vaccinated or not, is not stated. In 1857 the number of cases in the service amounted to twenty—ten on the Home, and six on the East India station. No case proved fatal. In 1858 the number

of cases was eighty-three—forty-seven on the Home, and thirty-one on the East India station. There were ten deaths.

"By a circular recently issued by the Director-General, the medical officers of the Navy are instructed to vaccinate, on their entry into the service, all persons who do not present marks of variola, or of previous vaccination. This will, no doubt, tend to lessen the virulence of small-pox, and to reduce the mortality consequent upon it." On more than one occasion, our ships of war have introduced the disease into populations on shore. Thus the destructive epidemic at Malta in 1830, when fifteen hundred deaths occurred, was said to have been brought to the island by H.M. ship *Asia;* and it was only last year that two seamen, from H.M. ship *James Watt*, were landed with the disease at Gibraltar, but where from the precautions taken it spread to a limited extent only.

Diseases of the Bowels, chiefly Alvine Flux and Cholera.

There is one station where these diseases prevail with unusual severity in almost all years, causing the principal amount of sickness and mortality among the fleet employed in that part of the world, viz., the Indian and Chinese waters. On all the other stations, they occasion a much smaller comparative amount of the sickness, and are, moreover, far less persistent and destructive. Everywhere at times, more especially during the summer and autumn months, there are occurring more or less severe outbreaks in particular ships, which it is often not easy to explain. Such local epidemics of diarrhœa, etc., are not unfrequent in ships lying in harbour on our

own coast, as well as in the Mediterranean and elsewhere. The diarrhœa is sometimes of a decidedly choleraic character, and occasionally sporadic cases of malignant cholera are met with, usually between the beginning of July and the end of September. Dysenteric affections are, as a general remark, decidedly more frequent and severe in the Mediterranean than in the Home fleet; but the mortality resulting therefrom is seldom considerable. On the West India station they are still more common, more especially in ships which have been long engaged off Greytown and some other ports in the Gulf of Panama. Dysentery is, however, far from being a cause of much fatality on the station generally. It is the East India and China fleet that calls for special notice under this head.

Out of the entire number, 492, of deaths caused by alvine flux (dysentery and diarrhœa) throughout the service in the three years, 425 occurred on this station; in the year 1858 alone, there were 252 deaths. It was on this station also that most of the deaths from cholera took place. Out of the entire number, 160, no fewer than 138 were in the ships engaged in these seas; and of these 110 occurred in 1858.

The excessively high rate of sickness and death on this station, not only during the three years under notice, but on all former occasions when our ships have had to anchor for a length of time in the estuaries of the large rivers, or off the low and swampy coasts of these regions, is a subject of great public importance. The nature of the sickness is almost always the same, viz.: the generally associated diseases

of dysentery and remittent fevers, of which, the former is far the more fatal of the two. The season of the year has much to do with their prevalence. From December to about the middle or end of April they are comparatively infrequent, but from May to November their prevalence and severity are enormously increased. Hence the necessity of keeping this fact steadily in view, in time of peace as well as of war, as far as the exigencies of the service will admit.

In 1841, such was the amount of sickness and mortality which followed the capture of Canton (during the hot season) that "it was almost fatal to the efficiency of the Naval force." In 1857, the city was taken on December 29th, and "notwithstanding the fatigue and exposure of the men, the number of febrile and diarrhœal attacks which followed was by no means great—owing, it is presumed, to the season of the year being more favourable to the health of Europeans than that chosen in 1841."

The attack on the Peiho forts in North China took place on May 13th, and on the 22nd the force proceeded up the river to Tiensin. The men continued in good health. On the conclusion of the treaty, the force was withdrawn and reimbarked in the beginning of July. On the whole, the expedition suffered comparatively little from sickness.

A good deal of the sickness on this station among the men is doubtless owing to their recklessness and wilful neglect of the most obvious precautions; for the officers, generally speaking, suffer much less in proportion, in consequence mainly of their greater attention to food and clothing, and of less intemperance.

The use of the water of the rivers, contaminated as it is with manifold impurities, has been reasonably enough suspected of having not a little to do with the excessive prevalence of alvine flux in the Indian fleet; this idea seems to be confirmed by the extreme frequency of intestinal worms among the sick. But this subject still needs further examination, as it is alleged that the crews of some ships, who have used only water distilled from their engines, have suffered as much as others where that practice was not adopted.

The occasional marked immunity of some ships from the diseases which prove so prostrating to others is highly suggestive, and demands a more searching inquiry than it seems yet to have received; for what is true of one vessel may reasonably be expected of others under like conditions. There is certainly not a more important problem in Naval and Military hygiene than clearly to determine all the circumstances which favour the induction, and aggravate the severity, of alvine flux. The food, the drink, the clothing, the exposure, the nature and amount of fatigue duties, the accommodation of the men, the mooring of ships, the site of barracks, these and many other points all need to be examined into.

That the tendency to diarrhœa and dysentery is greatly increased by the breathing an impure atmosphere is, as already stated, a recognised fact in medical science. They are the most common pest of crowded and ill-found emigrant and troop ships in all climates, and no diseases have been found more wasting to armies whether in the field or in unwholesome quarters and cantonments.

Overcrowding in a ship will, indeed, occasionally

continue for a considerable time without being followed by any distinct disease, such as fever or flux; but that the health of the persons so treated is deteriorated is shewn by the fact of their being more than usually susceptible of all noxious agencies, on landing after a lengthened voyage. This truth was terribly exemplified in the case of some of our regiments—the 98th for example—in 1841, which lost half their force within three months of landing in China. And, as if to make the experiment complete, it was found that the men who had been quartered on the orlop or the lowest and worst aired deck in the *Belleisle*, in which the regiment had been brought out from England, suffered in a higher ratio than the others.

The power of resisting the hurtful influences of a malarious climate depends quite as much upon the maintenance of a vigorous tone of health throughout the voyage up to the moment of landing, as on the vigilant use of precautionary measures after arrival.

As to the influence of Diet on the prevalence and character of dysentery in India and China, it has been observed as the result of long experience that the disease is much less frequent and severe among the natives than in Europeans, and more especially among British sailors; and this difference has been attributed mainly to the use of a less stimulating diet, and to the non-use of spirituous liquors.

On the subject of the water used for drink, it is to be remarked that the Chinese are said to generally boil it, and then add a little alum to it. "It is worth mentioning," adds the Naval Report of the health of the Navy for 1837-43, "that a number of Chinese prisoners who were confined for some time on board

the *Cornwallis*, and who had no opportunity of boiling the water they used, or of adding alum to it, suffered from diarrhœal attacks somewhat in the same ratio as the ship's company."*

With another interesting extract from the same report, I conclude this part of the subject. "The more general prevalence of diarrhœa and dysentery amongst Europeans residing or voyaging on the coast of China, and even to some extent on nearly the entire southern sea-board of the Asiatic continents, than amongst aliens of the same class residing in other countries or regions in the same parallels of latitude, is a most remarkable fact; whether these affections arise from some peculiar condition of the atmosphere, from telluric emanations, peculiarity of food or water, sufficient evidence has not yet been adduced to enable us to form anything like a satisfactory opinion; for it appears to be a fact, established on the testimony of many intelligent medical officers, that diarrhœa has sometimes attacked the crews of vessels on entering the rivers in China before they had any communication with the land, and before they had made use of any article of food or drink belonging to the locality. Hence in these cases it was generally supposed that the disease originated from malaria or marsh exhalations suspended in the atmosphere; but

* The elixir of vitriol, or dilute sulphuric acid, may be advantageously substituted for the alum. A very pleasant and useful beverage, I may remark, in hot climates and seasons, is made by adding a sufficient quantity of it to water, (or, what is still better, to cold tea), to impart a grateful acidity, sweetening to the taste. This is the *sulphuric lemonade* of some French hospitals. I have known it used with decided advantage as the common drink in diarrhœal and choleraic seasons, and can recommend it from personal experience.

then again, at other times, there were ships' companies who entirely escaped these affections until they began to use the river-water. Thus the evidence which appeared to be conclusive as to the influence of malaria on the health of the crew in one ship was found to be wanting in another, while the evidence which appeared to be equally strong as to the influence of the water in a third was, in a manner, negatived by the eruption of the disease in a fourth before the men began to use it."

Diseases of the Respiratory Organs, including Consumption.

The amount of sickness in the Navy generally from these maladies exceeds that from any other single class of diseases, and often equals that from all fevers and alvine fluxes together. To take one year for example—in 1856, a sixth part of the entire sickness throughout the service arose from this cause. The proportion varies, as might be expected, on different stations; but the influence of mere climate is by no means so great as is generally supposed. For although not so high as in the Home station, where atmospheric vicissitudes are more rapid and considerable than elsewhere, there is still an immense amount in the milder and more equable regions of the Mediterranean, and even under the tropical skies of the Old and New World alike. The mere inclemencies of weather at sea, even when combined with exposure and great fatigue, have much less to do with the frequency and severity of these ailments than most people suppose; but it must be acknowledged that the reckless habits of seamen when on shore, and their disregard of

ordinary precautions against wet and cold, contribute not a little to their production. But with chest and throat diseases, as with fevers and diseases of the bowels, we have again to notice the curious fact that there is often a marked difference as to their prevalence in different ships of the same squadron, lying at the same localities, and engaged on the same or similar duties. Whether this difference is mainly owing to the damper state of the between decks in some ships than in others, according as the wet or dry mode of cleaning them be in vogue, or whether some crews have greater facilities of drying their wet clothes and getting warm food or refreshment on going down below after a cold and stormy watch and before turning into their hammocks, or whether from any other cause it is not easy to say; but that such a difference exists is a notorious fact, and one that well merits examination.*

The point which might least have been anticipated in respect of this class of maladies in the Navy is the great frequency of tubercular disease of the lungs, or pulmonary Consumption. Sea-faring life is usually considered as prophylactic of, rather than predisposing

* "Generally speaking," says the Report for 1856, "the comparative frequency of inflammatory affections of the lungs, in the Home Force, is to be ascribed to the exposure of the men to cold and wet, which it is difficult to avoid when there is a necessity for employing them on dockyard duties and in boats, and their being quartered in cold, damp, and windy hulks during the winter months, where they have few opportunities for drying their clothes." As showing the difference in different ships' crews, employed in similar work, it is stated that "in the *Royal William*, the *Hawke*, *Formidable*, and *Blenheim*, there did not occur a single case of inflammation of the lungs and pleura, while in other ships they amounted, in some instances, to eight, and even to fifteen or sixteen."

to, the weakened and deteriorated state of the constitution on which the development of this disease depends; and experience has certainly shewn that civilians, with a decided tendency to it, have often got rid of every symptom by making a few lengthened voyages. How comes it then that the malady is so common among our seamen, and this too not on one station only, but in almost every part of the world to which our fleets are sent?

We are not surprised at the amount of mortality from this cause among the crowded tenants of the ill-aired dwellings of our manufacturing towns—ill-fed it may be, and often insufficiently clothed; but that it should be equally or even more frequent among our well cared for sailors, with the pure air of heaven always around them, is certainly what was not to be anticipated. Consumption is the most uniform and persistent cause of the large destruction of life in our Navy. Fevers, cholera, dysentery, and, indeed, every other malady vary in point of frequency; in some seasons they are very prevalent and fatal, in others they are comparatively infrequent and innocuous; but in all years, and nearly alike in all climates, phthisis eats its slow and inevitably fatal course into the strength of our Navy, and causes on the whole a greater amount of permanent loss to the service than any other single malady. During the three years, 339 deaths were caused by consumption, and 111 by other diseases of the respiratory organs, chiefly pneumonia and bronchitis. In the same period, 533 seamen were discharged out of the service on account of consumption (which in the great majority of cases would prove fatal within six months of their discharge), and 171 on account of other confirmed pulmonic diseases.

The ratio of the deaths from consumption alone averaged, for the three years, 2·6 per thousand of strength; and the corresponding ratio of the number of men invalided on account of this disease was 3·9. The amount of the permanent loss from this one disease is thus seen to be excessively great.

One remark only as to the predisposing and favouring causes of this evil—a wide subject if discussed in its various bearings—need be made at present, merely to recall to general attention the well-considered conclusion of the recent Royal Commission on the sanitary state of the Army respecting the cause of the great prevalence of pulmonary consumption among our soldiers generally, and its inordinate frequency among the household troops, viz., the close foul air of the crowded barrack-rooms at night.* Is the atmosphere of the lower between decks of a ship of war, after the men have turned into their hammocks, at all less impure? To use a common phrase, it is so thick that you might cut it. And when it is

* The words of the Commissioners' Report are these: "That the ravages committed in the ranks of the army by pulmonary disease are to be traced, in a great degree, to the vitiated atmosphere generated by overcrowding and defective ventilation, and the absence of proper sewerage in barracks."

The inquiries which have recently been made, to ascertain the causes of excessive mortality from lung diseases in certain districts of England, have led Dr. Greenhow to the conclusion that, "working in ill-ventilated and over crowded rooms," and "residing in dwellings so constructed, that the bedrooms are badly ventilated, and the cubical space per head is inadequate to the preservation of health, powerfully aid the operation of other injurious conditions in favouring the development of these disorders."—*Report of the Medical Officer of the Privy Council*, for 1860.

remembered that the men have suddenly to turn out from this close, damp, and fœtid air at night to go suddenly on deck in all weathers, the exceeding frequency of those illnesses, which always serve to accelerate the development of tubercular disease, is only what might be expected. That a large amount of the inflammatory affections of the throat and lungs in the Navy is due to the cause here indicated, will not be questioned by any medical officers in the service; and the experience of the present day is but the repetition of what has been strongly and repeatedly testified to by former observers. Sir G. Blane pointedly alludes to this subject as calling for the attention of the Admiralty in his day, and as one where salutary improvements were manifestly required. In the present day, when most ships of war are provided with steam power, and the heat of the between decks is, therefore, apt to be still greater than it used to be in former times, the necessity for the suggested improvements is the more pressing.

Diseases of the Brain, etc.

There is no class of diseases so fatal, in proportion to the number of attacks, in the Navy as those of the nervous system. By far the greater number of deaths under this head (there were 172) are due more or less directly to intemperance, and are classed under the designation of apoplexy and delirium tremens. The number of men hopelessly ruined in health and discharged as invalids from the service, chiefly from epilepsy and insanity,* swells the above figure to

* In the three years, seventy-six seamen were invalided on the ground of insanity; and that a good many who were discharged on account of epilepsy, palsy, and delirium tremens, would eventually lapse into some form of mental weakness can scarcely be doubted.

"The great proportion of maniacs among seamen is chiefly owing to injuries of the head received in a state of intoxication."—Sir G. Blane.

501, representing the total permanent loss in the course of the triennial. But even this aggregate gives but a very imperfect idea of the entire sacrifice of life and service arising from this national vice; as it is well known that, independently of many febrile and other attacks attributable to intoxication and its consequences, very many of the violent deaths from drowning, suicide, etc., occur, and nine-tenths of all the crimes and offences are committed, while under the influence of liquor. How to diminish this great public evil by the substitution of acceptable and less pernicious beverages, and in other ways, is still a question for further inquiry, although it has more than once come under the consideration of our Naval authorities.

Amount and Causes of Invaliding in the Navy.

The amount of permanent loss to the service by Invaliding *from disease alone* always largely exceeds that by Death from the same cause. During the three years, the relative proportion was two-fifths greater. The total number in this period invalided was 4221, and of this aggregate 3808 were from disease alone; the deaths during the same time from disease being 2125. Diseases of the lungs were the occasion in 692 cases, and three-fourths of these were consumption. Diseases of the bowels, chiefly dysentery, afforded 585; of this number 324 were from

the East India and China fleet, in 1858 alone. 162 cases were due to the sequelæ of fevers.

Various maladies which add but little to the death-list, annually cause a large amount of invaliding. In the three years,

448 cases were due to Rheumatic affections.
286 „ „ Diseases of the heart.
263 „ „ Ulcers and abscesses.
244 „ „ Hernia or rupture.
243 „ „ Venereal diseases.
235 „ „ Debility—complicated generally with some internal organic mischief, often of the lungs.

The great prevalence of rheumatism, with its disabling effects, is mainly due to the same external influences which occasion so much sickness from diseases of the organs of breathing;—viz., the cold damp state of the between decks in some ships; but principally to the abrupt transitions at night from the heated atmosphere below, when the pores of the skin are open, to, perhaps, a cold and wet watch on deck. The combined loss from these two orders of disease alone amounts to between a third and a fourth part of the total number of men, invalided in the course of the year.

Losses by War, Accidents, &c., compared with Losses from Disease.

I have now to compare the losses arising from the accidents, including drowning, to which seamen are specially liable, and also from the casualties of war, with the losses which have been shown to result from disease. For this purpose I have selected the Baltic

and Black Sea fleets in 1854 and 1855, and the East India and China squadron in 1857 and 1858, during the period of hostilities with China and the Indian mutiny.

The total mortality in the fleets during the Russian war, including the naval brigade and marines serving with the army before Sebastopol, was as follows:

From diseases - - - -	1574*
„ accidental injuries, suicide, and drowning	228
„ wounds received in action - -	227
	2029

In the Baltic fleet, in 1854, only fifteen deaths occurred from wounds in action at Bomursund, Hango, etc.; and in 1855 there were but eleven, of which five occurred from an attack by the enemy on a boat's crew, while landing some Russian prisoners under a flag of truce.

In the Black Sea fleet, in 1854, the total number of deaths from the casualties of war, afloat and on shore, was ninety-four; of which sixty occurred from the attack by the fleet on the sea-batteries of Sebastopol, and nineteen in the naval brigade (about 1200 strong), between the 2nd October, the date of landing, and the end of the year.

In 1855, there were ninety-eight deaths in the brigade from wounds received in the trenches before

* By far the greatest mortality was from diseases of the bowels, principally malignant cholera; 861 of the deaths were so occasioned. Diseases of the respiratory organs caused 217 deaths; fevers 172 deaths, exclusive of 29 deaths from the exanthemata, chiefly small-pox; and diseases of the brain 58 deaths.

Sebastopol, and six on board ship, either in the Black Sea, or the Sea of Azof.

Among the East India and China squadron, in 1857, there were eighty-seven violent deaths out of a total mortality of three hundred and twenty-seven. Of these eighty-seven, thirty-eight were from wounds received in action: viz., twenty with the Chinese, and eighteen in the naval brigade (520 strong) serving in India, against the revolted sepoys. Twenty-nine deaths resulted from drowning, thirteen from accidents, two from suicide, three from causes not stated.

In 1858, out of a total mortality of seven hundred and six, of which one hundred and twenty were deaths from violence, thirty-five were from wounds in action, twenty-seven in China, and eight in India; forty-nine deaths were caused by drowning, seventeen by accidents on board ship, three by suicide, one by a stroke of lightning, and fifteen from causes not ascertained, but "probably the result of injury or violence while on shore on leave, or in action with the enemy."

In the three years, 1856-7-8, eighty-two sailors and marines lost their lives in action, and eighty-nine by drowning.

The facts now stated show how small is the proportion of deaths in our navy, from the mere casualties of War.*

* Like results occurred during our former protracted hostilities with the Chinese, from 1840 to 1843. "The total deaths from wounds received in action amounted to 24, or in the proportion of about one annually in the thousand of mean strength; while the total loss from febrile and dysenteric complaints alone amounted to 547, or in the ratio of nearly thirty to the same amount of force." Even as compared with the number of deaths from other kinds of external violence, that from gunshot wounds was but small; for the deaths from ordinary casualties, principally accidents sustained by falling from aloft or into the holds, were forty-one, and no fewer than one hundred and nine were caused by drowning, five of which were suicidal.—*Statistical Report of the Navy (East India Station).* 1853.

Lastly, the proportion of men discharged out of the service in consequence of accidents and wounds, as compared with the number discharged on account of disease, is inconsiderable. During the three years, the number invalided from the former cause amounted to four hundred and eighty-three, out of a total of four thousand two hundred and twenty-one from all causes, or in the proportion of nearly a tenth part of the whole.

And now what are the inferences which seem to be fairly deducible from the foregoing facts and statements?

That a considerable portion of the sickness—the sickness, too, which is apt to be the most disabling and fatal—is owing to agencies which are well ascertained, and which are certainly not inevitable to ship-board life under any exigencies of public duty, will, I think, be generally admitted. The perfect soundness of the observation, already quoted on the title page of this letter, that "It is only by clearly and distinctly pointing out the causes which affect health, that we can hope to avert disease, and reduce the rate of mortality in the naval service," will be accepted by every sanitarian inquirer. Now, no one can well doubt as to the cause or causes of the exceeding and persistent unhealthiness of such ships as the *Conqueror*, the *Dauntless*, and the *Eclair;* or of the typhus fever generated on board the *Princess*

Royal, and the terrible malignancy of the yellow fever in the *Malacca*, and other vessels of the West India squadron in different years; or of the disastrous virulence of the cholera in the *Britannia*, at Varna. That the extreme sickliness and loss of life in the above instances were, to a large amount, avoidable, or, in other words, would not have occurred under circumstances less unfavourable to health, seems to me all but certain. And if this be true in regard of these ships, it is only but reasonable to believe that similar causes in other ships have given rise to like effects, though in a less degree, and varying according to the circumstances of each ship and her crew.

With respect to the all important subject of ventilation, it is now, I believe, nearly universally conceded, by executive as well as medical officers, that the accommodation for the men at night, in most ships of war, is insufficient;* and, also, that there is really no adequate reason for continuing the old usage of berthing almost all the crew upon one deck,

* The following description of the berthing of the men at night, and of its consequences, was given in the first *Statistical Report of the Navy*, in 1840. "The usual space between the suspending points (clues) of the hammocks is from seventeen to eighteen inches, so that, when they are extended by the beds, their bodies are in contact. The effect is to bring the bodies of the men into contact in greater or less number, according to the size of the ships. When at sea with a watch on deck, the accumulation and pressure are reduced by a half; but when in secure harbours, five hundred men perhaps sleep on one deck, their bodies touching each other over the whole space laterally, and with very little spare room lengthways. The direct results of elevated temperature and deteriorated air may be conceived; but it is not easy to conceive the amount of the first, nor the depressing and debilitating power of both, as measured by sensation, within the tropics. The tendency of such a state of things must be to subvert health, and lay the subject of it open to attacks of serious disease."

and that, generally, the least well-aired. I have elsewhere expressed my sentiments on this subject (*vide* Appendix), and beg to refer to them.

The between-decks of some ships are, it is known, so hot and close that for several months at a time, within the tropics, the men are compelled to sleep on the upper deck under canvas. The ordinary windsails are most imperfect ventilators at best; and often they cannot be used when most wanted. A good system, whereby the purity of the air in the lower decks may be maintained, especially when the ports are closed, is still a desideratum. Whether the Committee of Officers, that has recently been appointed to suggest means for improving the ventilation of war steamers, has had their attention directed to the berths of the crew, as well as to the engine-room, etc., I am not aware. It is a point that calls for special consideration, as of recent years almost all the instances of extraordinary mortality have occurred in steam vessels. Indeed, the whole subject of the relative healthiness of sailing and of steam vessels needs to be looked into. In the Baltic fleet in 1854, there was certainly a lower sick rate in the sailing ships of the line, than in the screw liners; and the former suffered much less from diarrhœa and cholera than the latter. In the Black Sea fleet too, in 1854, and again in 1855, the *Queen* and the *Rodney*, both sailing ships, were the most healthy of the squadron. Probably this is just what might be expected, considering the greater heat and closeness, as well as the large store of coal or other fuel, on board steamers; unless, indeed, extra means are resorted to for maintaining a more thorough circulation

of air—a purpose which the machinery in action may always be made to subserve.

It has been seen from the evidence of many officers that the condition of the holds in some ships is very far from what it is desirable that they should always be; for that the exhalations from the lodgment of offensive matters there, and occasionally from the timbers themselves, are productive of mischief to health and predispose to and greatly aggravate, if they do not directly engender, serious disease, can scarcely be doubted. This conclusion is only in accordance with the daily experience of civil and military life in like circumstances; for a foul hold is only a lengthened drain or gutter without the means for the ready escape of its contents, and these too subjected to constant shaking about from one side to the other. The miasmata from such a hold are sometimes spoken of as if they consisted merely of sulphuretted hydrogen—a gas, which, though certainly most noxious to life, cannot be regarded as ever the generator of fever, flux, or gangrene. The gas is but the accompaniment and the evidence of a more serious effluvium; the real source of the mischief arises from the putrescent decomposition of organic matter. Such miasms are, I believe, only less mischievous than the miasms proceeding from living bodies.

Sometimes, and even of recent years, the hold of a ship has been found to be anything but sweet shortly after she has been put into commission. This may have arisen from the practice of keeping a certain number of ships in an advanced state, *i.e.*, ready for commission, with their ballast on board, it may be for several years. When this is once disturbed by the

motion of the ship, the existence of something faulty may be only then discovered. Hence the desirableness that a thorough sanitary inspection and report be made of every vessel before she goes to sea, as well as upon her return to port at the end of her commission.

That not a little of the pulmonic disease, and also of the rheumatism, among seamen is capable of prevention is more than probable when we consider the very frequent cause of these ailments, viz., the abrupt transition from the overheated berth to the cold outer air, on every change of night watches. Humidity, too, is a great promoter of sickness. The dryer dwellings are, the healthier *cæteris paribus* they are. Medical officers are pretty generally agreed that damp lower decks serve to swell the sick list, and that it would be better for the men if dry cleaning and rubbing with hot sand often took the place of washing and wet holy-stoning. What was said in the first published Health Report, in 1840, on this subject was the result of extensive experience on the part of Dr. Wilson in all parts of the world;—"Evaporation, especially in low decks and low degrees of temperature, goes on slowly and, therefore, long; in hot climates it is, of course, more rapid and sooner completed; but in either case there is strong reason to conclude that the effects on health are injurious, sometimes highly so. Their power to excite catarrhal and rheumatic affections will not be questioned; nor ought there to be much question as to their power of exciting many of the inflammatory affections of the lower extremities, which in some ships give rise to much inconvenience and suffering. They tend to

reduce physical force, and thus co-operate in the induction of diseases of debility, or render the body more susceptible of attacks of violent disease."

It is unnecessary to say that it is always of much importance that the men should have the ready means of quickly drying, in a suitable place, their wet clothes when they go below.

The hurtful effects on health of a humid atmosphere are aggravated by the inevitable absence of sun-light from the lower decks of a ship. This point has not escaped the attention of Dr. Bryson in his suggestive paper on Medical Statistics in the Manual of Scientific Inquiry, prepared for the use of officers in H. M. Navy by authority of the Admiralty.*

On the subject of the food and drink in the Navy I have but little to say, and that little will have reference to the East India and China squadron, which, as we have seen, suffers so disproportionately from unmanageable and very fatal bowel complaints. It must be admitted, I fear, that our multiplied experience in Chinese waters for many years past has not yet enabled us to reduce the amount of sickness and mortality to which our ships of war are liable, whenever they have occasion to be long detained in any of the great estuaries. But it would be unjust

* "The marked difference in the appearance of men employed in the bread room and holds, compared with those who are freely exposed on deck, or in open boats, at all hours of the day, cannot escape the notice of the most superficial inquirer. It is, therefore, of importance to ascertain whether exclusion from the solar rays be not, to a greater extent than is generally believed, one reason why men who have acquired a pale waxy look from confinement below are more susceptible of disease, and less capable of sustaining its shock, than are those whose blood is enriched and strengthened by the free exposure to light, heat, and air." —P. 240, 3rd edition, 1859.

to sanitary science to believe that no reduction can possibly be effected in such a climate. That the climate has much, very much, to do with the extreme sickliness is beyond dispute; but then what are the circumstances and conditions which predispose the system to be most promptly and injuriously affected by the climate? Experience seems to point first and mainly to the nature of the *ingesta;* and, secondly, although in a minor degree, to exposure, especially at night and early morning, without due precautions. That the avoidance, as much as possible, of salted meats, and the substitution in smaller quantities of fresh meats with a larger allowance of rice, and, also, the more frequent issue of baked bread in lieu of biscuits, are most desirable, more particularly during the six hot months of the year, is the natural inference from what we know to be the pathological condition of the alimentary canal in dysenteric affections. And for the same reason, we are pretty sure that the daily issue to the men of a sound wholesome wine, in place, and to the exclusion, of ardent spirits could not fail to be beneficial. Of course, there may be difficulties in the way of carrying out such changes to the extent to which it may be deemed desirable; but still it is highly important to discover at all events what are the favouring, and what are the aggravating, agencies of so disabling and so destructive a disease to our Navy as dysentery. The influence of the water used on board for cooking, etc., is one of the points which appear to be far from being clearly determined, although it is difficult to believe but that the quantity of organic impurities in the Chinese rivers must have a pernicious effect on health. We

require to have a series of accurate chemical and microscopic examinations of the water in different localities, so as to compare the results, not only with each other, but also with the ingredients in the river water of other similar regions, where bowel complaints are less frequent than in China.

How to guard against the recklessness of the men when they are on shore, in respect of intemperance and other matters bearing on their health, I am incompetent to form an opinion; it is only the experienced officer who is entitled to speak on the subject. It is enough for my purpose merely to point once more to the sad sacrifice of health and life, that is still traceable to intoxication in the Navy upon all stations. Things are certainly not so bad as they were forty years ago, when half a pint of spirits was served out daily to every lad and man, throughout the service, whether they wished for it or not. Still much remains to be done to lessen the amount of intemperance among our seamen.

To effect a salutary change in this as in every other branch of naval hygiene, it only needs, I believe, that the attention of all the officers of the service, executive as well as medical, and of the general educated public also, be continually directed to watch the influence of every circumstance affecting the preservation of health and the occurrence of sickness in ships, and that all encouragement be given by the administrative authorities for the promulgation of sound opinions, and the tentative adoption of reasonable suggestions. Let no one permit himself to believe that any thing like perfection has already been attained. We have seen what extraordinary

success Captain Cook achieved, now ninety years ago, in preserving the health of his crew; and we know that instances of similar and even greater success have since been attained by following a like course of action. For example, to cite only one or two cases. About the beginning of the present century, the *Glatton* made the voyage round the world and returned to England after twelvemonths absence without the loss of a single one of her crew, 170 in number; and this, too, notwithstanding that she had carried out upwards of 400 convicts to Botany Bay, on the passage out (*vide* Appendix). And on the last of Captain Parry's Arctic voyages, the annual mortality of the crews was at the rate of only 0·5 per cent. of the strength.

It would be a fine thing, certainly, for science and humanity if ten per cent., say, could be struck off from the present ratios of sickness and mortality throughout the Navy. The saving of the loss of service, not to speak of the expense, would be of no slight consequence in a national point of view. Just in proportion, too, to every diminution of disease and death, so, we may be assured, will the robust tone of health and the vigorous alacrity of the well men be enhanced; for it should never be forgotten that there may be, and certainly is, a great deal of lowered health in all communities, short of the occurrence of actual illness. The problem of State Hygiene is not only how to prevent sickness in the public service, but how to maintain the highest possible effectiveness of the men. For the working-out of this problem in the Navy, the more that the medical officers of our ships are regarded in the light of preservers of health, and not merely of healers of

disease, the better; and, certainly, in no branch of the profession can abler and more enlightened men be found than in the medical department of the navy. The more, too, that the bearings of sanitary science are studied by the executive officers, the more they will, I am sure, appreciate their importance, and the more efficient aid they will be ever ready to give to all the recommendations of the medical officers. It is only necessary for them to peruse, from year to year, the very instructive Statistical Reports of the service, to fully understand how much the health of a crew depends upon the condition and sanitary arrangements of a ship.

In conclusion, I will only add that every step of practical progress in the hygiene of the Royal Navy is sure to react with prompt benefit on the health and general welfare of our Mercantile Navy,—which, of course, and rightly so, will always take as a standard for their guidance and example in such matters, the experience of our ships of war. And when it is considered that the number of merchant sailors employed in our foreign trade alone, exclusive of the large numbers on board coast steamers and sailing vessels, exceeds 200,000, and that often no small difficulty is found in obtaining the right sort of men for the service of this vast commerce, the magnitude and national importance of the subject are at once apparent. The best and the wisest, as it is the most humane, course is to use our utmost endeavours to prevent, by anticipative precautions, all unnecessary waste of available strength and power. That there is in our mercantile marine much preventible disablement and sickness—sickness too often terminating fatally, either abroad in hospitals, or among our civil population in this country—is well known to every one whose attention has been drawn to the matter.* The hygienics, indeed, of our merchant seamen have not yet attracted that amount of public notice which their great importance demands. If something of the same system of accurate registration and record, which has for some years now been so beneficially carried out by the Board of Trade, in respect not only of the fabric and sea-worthiness of ships, and of the accommodation to be provided on board for crews and passengers, but also of meteorological, hydrographical, and other scientific observations, all for the good and safety of the service, were extended to the no less important topic of the Vital Statistics of the men employed, results of inestimable advantage could not fail to be obtained. This subject has, I am glad to say, been quite recently taken up by my distinguished friend Dr. McWilliam, Medical Officer of Her Majesty's Customs, in a paper read at the last annual meeting of the National Association for the promotion of Social Science; and it is much to be hoped that his

* "The sanitary and hygienic state of merchant shipping is often very faulty; and there is good reason to believe that there is at all times a large amount of sickness, damaged health, and premature disablement among the merchant seamen, which might be easily prevented by simple precautionary measures." * * * "The sanitary condition, too, of most seaport towns, and more especially of those parts near which the shipping is lying, is generally reported to be extremely unwholesome, and calculated, if not to engender, inevitably to aggravate many of the diseases against which quarantine is directed."—*Report on Quarantine, by the National Association, etc., printed by order of the House of Commons*, August 1861.

extended inquiries may eventually lead to the recognition, by the Government, of the extreme desirableness of establishing a more full and accurate registration of the sickness and mortality among our merchant sailors than has hitherto existed.

I have the honour to remain,
SIR,
With great respect,
Your most obedient Servant,
GAVIN MILROY.

London: March 1862.

APPENDIX.

Unhealthiness of Sheerness and neighbourhood; influence on the Ships of War, Dockyard, &c.—Vide p. 30.

"Information showed, beyond question, that the population of the entire island of Sheppey is, to an enormous extent, afflicted with the effects of marsh-malaria, generated partly within the island, and partly on other adjacent mud-lands or marsh-lands about the Swale and the Medway; and that the diseases thus engendered occasion an immense amount of physical suffering, a very large interference with industry of all kinds, and a serious detriment to the efficiency of Her Majesty's service in that important locality."

Among the crews of the *Edinburgh*, and of the Steam Ordinary, averaging 1251 in number, 130 cases of malarial fever, 64 cases of rheumatism and neuralgia, and 81 cases of colic and diarrhœa occurred during 1857 and 1858; occasioning a loss of 2132 days service in these two years. A similar amount of the same sort of sickness prevailed among the crews of the *Waterloo* and *Formidable*, while at Sheerness, during part of 1858. The proportion of attacks of fever per thousand of the whole naval force was 106, and the average duration of each attack was very nearly nine days.

The Garrison Artillery, as might be expected, suffered still more than the population afloat. In 1856-57-58, no fewer than 344 cases of fever in an aggregate force, for the three years, of 2086 men. The average length of each attack was the same as in the Navy.

As to the workmen in Her Majesty's Dockyard (whose numbers averaged nearly 1700 during the three years), it appears that "of every 1000 men employed, more than a third part (perhaps more than half) suffer during the year from disorders which more or less decidedly are referred to that cause; viz., that 146 of them suffer fever, and that each of the 146 is thus kept from his work for (on an average) 9 4-5ths days; that 63 of them suffer neuralgia or other like pains, and that each of these 63 is thus kept from his work for (on an average) 10 3-5ths days; that 158 of them suffer from bowel-complaints, which are mainly attributed to the same sort of local influences, and that each of these 158 is thus kept from his work for (on an average) 5 days; besides that a very large amount of unrecorded illness and disqualification prevails among other members of the force."

With so much endemic sickness, it is not wonderful that Sheerness is said to be spoken of, at Chatham hospital, as "the African station of our home service."—*Report of the Medical Officer of the Privy Council*, for 1859.

Yellow Fever in Ships of War; effects of landing the sick.—Vide p. 33.

"The great and most important practical question arises, is it safe to permit the sick persons from such a vessel as the *Highflyer*, to be landed among a healthy community? This question was put to me, and, fortified in the opinion at which I had arrived by the results of many similar experiments in this place, I recommended that there should be no interruption to the *Highflyer's* people communicating with the shore; but intimated that it would be dangerous for strangers to be exposed to the atmosphere of the ship, so long as the disease continued in her. There has been no interruption to the communication of the *Highflyer's* officers and men with the shore; her sick have been in proximity with a considerable number of surgical cases from the other ships in the hospital, and with a large proportion of the crew of the *Persian*, affected with a malarious fever.

"No single instance of any kind of fever followed the landing of the *Highflyer's* sick, or the free intercourse of her officers, stewards, and people with the town, either in the hospital or in the town.

"I have witnessed and watched the progress of so many epidemics in this place, as to feel perfectly satisfied that any contagious powers the disease may possess in crowded ships, is speedily rendered inoperative by moderately good ventilation; and that the best mode of checking the progress of such diseases is to remove the sick to roomy quarters on shore as speedily as possible."—*Report of* Mr. Watson, *Medical Officer of Port Royal Naval Hospital, printed by order of the House of Commons*, May 1853.

Mr. Watson and Deputy Inspector Dr. Wingate Johnston were at Port Royal when I was in Jamaica, in 1851, and with both these gentlemen I had frequent opportunities of inspecting the ships of war, and the large naval hospital on the station.

In the dispatch of the Governor of Barbadoes to the Right Hon. Sir J. S. Pakington, Secretary of State for the Colonies *(printed by order of the House of Commons*, March 1853), we read:—

"In forwarding a copy of the report of the Health Officer,* on which the sick of the *Dauntless* were removed to the military hospital, it is very satisfactory to find that by observing the precaution recommended, the disorder was not in a single instance

* "The sanitary measure that I advise, is an immediate removal of the sick to the shore, taking proper precautions for an efficient segregation of them."

extended to the troops, affording, as it does, a strong confirmation of the soundness of the views by which the board have been guided."

Captain Halsted, in his letter to the Governor, mentions that "on the ship's first arrival, all communication with her was peremptorily stopped, an exclusion which still continues with regard to all but the *native* labourers and servants employed on board." The omission of this necessary precaution: viz., of employing only the coloured natives to go off from the shore on board a fever-smitten vessel in the tropics—occasioned, it is to be feared, the spreading of the disease to the unacclimated boat's crew of one of Her Majesty's ships, recently at Port Royal, with very disastrous results. The most regretable point in the history of the *Dauntless* was the not landing the whole, or greater part, of the crew, the unattacked as well as the sick, as soon after arrival as possible. A large number of valuable lives might thus have been saved; as fresh cases, very many of which proved fatal eventually, continued to occur on board for several weeks afterwards.

Defective Ventilation in Ships of War.—Vide p. 55.

"In consequence of the very fatal outbreak of malignant cholera in the fleets at Varna in the preceding year, when general alarm was occasioned in the land and sea forces of the allies, and the expedition to the Crimea was thereby considerably delayed, the Lords of the Admiralty considered it advisable in the summer of 1855 to put the Commission in communication with the Admiral in command and with the principal medical officer of the Black Sea fleet, in the event of epidemic sickness again prevailing in the squadron."

"A minute inspection of the *Royal Albert* was made by Dr. Milroy, in company with Dr. Brien, the principal medical officer, and subsequently of the *Queen*, with Dr. Deas, Inspector-General of the fleet. Especial attention was paid to the arrangements on board ships of war, which are generally believed to have most influence in predisposing the crew to attacks of epidemic diseases, and in rendering these attacks formidable. The foremost of these is the amount of accommodation between decks for the men at night. In line-of-battle ships, the lower gun deck is reserved for this purpose; in two-deckers, the marines as well as the seamen sleep there; but in three-deckers, the marines and boys occupy the fore part of the middle deck. From 600 to 800 men, according to the strength of the crew, are thus usually berthed on the lower or main deck. By the relief of watches every four hours, there may never be more than one-half these numbers in their hammocks at one time; but, nevertheless, the whole have to sleep on that deck from night to morning. * * * When the ports are closed, the only means of admitting fresh air is by the hatchways, with or without the aid of windsails, so that the same openings serve the double purpose of entrance and escape.

"On board the *Royal Albert*, and in other *screw* line-of-battle ships, most of the officers have their cabins on the orlop deck, where all the midshipmen and mates also sleep. This arrangement, introduced of late years, must serve to render the atmosphere in the main deck still more impure; the heated breathed air from the orlop deck passes into it. The officers' cabins are apt to become quite stifling when the scuttles are shut, more especially when the furnaces are lighted.

"The accommodation for the sick in screw ships, as in the *Royal Albert*, is, in several respects, inferior to that on board sailing ships of the same class. The sick-bay is much smaller, occupying only one side of the upper deck forward instead of its entire breadth. It is not nearly so well ventilated, and does not admit of being so well ventilated. It is, moreover, exposed to contamination of atmosphere from the faulty arrangements of the water-closets, which have been adopted in the new ships.

"That the ventilation of the between-decks, and of the cabins, is capable of being greatly bettered by sufficiently simple means cannot be doubted. Still it is very questionable whether, by any means, it can be made so perfect as to render the air at night as pure as is desirable, or even safe in certain seasons, while the crew continue to be crowded together on one deck, and that deck the lower one. At least one-half of the best sleeping space in a ship of war is, in ordinary circumstances, left unoccupied. It is only made available when there is much sickness on board, and then it is used as part of the sick-bay. There appears to be no other reason for its non-occupation at other times, but the practice hitherto of the service. Free space and pure air are, however, as necessary for the prevention of disease, as for its mitigation and arrest.

"The changes in the accommodation for the well and sick, adopted of late in the new screw line-of-battle ships, have had the effect of diminishing the amount of space, without any concomitant improvement in the ventilation of the decks. This point requires the more notice, as the heat on board a steamer is of course greater than in an ordinary sailing ship, and the atmosphere is liable to become more oppressive. Many of the most fatal outbreaks of pestilence in the navy of recent years have occurred in steamers." —*From "Notes on Ships of War," by* Dr. Milroy, *in Report of the Sanitary Commission to the Army in the East.*

From a letter which Dr. Deas wrote me from the Bosphorus to Balaklava in November, 1855, I extract the following passage:— "The want of ventilating tubes, whether fitted into the ship's sides or otherwise, is common to all the decks, and is, doubtless, the cause of some mischief. And insisting on the lower deck in two-decked and frigate-built ships, and the lower and middle in three-deckers, being the only decks for sleeping the whole of the crew is, I fear, the source of still greater evil. *They clearly ought to be distributed over all the decks.* * * * There is no attempt at a

ventilating tube, leading either to the upper deck or into the steam funnel, or anywhere else, from the officers' cabins (on the orlop deck); and these cabins must become most destructive to health, especially when the steam is up." Dr. Deas mentions, also, the want of proper accommodation for the reception of the wounded in action in screw liners, and of the bad state of the cock-pit generally in these vessels. The opinion of so experienced and able an officer is, of course, entitled to great weight.

Diet of the sailor in malarial climates.—Vide p. 59.

Deputy Inspector Dr. Smart, in a valuable paper on the Diseases of the Navy at Hong Kong, just published in the *Transactions of the Epidemiological Society*, draws attention to a point of no small moment in the preservation of health in both public services. "From this," (*i. e.* the diurnal ranges of temperature from a high heat to great chills), "we should derive a very important indication, not always attended to, to watch carefully that our men on night duty are well protected by warm clothing, and fortified by the stimulus of warm food and drink during the night and towards dawn. By routine we crowd the aliment of our men into a few hours before and after mid-day, by which the system is left without support when most urgently demanded to ward off the depressing influences of climate. I am convinced," adds this experienced observer, "that the invasion of diseases, which have cost the lives of hundreds of our brave seamen and soldiers, has been greatly owing to this erroneous system."

The point here indicated was carefully attended to in the case of our troops during the late operations in China, and, as was to be foreseen, with most salutary effects.

Case of the Glatton; mode of ventilation, vide page 61.

This vessel, one of the old East Indiamen class, was fitted up specially, under the direction of Count Rumford and Sir G. Blane, for the conveyance of convicts to Botany Bay, in consequence of the great mortality which had previously taken place in the transports employed in this service. The voyage was performed without either fever, flux, or scurvy occurring on board, and with the loss of only five of the male and two of the female convicts from chronic diseases.

The means adopted to insure effective ventilation of the between decks were a series of air-tubes passing up from where the convicts slept to the open air; also a narrow opening amidships along the whole length of the upper deck, protected by a pent-house covering raised a few inches above it to prevent rain, etc., from entering, and scuttles at the side to open or shut according to the state of the weather. The air-tubes and the deck opening acted, of course, in all states of the weather.

had assumed a stercoraceous character. When visited at this time, she had all the appearance of sinking, her features being very much changed, and her pulse nearly imperceptible at the wrist. Stimulants were used without any benefit, and she gradually became weaker, and died at 4 A.M., retaining her consciousness to the last.

She had previously enjoyed good health, so far as could be ascertained; but, about twelve months before this, had a slight attack of bilious vomiting, which was quickly relieved.

On *post-mortem* examination, the stomach was found filled with feculent matter; and, on tracing the gut, a hard substance was found firmly impacted in the ileum, about 14 inches above the caput cœcum. The mucous membrane on each side was highly injected. The substance found in the ileum, on examination, proved to be a large gall-stone, weighing about five drachms, and measuring one inch and three quarters in length by one inch in breadth. On opening the thorax, extensive pleuritic adhesions, of old standing, were found on the left side. The pericardium contained a considerable quantity of blood; the heart was small and atrophied, and, on raising it up, blood flowed from several small fissures in the right ventricle, which was very soft and fatty, and broke up on being touched even very gently.

Part Second.

REVIEWS, ETC.

1. *Report of the Commissioners appointed to inquire into the Regulations affecting the Sanitary Condition of the Army, the Organization of Military Hospitals, and the Treatment of the Sick and Wounded; with Evidence and Appendix.* 1858.

2. *Report from the Select Committee on Medical Department (Army).* 1856.

3. *England and France before Sebastopol.* By CHARLES BRYCE, M.D. 1857.

4. *Recherches sur les Maladies de l'Armée d'Orient pendant l'hiver de* 1854–1855. Par M. le Docteur THOLAZAN. 1856.

So quickly now-a-days are the scenes shifted and the actors changed on the busy stage of life, and so rapidly do new objects of engrossing interest supplant their predecessors in the public mind, that we perhaps owe some apology for going back to the subject of the Eastern war; but some such brief reference is needed to introduce the contents of these two blue-books. When the frightful degree of sickness and mortality in the Eastern army was the overwhelming

subject of public interest, attention was naturally directed to the system and condition of the public body which is charged with the medical care of the army; and, at the same time, there was much criticism, not only of the general administration of the army as a mass, but also of the particular circumstances which, under that administration, and having reference to his sanitary condition, surround the soldier at home and abroad. The late Mr Augustus Stafford was one of the first to exhibit, as a result of close personal observation, the many defects of the system; and he was also foremost in exonerating the medical department, in so far as that department is a mere aggregation of individuals, from any blame in the matter under discussion. He procured the appointment of a Committee[1] of the House of Commons, which collected much evidence on the constitution of the department, both as to the position of the individuals composing it, and as to the degree and direction of their influence, as constituting a part of the general system of administration. The recommendations of the Committee, the executive Government did not think proper to give effect to; but, fortunately, appointed a Royal Commission,[2] charged with the duty of reporting not only on the medical department, but also on a much more important and extensive subject, and one which has little more than an apparent connection with the first—the general sanitary condition of the soldier, the effect and influence of his environments on his health, efficiency, and expectation of life. The result of their inquiries is a mass, huge, and, we had almost said, quite indigestible; but the glib ready writers of the daily and weekly press have presented us with fluently written abstracts of the most noteworthy points—these abstracts being, however, unluckily coloured with the sectional views on the much-vexed question of administration advocated by each individual writer, and betraying, too, an ignorance of the intimate relations of the different points which could only be removed by personal contact and prolonged observation. The diligent student of the Report and Evidence will find that to reach important and positive facts, and to secure for himself matter for practical thought, he must search through a quarry containing much formless and pretentious rubbish; but we venture to promise that he will certainly find these jewels of much value, and there can be no doubt that the whole book is calculated to supply, for many years to come, a handbook of reference on all the points embraced by it.

Large as the book is—a circumstance inseparable from the form

[1] The Committee consisted of Mr Stafford (*chairman*), Mr Bellew, Colonel Boldero, Sir James Ferguson, Sir Henry Davie, Sir John Hanmer, Colonel Kingscote, Mr Leveson Gower, Captain Laffan, Mr Legh, Mr Noel, Colonel North, Mr Peel, Mr Percy, and Sir John Trollope.

[2] The Commissioners were Mr Sidney Herbert (*chairman*), Mr Stafford, M.P., Sir Henry Storks, Dr A. Smith, Mr Alexander, C.B., Sir Thomas Phillips, Sir James Clark, Mr J. R. Martin, and Dr Sutherland.

of the inquiry—one is every now and then struck with regret, that many points have not been more fully entered into. Of these subjects, any one, at first sight the most trivial, may be of considerable importance. For instance, and to take a very petty subject, there was a good deal of loose talk about shirts—about the comparative merits, as part of a soldier's kit, of flannel and cotton shirts. The non-commissioned officers who were examined, objected to the use of flannel as being expensive, difficult to wash, and liable to contract much dirt—good soldiers' reasons. Some military and medical witnesses strongly advocated the use of it, but, unfortunately, without stating reasons for the preference; and so the matter was left. But in this very minute point are involved, not only most important sanitary considerations, but also the question of expense as well as of transport, which latter is perhaps the most important of all, in connection with an army in the field. Again, there is no more important article of dress than the feet covering. Marshal Saxe said that "legs win battles;" and Count Alfred de Vigny tells us that the fortune of a campaign may be settled by the way of lacing soldiers' boots. Although this subject was once or twice touched on, there is no conclusion, and nothing to form a conclusion from. All this by the way, however. Our space will only permit us to glance, in the briefest and most cursory manner, at a few of the more salient of the points discussed by the Commission.

If the object and essence of all strategy is to bring the greatest power to bear on the weakest point—to have the *gros battalions* massed at the right time and at the right place—it may be said that the sole purpose of all the immense machinery of army administration is simply, that for every firelock and for every sabre, there should be a capable, athletic, usefully equipped man-at-arms to wield them. For this end, and for this end only, do Departments exist; and the sole test of their efficiency must be the extent of means which they place in the hands of the military commander. The Eastern campaign, which was fruitful in so many experiences, exhibited two very different ways of treating soldiers. The transition from one to the other was almost immediate; and the experiment had this further advantage, that both plans were broadly marked, and diametrically opposed, one to the other. These two were—starvation and pampering. We had first, utter hunger and nakedness; and when the inevitable sickness came—sickness even unto death—so universal was it, that there was little but salt pork and hard biscuit to offer to poor scorbutic wretches, who lay down and died in cold and mud. Then, quite suddenly, we had a profuse expenditure, the very waste and excess of which might have fed and furnished an army. The healthy were fed with a lavish extravagance, and no luxury was considered too great for the sick. Fortunately, the experiment was not carried further. We were not afforded the means of observing the influence of the pestiferous

districts of Asia Minor, to which all eyes had been bent as the scene of the coming campaign, on the "soft, inflated state of the system, simulating robust health," which Dr Lyons[1] observed so generally in the spring of 1856. It would not be easy to say which of these two plans was the most expensive; both were certainly terribly expensive and very short-sighted. The object should be to discover the happy mean. It will be admitted that the training of the soldier should be somewhat Spartan—not according to the standard of Lycurgus, but according to the standard in use and vogue at the period when the estimate is made. The greatest degree of individual effectiveness, with the smallest amount of cost required to produce it, is what the civil departments have to set themselves to establish; all the rest is for the general. With the discussions which this Report has originated, the Horse Guards has really very little to do. They lie not so much between Captain Sword and Captain Pen, as between one Captain Pen at Printing House Square, and another Captain Pen at Pall Mall. "Battles," said Marshal Turenne, "are fought by generals, campaigns are won or lost by the commissariat." How much it should pay for efficiency, and how the money is applied, is what the country has to consider. The matter seems to be a very simple one. Fresh air, and plenty of it—good and well-assorted food, and not too much of that—well-devised and appropriate clothing,—we really do not know that anything more is wanted. The Commissioners tell us very fully how far these requirements have been supplied.

We need not here repeat the tables of mortality which have, within the last two months, been read by all. Suffice it to say, that the soldier's expectation of life is shown to be as bad as that of the inhabitants of the most unhealthy town districts; and with regard to occupations, the soldier's is only to be compared with the most unhealthy. If it is remembered how many men are discharged from the service, on account of disease, it may be broadly stated that, as far as reliance can be placed on the Commissioners statistics, the soldier's is the most unhealthy occupation followed in England.[2] It had been long known, or rather felt, by all who

[1] Report of the Pathology of the Diseases of the Army of the East. 1856.

[2] We must repeat the usual caution against a too ready reliance on figures, when "disturbing causes" are not specified. For instance, it is stated that "the mortality of the army, when hutted before Sebastopol in 1856, as compared with that of the troops at home, was nearly one-third less than that of the infantry of the line, and two-fifths less than that of the Guards when barracked in England." This is, of course, ascribed to sanitary measures. It is not, however, stated that at that time there was a regular service of sick transports organised, and that every case of chronic disease was sent home, all efforts being made, in view of the expected campaign, that none but effective men should be present; while the most cursory glance at the other tables shows that the great mortality at home is from chronic diseases. The small ratio of sickness to strength at that period was much commented on. This, we apprehend, was entirely, or almost entirely, owing to the absence of syphilitic diseases. If the cases belonging to the syphilitic category were removed from the home returns, the proportion of sick to strength would be exceedingly small. When the favourable rates in the Crimea, in 1856, are ascribed to sanitary measures, it should be remembered that the allotment of cubic space in the huts was less than that prescribed by barrrack regulations.

had much intercourse with them, that their rate of mortality was exceptionally high, but the facts adduced by the Commissioners, and enforced by every sort of manipulation of figures and diagrams, must have struck even those who thought themselves best informed, with amazement.

We cannot help thinking that there is a certain fallacy in the assertion that the "soldier's is a picked life." That recruits are selected with a certain degree of care is very true, but that they are select lives in the sense in which an actuary would use the term, we very much doubt. They are the best men of their class, perhaps, but that is the very class of the population which most of all sins against sanitary laws, and it is one in which these sins of the parents are visited on the children through every degree. The recruits are, more or less tainted with the strumous habit, and are therefore just in a condition to be speedily affected by the deleterious causes which we proceed to consider.

In discussing these causes, it appears to us that the Commissioners have passed far too lightly over the night duty. They seem to have been induced to do so by some statistics of the London night police presented to them; but the night duty of the police is very different, in all respects, from that of a soldier on guard, and even its severity may be judged from the fact that the average total service in the force is only five years, and that this low average is ascribed "to the frequency of invaliding or resignation on account of ill health." The Commissioners, as we shall have to point out again, have shown too great a disposition to establish an arbitrary analogy between military matters and some supposed identical condition in civil life, and from this analogy to put forward conclusions, which, as in the present case, we venture to think fallacious. That no comparison should be instituted between a soldier on guard and a night policeman, is well shown by the proposal made by some of our "week-day preachers" to carry it out in practice, and, in fact, make the sentry no sentry at all. These gentlemen forget that every duty assigned to a soldier, wherever he may be, is intended to be a lesson and a preparation for some position that he may have to occupy in actual war; even the ceremonies that so much amuse Cockney story-writers have some original meaning, or point to some purpose of necessary duty. The soldier on advanced sentry before an enemy must take his chance of being wounded or killed, and the sentries at the Tower or Buckingham Palace, who are placed there to learn their duty before an enemy, must run the risk of suffering from the slower operation of insidious disease. They must be relieved frequently, must be on the alert when on their post—not

foraging in the kitchens of the neighbourhood, as writers in the *Times* would apparently have them to be—and they cannot remove their uniform and belts in the guard-house, simply because they must be ready to turn out at a moment's notice. Our business is to reduce the noxious influences as much as possible. There can be no reason for the guard occupying a close and ill-ventilated guard-house,—and guard-houses are, as a rule, much more tainted than even barrack-rooms. It seems probable that most of the bad effects of night duty on health should be referred, partly to the clothing, but chiefly to the fourth and last class of causes enumerated in the Report.

As to "want of exercise and suitable employment," as a cause of mortality, it would be exceedingly difficult to furnish any precise data from which to show that they operate at all. With the admission that there is a good deal of truth in what is said of the monotony of an infantry soldier's life, the wearisome fixing and unfixing of bayonets, in which so much of his time is spent, this section of the subject may be dismissed.

To "intemperate and debauched habits" we attach more importance than the Commissioners seem inclined to do. It is true that, at home stations at least, the soldier has neither the means nor the opportunity of occasional drinking to excess, or constant tippling. That form of intemperance, therefore, can have but little influence in swelling the home returns. But while it cannot be doubted that the returns of sickness, which indicate the ratio of non-effectiveness from time to time, are enormously influenced by the extent of syphilitic disease, it appears to us that that cause, acting along with others to be afterwards specified, has a most serious influence on the rate of mortality. A young man of the same class in civil life, when he contracts a venereal disease, becomes an inmate of a civil hospital, the condition and arrangements of which are such as to promote a speedy and permanent cure: or he is an out-patient of a dispensary, and while undergoing treatment follows his ordinary occupations, which afford him the best and cheapest of all medicines—fresh air. This is the only medicine that is denied to the soldier. It is necessary, in the interest of good order and discipline, that he should be placed in a hospital ward, and what these hospital wards are the, Commissioners tell us. The original, simple disease soon becomes complicated, and a syphilitic cachexy is engendered, between which and the remarkably high rate of mortality from phthisis, it cannot be difficult to establish a necessary connection. Every one acquainted with military hospitals must have been struck with the vast proportion of cases of the secondary and tertiary forms of syphilis to be found in them, and must have been driven to the conclusion that, treat the primary disease how you please, the poison takes possession of the system, and shows its virulence for years to come. What a sensible and serious drag on the efficiency of a corps this must be, we need not point out. We are

satisfied that in so far as there is more chronic syphilis, in proportion to the extent of primary disease, among soldiers than civilians, the result is entirely due to the deficient supply of pure air, the want of which the surgeon is driven to the expensive necessity of attempting to supplement with a large issue of porter and costly drugs; and this is one only of the many exemplifications that could be produced of the short-sighted policy that has stood its ground up to the present time. It is to be regretted that the Commissioners have given currency to the fable, that soldiers "frequently conceal" these diseases. This is a notion which has always appeared to us to be a lingering remnant of the times, not very distant, when it was the fashion to look upon a soldier, and to treat him too, as if he was but little raised above the brutes; and it is an opinion which one hears but seldom expressed now, except by some old officers, chiefly medical officers, who may find it a useful plea for enforcing on their juniors a disgusting task, as useless for any imaginable purpose, as it is degrading and humiliating to all concerned in the execution of it. If any men are found who are so utterly foolish as to think of concealing disease, let them be put on their honour, as Mr Dartnell told the Commissioners that he did with his regiment,—let them, in one word, be treated like soldiers, and the best results will follow.

While these three causes must exercise a certain influence, there can be no doubt that the overwhelming cause of the excessive sickness and mortality is the one which stands fourth and last in the Report, "Crowding and insufficient ventilation, and nuisances arising from latrines and defective sewerage in barracks." While extensive and expensive sanitary improvements have been carried out within late years in all our towns, they have been arrested at the barrack gates,[1] and refused an entrance at the very places at which it was to have been expected that an enlightened government would have enforced them. All the evidence supplied to the Commission, and all that is quoted from the proceedings of the recent Barrack Committee, tell the one uniform tale of defective original structure, defective sewerage, and above all, want of space. While we confess ourselves staggered by the rates of mortality, and quite unable to fully account for them, we entirely agree with the conclusion, that it is to this cause that they must mainly be ascribed.

The next point to consider is, on whom the responsibility for this state of matters rests, and how it is to be remedied, but it may be convenient, before doing so, to pass in review some secondary points. When the Commissioners assert, that "a soldier, on entering the service, has the prospect of dining on boiled meat for twenty-one

[1] An apt illustration of this occurred a few years ago at Gibraltar. A sanitary inspection of all the dwellings of the civil population was made by a medical officer appointed to the duty, and a scheme of improvement was instituted and carried out. Every dwelling-place on the rock was brought within the operation of it, excepting the soldier's barracks.

years," they state what is very far from being strictly correct. In the first place, they themselves tell us elsewhere that the men do arrange for their rations being occasionally baked; and any one who passes a barrack of a Sunday, after church parade, may satisfy himself that enormous meat pies are not seldom to be seen in the different messes; in the second place, it is forgotten that all the twenty-one years (or rather ten years, the Commissioners strangely forget the Limited Enlistment Act) are not passed at home, and that abroad, the soldiers' messing must be in some sort assimilated to the habits, and dependent on the markets of the country in which he is serving; and, in the third place, it is not boiled meat that constitutes the ordinary dinner, but soup and *bouilli*. It cannot be said that, in preparing this dinner, the best use is always made of the materials, because soldiers do not differ from the rest of their countrymen, or from their countrywomen, in respect of cooking powers, and are often not only bad, wasteful cooks, but very prejudiced and bigoted to boot. There can be no objection to cooking ranges being supplied, giving facilities for roasting and baking, but when a piece of roasted meat is duly divided and three quarters of a pound, less bone and the necessary waste in cooking and issuing, is offered as a strong man's dinner, and offered, too, as a boon and an improvement, it may be expected that a higher value will be set on the beef and broth than Sir Richard Airey told the Commissioners is the case at present. With great respect for Sir Richard's opinion, and long regimental experience, it must be stated that soldiers not only like the present system, but stubbornly refuse to admit of any improvement in the mode of cooking. It should be remembered, too, that in a campaign, for which all arrangements in barracks and standing camps should be only preparatory, the present is the only possible mode of cooking, and we really do not know that the virtues of the meat and vegetables can be better obtained in any other way. The Great Napoleon well knew how to make soldiers, how to preserve them, and how to use them, and one of his maxims was, that "soup makes the soldier." His soup-fed soldiers,—and fed on very meagre soup, too,—beat the tallow-eating Russians, the sour vegetable-eating Germans, and on the Pyrenees and at Waterloo, stood a good deal of beating from the English, whose "solidity" General Foy, with truth as well as sarcasm, ascribed to their solid and regular feeding. The stalwart men who did such a good day's work at Alma, and again at Inkermann, the magnificent troopers, "whose limbs were made in England," who, with a stout arm and a good sword, followed General Scarlett through masses of Russian cavalry at Balaklava, had, the Commissioners would tell us, been fed for years on monotonous boiled beef. Indeed, there is much to be said for this boiled beef. Shakspeare, to whom all subjects within the range of man's observation, should be referred, makes Orleans hope to win the day at Agincourt, because "these English are shrewdly out of beef;" and the Constable says that "that island of England breeds very

valiant creatures; their mastiffs are of unmatchable courage, and the men do sympathize with the mastiffs in robustious and rough coming on, leaving their wits with their wives; and then, give them great meals of beef, they will eat like wolves and fight like devils."[1] Dr Christison proposes, for all experimental diets, the best test, that the men using them should be weighed at intervals, and, certainly, tried by this test, the soup and *bouilli* would not be found wanting. It is a matter of common observation that the recruit increases much in weight very soon after joining; indeed, so marked is the influence of the new diet, that he seldom passes through his noviciate, without some brief febrile sickness caused by continued repletion. This subject of diet is one on which it is most important that a clear decision should be arrived at, and that cannot be done without calling in the aid of chemical science. Home rations may be left to settle themselves. It is with regard to field service, when the soldier has so often to burden himself, in addition to his other *impedimenta*, with so much as three days' rations, that we require definition and advice. What grounds have we for supposing that, for the next war, the Commissariat may not give us again the poisonous rations of 1854-5, or the bulky and non-transportable issues of 1855-6. It is not the proper time to settle a question like this when the country is in the midst of a great war, after the preliminary disasters that all history teaches us to look for, and when the public mind is in a state of feverish and hysterical excitement. The problem is, to establish a scale of diet, offering, in their due proportion, the animal, vegetable, and farinaceous ingredients, combined with a due regard to the important considerations of bulk, cost, transport, and preservation.

Considerable improvements have, within the last two or three years, been made in the matter of clothing, but much remains to be done, if only to remove unintelligible anomalies. The men of Highland regiments, and they only, are supplied with a sleeved waistcoat. An artilleryman must show two flannel-shirts in his kit, while a linesman does not do so, and has no room for them in his pack. In 1855-6 the men in the Crimea were encumbered and embarrassed with all sorts of warm clothing—fur, flannel, and broadcloth—and the very same men, on their return to England, were made to shiver in a jacket that weighs, buttons included, twenty-four ounces only! When they find themselves in a military prison, they are furnished, for an artificially regulated temperature, with jacket and waistcoat, together weighing fifty-four ounces. The regimental trousers weigh seventeen ounces, the prison trousers thirty-four and a half ounces. The great-coat, which, in extremities, is the soldier's only house, and one that he always carries about with him, is very capable of im-

[1] "Every French soldier carries a marshal's *baton* in his knapsack." Let every English soldier carry a copy of *Henry the Fifth* in his. It will teach him English history where Chatham learned it; and it will teach him how to deserve the *baton*, which may sometimes be better than receiving it.

provement. It is made of bad materials, porous, not affording sufficient warmth, and stinted in the supply of cloth. Surely, these and other deficiencies and anomalies, require only to be known to be remedied.

The greatest defects of all, and the most easy of improvement, while, at the same time, they must prove the most expensive, are in the structure of the fabric of barracks and hospitals. The grand wants are,—increased space, efficient drainage and sewerage, and a suitable arrangement of the respective buildings. But the present structures have, in most instances, been misbuilt with such perverse ingenuity, that, to them, the correct system which could be easily laid down on paper, can only be applied approximately. To thin the beds, it will be found most advisable to erect wooden huts, the use of which has been revived, and the sanitary value of which has been recognized by medical officers ever since the publication of Dr Brocklesby's observations. For new structures, it is necessary that a determinate plan should be fixed on. It cannot be tolerated that the arrangements of a new barrack or hospital should depend on the individual opinion, or perhaps the caprice of this or the other engineer officer. Indeed, it is much to be desired that the Royal Engineers, admirable as they always are in the performance of their own special duties,—such duties as they are professionally acquainted with,—should be relieved from one of which they can have but a slight knowledge. They have been tried for many years, and in every garrison town there are to be found standing and very solid records which show that they have been found wanting. Visit any hospital erected within the last few years, and what do you find? Externally, a building of the most durable and solid construction, built on a foundation of concrete, the cost of which would, according to Dr Brocklesby's views, have sufficed to provide accommodation for the sick of a division. The building seems fitted to last for ages, surely till long after that happy time when wars and rumours of wars will be no more heard in the length and breadth of the land. Enter—and you find small, narrow, contracted wards, too high in proportion to their breadth, the walls of rough, porous, whitewashed brick only; the different offices are all in the same style; the lavatory, if there be one, is an inconveniently placed outhouse; and the water-closet, if there be one, is probably untrapped. On barracks, we need not make any special remarks, further than by calling attention to the statements in the Report, and the valuable improvements which it suggests.

And now, all these defects and shortcomings being admitted, What is the cause, and how is a remedy to be applied? "A question to be asked." The most ready, the easiest, and the least troublesome reply is, that it cannot be done without money, and that money has not been forthcoming. It will be observed, that those to whom blame is most likely to be attached, set great store by this answer—"There is no straw given unto thy servants, and

they say to us, Make brick: and, behold, thy servants are beaten; but the fault is in thine own people." A little consideration will show, however, that this explanation is not much more than superficial, and that we must go somewhat deeper to find the true remedy. It is very certain that large sums are annually voted for military buildings; it is notorious that the minister has only to put such a vote on the ground of benefiting the soldier, and all opposition from the most niggard financial reformer is pretty sure to be withdrawn. The question is, What has been done with these sums? What can be shown for them? For instance, it is only within the memory of soldiers who are not very old, that lavatories have been supplied to barracks. The exact sum that may have been expended on these most important adjuncts cannot be here stated; but, remembering the way in which Government is made to pay for such undertakings, it may be assumed to be considerable. Now, in any workhouse, jail, or military prison, in the hospitals for poor children that so much adorn this city, the lavatory will be found conveniently placed for the use of the inmates—a dry, weather-tight, most comfortable apartment, with all means and appliances *inviting* to personal cleanliness. In every barrack that we ever visited, and we have seen many—and the lavatory is always the first place that we look for—the soldier's ablution room is a detached building, paved with stone flags, with wooden gratings laid on them; dirty-looking metal basins placed on a brick platform; the whole place wet, sloppy, and uncomfortable; in fact, all the few means and appliances *repelling* cleanliness. This may be taken as a specimen of what has been done for barracks; but, for the many defects, it is not necessary to travel out of the Report. If the money has been given, and the money's worth has not been got in exchange, it must be in the system that the error lies. Three years ago, when, under an enormous pressure, all the departments seemed to break down, there was a great outcry on the subject of administrative reform, "routine and red tape" being the particular objects of condemnation. It is not necessary, let us hope, now-a-days, to defend method and system from the ignorant attacks of these times. When the minister, under whom "routine and red tape" were supposed to have destroyed an army, was driven from office, it was said that his successor was to reform, in a rational direction, the whole method of administration; and the public, always led so much more by phrases and political predelictions than by facts, seems to have pretty generally acquiesced in the opinion that he has done so. It is true that, in the course of these three years, great changes have been made; but it would be difficult to show that greater directness of action has been, in any sense, attained. We rather apprehend that, for a reason to be presently stated, a more complicated system of circumlocution has been the result. Such delay as may have been caused by certain supplies being in the hands of a distinct authority —the Board of Ordnance—has been certainly put a stop to, by the

simple expedient of abolishing the Board; and there has been an enormous increase of patronage placed in the hands of a political public servant; but that there is the slightest ground for supposing that the machinery of government is in any wise more fitted for such a strain as occurred in 1854, than was the system of that day, we venture to doubt. The tendency seems to be to multiply departments and subdivide duties, rather than to simplify and define. If this were accompanied by a fixing of responsibility, and such a perfect adaptation of all the parts of the machine, as would make each individual feel the burden that is laid on his own particular shoulder, there would not be much reason to complain or to fear. If, when a new want occurs, or a cry on a new subject is raised, the simple expedient adopted is to constitute a new Board or Department, and to place at the head of it some political secretary, or to permanently employ some hack Commissioner, whose remuneration has hitherto been only, so to speak, by the job, the public need not grumble. It is right that old servants should have their interests looked after; and there may even be grounds for rewarding family connections; but when such a system is held up to admiration as the perfection of administrative efficiency, it may be permitted for us to pause before applauding. When one has occasion to transact business with a department, or sub-department, or board, and finds that the subject of his representation is tossed about from one to the other, and that directness seems to be altogether lost sight of, he may be pardoned for thinking that Mr Dickens uttered no fanciful or extravagant mockery, but expressed a palpable, and positive, and patent truth, when he said that the grand object of his Circumlocution Office was—How not to do it. What is wanted is the contraction of duties within a circle as limited as possible—definition—prescription—the imposing of his own weight on each man's shoulder—and, above all—the driving into his mind the conviction that that weight he must bear, and the responsibilities it imposes he must cheerfully and earnestly undertake. Earnestness may be a quality which, from the nature of things and the accident of his position, a man may not be expected to display on public affairs as he would on a private concern, or where his own intimate prospects more nearly depended on his labours; but it should be the object of a true administrator to devise some grand scheme, securing for each individual mind the imminent pressure of its own responsibility. John Bull is such a simple, good-natured creature, and, above all, so generous with his money, that he really deserves better treatment than he is apt to receive from some of his servants. He makes a great outcry when things go wrong, but words, mere words, soon pacify him. When every department seems to be out of joint, he insists that merit only should be the test of promotion—the concession is made at once—and lo! merit and the favour of some arch-jobber seem to be almost convertible terms. There is great talk, just at present, about this Report; and, doubtless, John Bull will

be called on to put his hands into these capacious pockets of his, in consequence. The bill will be cheerfully paid—indeed, he is most likely to grumble at the smallness of the demand; and then, whether or not the money is frittered away on new boards and departments, he will resume his customary, placid, self-complacent mein.

We have said so much, chiefly because it appears to us, that in some of their recommendations, the Commissioners have erred in the direction indicated; that they, in most instances, propose to introduce complications where all should be simple, that their tendency is rather to multiply and distribute than to simplify and concentrate. When they come to make suggestions for a new organisation of hospital management, and a new arrangement of the duties of high departmental administration, they seem disposed rather to add to the number of officials and to divide the duties under more distinct heads, then to curtail and define.

As to hospitals, they, as usual, seek some analogy in civil life, and think that they find it, in this instance, in the large civil hospitals of the metropolis. But the attempted comparison does not stand investigation. There are sick in both, and the sick must be provided for; and there are surgeons in both; but there the points of similarity cease. The two establishments exist for different purposes, or rather, there is one purpose in both, which in the military hospital is the sole one, but in the civil hospital is, as far as the arrangements go, the secondary one. The circumstance which makes metropolitan hospitals so well provided is, that they exist, in great measure, for teaching. Many of them are indebted for their continued existence to their students, and on that circumstance their system must be modelled. When a soldier voluntarily gives his services for ten years, he has a right to expect proper medical treatment; but he does not surrender himself to the inconveniences necessitated by clinical teaching, which inconveniences are a part of the system of a civil hospital which the poor man knows that he must submit to when he takes the advantages of it. There can be nothing in a military hospital like the Committee or the Board of Managers of a civil establishment, with its nepotism, paltry jobs, arbitrary legislation, and irresponsibility. The military hospital must, except in one or two instances, be always too small for the staff maintained in a civil one. Furthermore, it must always, excepting in these one or two instances, be an integral part of the regiment. All its functions must be in accordance with regimental arrangements. It is not permitted to us to discuss this point, because it is settled for us. The regimental system is the fundamental system of our army, the germ from which all more extensive arrangements are developed; and that system cannot exist, in its integrity, without the regimental hospital. And if we must sum up in one word the objections to importing any plan into that from civil hospitals, we would simply say, that every person employed in it must be in such a

position, that he can, in case of misconduct, be dealt with by military law. The suggestions on this head are so much an echo of Miss Nightingale's evidence, that we will refer rather to that lady's opinions than to the body of the Report. Since her beautiful work in the East, the public has been endowing Miss Nightingale with all feminine graces, and admiring and almost worshipping her for these. It may surprise many persons to find, from her evidence, that, added to these, she possesses not only the gift of acute perception, but that, on all the points submitted to her, she reasons with a strong, acute, most logical, and, if we may say so, masculine intellect, that may well shame some of the other witnesses. They maunder through their subjects as if they had by no means made up their minds on any one point,—they would and they would not; and they seem almost to think that two parallel roads may sometimes be made to meet, by dint of courtesy and good feeling,—amiable motives that should never be trusted to matters of duty. When you have to encounter uncouth, hydra-headed monsters of officialism and ineptitude, straight hitting is the best mode of attack. Miss Nightingale shows that she not only knows her subject, but feels it thoroughly. There is, in all that she says, a clearness, a logical coherence, a pungency and abruptness, a ring as of true metal, that is altogether admirable. There is no chance of her meaning on any one point being mistaken. It is unfortunate that the Scutari Hospital is the only military one of which she has any intimate knowledge, because this, like everything connected with the war, was exceptional, and what she saw there has biassed all her opinions on the management of army hospitals. Grant all that she says of the mismanagement at Scutari to be correct, and what does it amount to?—That the chief appointed was an unfortunate selection; that necessary supplies from home were not on the spot when wanted, or not procurable, if there; that an enormous burden was suddenly imposed, greater and sooner than was ever anticipated; and that the standard of comfort and provision existing in the minds of influential people was much lower than it should be. These drawbacks being considered, and it being further remembered that there is not extant any definite plan for the furnishing of a general hospital, it may be easy to say that to establish one requires a high faculty of organisation; but, when a scheme of arrangement is once laid down, the organisation required almost ceases. It is only necessary to take the scheme out of a pigeon-hole at the War Office, and all the rest may almost be left to packers and issuers. Sir John Liddell, who spoke from the experience of many years' most successful administration in different hospitals, told the Commissioners that "the administration, with a *regular system*, is easy enough, and could be well performed by a medical officer, having the clerical work done by a clerk;" and again, that the "Belleisle" was fitted for the China Expedition in a few days. "We know that if certain stores are sent, the hospital will be complete; we have everything laid down for every patient." What can be done for a floating hospital can surely be done for one of brick and mortar; but then, it would appear that in the navy the Director-General reaches such an operation by a straight and direct course, and therein, we apprehend, lies the whole gist of the matter. The *Times* is puzzled to know why naval hospitals are so much better than army ones, and at length discovers the reason in the fact, that admirals, from living so much with seamen on board ship, know their wants better than it is possible for generals to be acquainted with those of soldiers. Truly, a wonderful reason. Officers' quarters in dock-yards are by many degrees better than military officers' quarters. Does the same reason apply here? In point of fact, generals and admirals have nothing whatever to do with the matter. The true reasons are, that votes for the navy are always more easily assented to than for the army; that naval hospitals are very few in number, and were built originally as general hospitals, whereas no general army hospital, excepting at Dublin, has ever yet been built; but chiefly, there is the important reason referred to, that the Director-General has a direct and positive voice in the whole matter.

Whether or not general hospitals shall exist for any purposes other than those which they now serve, is a question of general finance. The Phœnix Park Hospital is chiefly used to supply the deficiency of space in the regimental establishments of the Dublin garrison; so it need not be further alluded to. The purposes now served by Fort Pitt are two—the reception of invalids from abroad, and the congregation of invalids awaiting the final decision of the Chelsea Board. The latter purpose need scarcely be specified, as it would cease if the Chelsea Commissioners chose to travel to the invalids, instead of making the invalids come to them, or if they permitted final discharge to take place at the stations from which the disabilities are reported. The present theory is, that as soon as a soldier becomes permanently disabled, or labours under sickness which is likely to disable him for a lengthened period, he should be discharged. An extension of the present general hospital system beyond what Netley will be able to supply, can only be required if the public should think proper to retain chronic cases in the service, either from charitable motives, which a political economist would tells us should have no bearing on the question, or for the purpose of clinical instruction, under the idea that the professional education of the schools can be thereby supplemented. But it will be admitted that, as to the first reason, it will be better to spend the public money on what is necessary to preserve the efficient in a state of health, before devoting any to mere charity; and, as to the second, few medical men will be likely to admit that it presents anything but an obvious fallacy.

Starting from the Scutari failure, and assuming that it is derogatory for members of the medical profession to be engaged with the small details of hospital management, Miss Nightingale proceeds

to propose that they should be relieved from every duty but that of mere prescribing, and even goes so far as to recommend that, at certain stations, an integral part of the regimental system should be broken in upon, in order that, at home, there should be the means of seeing such an arrangement carried out in practice. This is a most grave proposition, and it will be observed that the mishap at Scutari is the main reason assigned for it. Has the experiment not been made elsewhere; and, if so, what are the results? On the other side of the Bosphorus, there were hospitals on even a more extensive scale than the establishments on the Asiatic side, in which this system was in operation, not as an experiment, but as the perfected method of a people whose capacity for organisation is much greater than ours. The French *Intendance* takes out of the hands of the surgeons every duty but that of prescribing for their patients. Not only for the distribution of subordinate duties, but for all sanitary measures, and even for the internal arrangements and furniture of the hospitals, the French army is entirely dependent on a semi-military body, consisting of men who, having risen to a certain grade, leave the regular service, and abandon their chance of further military promotion for this sort of employment. Miss Nightingale visited these hospitals, and these and other similar visits are put forward as part of the experience on which her views are propounded. A very few words about what she saw in the French hospitals would have been most welcome, and were certainly necessary to give anything like completeness to her arguments. But not one word does Miss Nightingale vouchsafe. We must, therefore, however unwillingly, look about us and apply in other quarters. Any one who has conversed with a French medical officer, must have a lively recollection of the volley of hissing execrations that always followed a suggestion of the word *Intendance*. But they, perhaps, are as bad judges of the system under which they live, as this Commission seems, by the list of witnesses, to consider that our regimental surgeons are of theirs. Dr Bryce is an impartial witness; his judgment was not likely to be swayed by prejudice or prepossession one way or another; he visited, by special invitation, the only hospitals that were exhibited to strangers—and, it should be added, his visits were paid towards the end of the war, when the system had had abundance of time to show its fruits. And what did he find? Discomfort, dirt, means badly applied, and an immense mass of disease, clearly traceable to defective administration; looking on which, the medical officers could only shrug their shoulders, and regret that the whole matter was entirely out of their hands. Dr Bryce's verdict is:—"That in these extraordinary circumstances, the forms and functions of the medical staff were as closely restricted *à l' art de guérir*, and in questions affecting the hygiene of the troops and management of hospitals, as strictly subordinated to the *Intendance Militaire*, as they are at the Val-de-Grâce, *by which means the destruction of the army was still further insured.*"

And in a note, he adds, "M. Bauden's successful attack on this system, and its instant beneficial effects, were of too late date to influence strategic operations. His fearless remonstrances and direct approach to the Emperor, obtained for him an exceptional authority, by which, and his intelligence, he *saved many thousand lives to France.*"

The regimental system is the one for which we have to provide.[1] Miss Nightingale sees this, as she does most other points, very clearly; but still, carried away by what she saw at Scutari, endeavours to avoid it by proposing that, when circumstances admit, several regimental hospitals should be so massed, as to make it possible to conduct them on the general hospital system. It is odd that, when she comes to specify the detail of medical duties by which she proposes to effect this, she does not perceive that that is entirely the system of the conglomerated regimental hospitals to which she objects. In a general hospital, properly so called, there may be two ways of conducting the medical duties. The immediate charge of the patients may be assigned to the junior officers, and all the other officers may be engaged in "superintending" these juniors. Those least acquainted with the professional duties may have all the professional duties assigned to them; and those whose rank and years entitle us to assume that they are thoroughly conversant with these duties, may be involved, through several grades, in an elaborate system of what is called "administration." This seems to have been at one time very much the Scutari system. On the other hand, both surgeons and assistant-surgeons may be placed in charge of sick, and superintended by a very small staff of seniors, as is the case at Fort Pitt. In both cases, the supreme control must be in the hands of the principal medical officer; and all general responsibility, all beyond the immediate care of individual cases, must be in the same hands. It is necessary that the responsibility for what is general should be in different hands from the responsibility for what is particular. This is a complication, and therefore a misfortune. In the regimental hospital, the surgeon is responsible for both. Miss Nightingale has had much experience of military medical administration, and seems to know exactly what it is worth. Does she not perceive, that when several regimental hospitals are placed together, under one medical superintendence, the action of each surgeon becomes instantly paralysed? He is still held responsible by his commanding officer, who, by no plan of communication, can

[1] We need not say that, on service, general hospitals must be the rule. The Crimean army was on the march for only a week, and then for nearly two years occupied a standing camp, which was latterly as much a large barrack as Aldershot is now. There the regimental system was as easy of adoption as at Aldershot; but, in a campaign, the sole duty of the regimental staff must be to attend to the immediate wants of the sick and wounded, and then send them to the general hospitals, which are established not only at the base of operations, but at various points between the base and the army in motion.

be brought *en rapport* with the principal medical officer, although the latter may be influencing all the general arrangements. The surgeon ceases directly to influence proceedings, for the miscarriage of which he is still liable to be called to account. His only means of attempting any desired end is that of a circumlocutory requisition, and he may be apt to find his requisition shuttlecocked about between the Principal Medical Officer, Purveyor, Barrack-master, and officer of the Quartermaster-General's department, until it reaches the goal of the shuttlecock—by falling to the ground.

For general hospitals there cannot be too many comforts and appliances provided; and of the detail given by Miss Nightingale, it need only be said that there is nothing to criticise, and that she has exhausted the subject. The regimental hospital stands on a different footing. A soldier is but a homeless wanderer, and a dweller in the tent of a night. All that surrounds him, even when sick, should teach the military lesson, that he must be ready to march at all times. The hospital equipage must therefore be as restricted as is consistent with mere necessity. It must be remembered, too, that the great majority of the cases are very trifling, such as do not require any complicated arrangement. If the soldier is attacked with serious acute disease—if, for instance, he has an attack of pneumonia, or other brief, sharp seizure,—he will, with cleanliness, abundant space, and a well-ordered kitchen, with some Corporal Trim for his nurse, have as good a chance as anywhere else—provided always that the six regulation lancets are carefully removed to a distance!

Miss Nightingale's hospital of the future is sketched in very prominent colours, and there is no mistaking its features. Spacious, fully equipped wards—the different services of supply, and adaptation, and issue, and apportionment, all placed in distinct hands—a supreme government over all—a sanitary officer for the bad smells—the soldier orderlies strictly subordinated to female nurses—nothing left for the surgeon but mere prescribing, to perambulate the wards, giving general instructions to all the departments, crammed full of science himself, and followed by a crowd of eager and attentive clinical pupils. In fact, he is to be just what Sir Benjamin Brodie told the Commission that he was at St George's Hospital for thirty-two years. Now, we entertain a profound conviction, that Sir Benjamin Brodies are made by no sort of machinery whatever. If a Brodie enters the army, or chooses any other path, he will eventually occupy Sir Benjamin's position, in spite of any hindrance or discouragement. If a man begins life as a dunce, or prefers idleness to work, a dunce or a lazy fellow he will remain, all rules and regulations notwithstanding. "No law can be sacred to me but that of my nature." Men become great and famous from original bent, or impelled by the firm resolve of a strong mind; but the mere mechanical methods of system avail very little. And here let us, once for all, protest against the mere talk about science that pervades so many of the Commissioners' questions, against the profane application of that sacred name to the most common and trifling things and opinions. Mr J. R. Martin is the chief offender in this respect, apparently from his desire to impose peculiar views on sanitary arrangements. It is a pity that, when Sir John Hall stated his objections to these views, Mr Martin had not a better answer for an officer of long service and vast experience than the imputation of contemptible motives. But let that pass, and Mr Martin with it; we rather quote a sentence from Dr Christison, whose position as a man of science is so high and so well assured that he may afford to pardon our criticism. In his otherwise admirable remarks on diet (Appendix, xxxiii.), Dr Christison says—

"Any scientific person conversant with the present subject, could have foretold, as a certain consequence of their dietary, that the British troops would fall into the calamitous state of health which befell them last winter (1854–5) in the Crimea."

We humbly submit, that no scientific knowledge was required to arrive at this opinion. The calamities of that winter were such as any individual, who possessed the necessary data, and was not a member of Lord Aberdeen's Cabinet, was capable of predicting, and could not avoid foreseeing. Was there any person present with that army in November and December 1854, who seriously looked before him, and did not feel satisfied that the calamities must occur? Nay, more, was there any one who, in March 1855, and having seen all the occurrences of the interval, was not surprised that the army had not been overtaken by even a greater measure of calamity? Is there any one who does not know, that, when men are naked and hungry, and overworked, they must die? Have we not all read Cook's Voyages? Have opinions, founded on the observations of Lind, and Trotter, and Blane, not passed into the possession of every well-informed gentleman?[1] The evil of so much talking about science, in the present instance, is not only that it may give currency to erroneous opinions, but that it may engender, among

[1] The scorbutic was, unquestionably, the radical type of disease. Of what was observed among the French, Dr Tholozan says—"En voulant apporter dans ce sujet la méthode rigoureuse de la pathologie moderne, j'ai rencontré une difficulté que je dois préalablement soumettre à l'Académie, parce qu'elle tient aux principes mêmes de l'observation clinique. La dyssenterie, le scorbut et le typhus, tels que nous les connaissons par les descriptions classiques, forment des groupes morbides totalement distincts les uns des autres. Quand ces affections se présentent ainsi isolées, à l'état de simplicité, il est bien facile de les reconnaître et aucun observateur ne s'y trompera. Mais que ces maladies viennent à se combiner et à se compliquer l'une l'autre, et quelquefois toutes trois à la fois, pour former, comme cela a été observé si souvent aux armées, des maladies composées, des espèces mixtes, des types spéciaux, alors le problème pathologique se complique. Les dyssenteries présentent les caractères du scorbut; les scorbutiques délirent comme dans le typhus, ou bien ils succombent au flux dyssentérique; les sujets atteints de typhus ont la dyssenterie et deviennent scorbutiques; les exemples de ces mélanges ne manquent pas, presque tous les cas graves sont des cas compliqués. C'est du moins ce que j'ai observé pendant l'hiver de 1854 à 1855 à Constantinople."

the weaker sort, an erroneous mode of thought and consequent action. If a young medical officer is told that his commission makes him a devotee of pure science, and that it is unworthy of his position to be engaged in any duty that has not a strictly scientific character, a most mischievous state of feeling may be the result. And there is some slight evidence of this state of feeling in the assistant-surgeon's memorial, given in the Appendix (ii., No. 2, Report of Committee). At Smyrna, Dr Meyer, fully convinced that diet rolls should be kept by officers, could not prevail on his physicians and surgeons—a somewhat inferior description of Brodies, it may be assumed—to do so,[1] and finally left it in the hands of ward-masters and nurses. This only shows that Dr Meyer and his staff did not sufficiently appreciate the signification of the word Duty; and if the meaning of that word is not understood, all the science in the world will not save us from catastrophe. A surgeon cannot be a good medical officer, unless he speedily acquires some soldierly feeling; and that feeling he does not entertain, if he is not prepared to turn his hands to any task that may be assigned to him, or the doing of which can promote the good of the service or his patient; or if he looks down on any occupation, in the line of duty, as being to him common or unclean.

Let us return to the detail of hospital management, for the sake of one or two further remarks. Before the Commissioners recommended an extension of the purveyor's duties, they should have given some answer to the question, what is the use of purveyors at all? It seems to be a strange system that sends two servants of the same master, the commissary and the purveyor, into the same market, to receive tenders for supplying the very same articles. If there is any truth in political economy, the result must be rather inconvenient to the master, the public. It seems very absurd that, abroad, commissariat issuers for barracks are men of humble rank, sergeants and old soldiers, while the issuers for the adjoining hospital are officers of a distinct department. But such is the case; at home, the purveyor is an issuer of small groceries and a superintendent of contracts for larger supplies: abroad, he is simply a commissariat issuer. In both cases, he audits the hospital accounts. For the furniture of general hospitals, the purveyor is an issuer under the barrack-master; for regimental hospitals, the barrack-master issues directly. It appears that this department existed for some years in a state of only suspended animation, until some hospital sergeants were discovered to be peculating; and that is the excuse given for the full-blown condition of development that recent army lists show the purveyors to have attained. We often hear of company pay-sergeants deserting with large defalcations, but no one has yet proposed a new department in consequence of that. The defaulting hospital-sergeants can have caused a loss of but a few pounds; and it would

[1] Answer, 1535.

be interesting to have a statement of the extent of their intromissions placed alongside of the large vote for the purveyor's department. There can be no reason, excepting a wish to multiply departments, why the barrack-master should not directly issue furniture, and the commissary rations, to the hospital as well as to the barrack. If it is said that the commissary would not undertake the trouble involved in the new duties, or perform them negligently, then we say that the object of Government is to make men who have duties assigned to them, and are capable of executing them, do so. But, it will be asked, who is to keep the hospital accounts? Miss Nightingale bestows a great deal of unnecessary scorn on "the small part of the army medical department who like to keep the house-keeping and book-keeping in their own hands, who do not consider how impossible it is to raise the true dignity of the department, as long as this is the case." Wordsworth was a tax-gatherer; the greatest soul that ever saw the light in England once held horses at a play-house; and we do think, that if it is shown to be for the good of the service that he should do so, the regimental surgeon may condescend to add up a few columns of figures, once a month, without much disturbance to the serene atmosphere of science, in which, by favour of Mr J. R. Martin and a court physician, he is, for the future, to walk. Of one thing we are very certain, that most surgeons would cheerfully undertake the trouble, if their doing so were the means of extinguishing the purveyor's department. Of all the different parts of the hospital administration, this is the one for which definition is most required. One may fancy such a department working well in subordination to the medical officers, and it may even be possible to suppose the duties carried on, if distinct from any medical authority; but to be nominally under the medical department, and still permitted and encouraged to complain of the superior medical authority, without his knowledge, and by a channel with which he has nothing to do, is a state of matters that indicates not only a most imperfect idea of system, but ignorance of the primary rules of military subordination. Such seems to be the result, when, in the "double government" of the army, the civil half usurps the function of prescribing the routine by which subordination is to be carried out.

Professional readers who study the Report without much previous knowledge of the subject, may be surprised to find so much prominence given in the discussions to "administrative medical officers," and may be puzzled to understand the meaning of the phrase. Indeed, it is worthy of note, that of all the many different points embraced by the Report, this seems to be almost the only one for which the Commissioners have not even attempted to find a parallel in civil life. It is curious, too, that the system seems to be scarcely known in the sister service. For the benefit of the outer world, we may explain, that of the six ranks into which the department is

divided, the two junior ones are executive, or charged with the performance of ordinary professional duty; while the four higher ranks are administrative, or charged with the superintendence of their executive juniors. Of the highest rank, and the changes proposed to be imported into it, more anon—the question of the usefulness of two other higher grades is seriously involved in the opinions expressed as to the constitution of the supreme body;—it is the junior of the administrative grades that has attracted most of the discussion, and respecting it a very decided opinion is expressed. This rank is now looked forward to, by most surgeons, as a haven of rest, which they hope to reach when wearied by monotonous years of the routine of hospital duty. May we, in presence of so much talk about science, and so much artificial dignity, venture to say, that a "doctor" does sometimes grow tired of physic and patients? The pay, small as it is, is better than that of the surgeon; there is emancipation from what a man on the wrong side of forty is apt to think the restraints and puerilities of mess society; the duty is almost nominal; and other considerations combine with these to make the position of a staff surgeon one of the easiest and most comfortable in the service. In ordinary, quiet times, he may even lead people to imagine that he serves some real purpose in the world, by dint of going about his business with a grave face, as Mr Shandy's bull did his parish business—and with very much the same real claims on public confidence. It is precisely when some emergency arises, on which action and decision are required, that the pretension to a real place in the chain of execution, which the existence of the rank implies, is proved to be hollow and unreal; and for this most simple reason, that there cannot be, in the army, or out of it, two commanding officers. With good-nature and courtesy on the part of the superior military officer, and good sense and discretion on the part of the staff surgeon, the latter may, as we have said, have all the outward appearance of exercising a positive function. If he ever imagines that he has direct power—indirect power, chiefly for mischief, he seems to have enough of—he is apt to play such fantastic tricks before high Heaven as may well make men and angels weep. But, generally, consciously or unconsciously, he acquires such an opinion of his true position, as induces him to abstain from practical interference. If, after this, he is still anxious to keep up the pretence of action by fuss and mere bodily activity, he may be driven to the strangest devices. It is, naturally, on the medical subordinates that the powerless arm is laid. Antiquated regulations are enforced, obsolete forms are revived and brought into effect, not so much that the interests of the service may be promoted, as that a useless official may appear to have something to do. Then may be seen a straining at the gnat of an obscure clause in a long forgotten rule, and a swallowing the camel of incompetence and ignorance. Then may be seen the amazing phenomenon of the undisguised application of the autocratic principle to the only branch of the service which requires the free

play of opinion, the only branch to which this principle is totally inapplicable. The true and only solution of the administrative reform problem is this,—consolidate, simplify, lay down clear, concise, intelligible rules, which do not contradict each other, for the conduct of all matters that are palpable, and that it is possible to conduct by rule; for the execution of such duties, appoint one officer, or set of officers, one above the other in a distinct series of gradations, take care that they are competent for the duties, and have the means of carrying out that which they are appointed to do, and if, with the means and the ability, the thing is not done, then let the punishment be swift and sure, and such as could be calculated on beforehand. But, when you come to legislate for duties that involve matters of opinion, you must provide the only element in which opinion can exist, that of freedom and independence,—you must approach, as nearly as is consistent, with other considerations the grand principle of No Government. The medical profession is a strict democracy. When a man pretends to be something that he is not, on the strength of what is only accidental and extrinsic, the profession sees through him at once, and refuses to acknowledge aught that does not spring from original native force. Whatever may be the case elsewhere, all have the same property in opinion. The poorest village leech has as much right to his opinion as Sir Benjamin Brodie. It is opinion against opinion. Let others settle the question of value,—we must not only form an opinion and assert it, but, by serious penalties, we are bound to enforce it. What, then, if a man comes and claims currency and effect to his opinion, by virtue, not of what he is and what is in him, but of what is altogether outside of him, a piece of lace or a badge, mere accidental rank! There can be few more melancholy spectacles. Rightly considered, it is a monstrous thing that any two-legged creature should, on the mere strength of such an accident, have the power to sit in judgment on the opinions of others, trying them by some arbitrary standard, and, perhaps, showing his own real inferiority by the very rules that he establishes. And if you place everywhere a series of officials for the purpose of reporting their opinions of the opinions of others to a central authority, who brings his own opinion to the consideration of such reports, and if it is felt, as felt it must be, that all this has a positive bearing on the fortunes of seven hundred and seventy-eight officers, what must be the result? A chronic dread of responsibility—a hesitation and embarrassment between two distinct authorities, whenever conflict of authority arises—a disposition to refer, in the smallest difficulty, not to the great judge of right and wrong that every man carries in his own head, but to another judge who sits by favour of rank only—and, worst of all, a desire of ingratiation, and a proneness to make important matters subserve to that ingratiation, with an authority on whom you feel that so much depends. It cannot be said that the rank should be retained, as supplying consulting physicians and surgeons, because we do not consult men who have

abandoned practice. Indeed, there may sometimes be no better way of putting an administrative medical officer to flight than by consulting him about a case, bringing him down to the mere level of the profession. Let us attempt a sketch from nature. In a small, detached camp much sickness prevails, all feel its influence, many are prostrated, some are grievously sick; after a long interval, the administrative officer arrives on a visit of inspection; the surgeon, weighed on by anxieties that would oppress the most lukewarm, eagerly welcomes him, relates all his doubts, difficulties, and anxieties, the hitherto unknown form of disease, its embarrassing characters, its rapid progress, the difficulties and the hindrances to rational treatment, the recent deaths, the gloomy outlook for all; he takes him to the side of the worst case—not to the bedside, for the poor fellow has no bed but his greatcoat, and only a knapsack for a pillow; the administrative medical officer looks at the patient, then at the surgeon, asks "What do you call it in the register?" that is all, and he mounts his horse and rides away. Like the Levite in the parable, he, being at the place, had come and looked at him, and passed on by the other side. We may be told that there must be regular gradations, and that, in methodising ranks, we must not attempt to reach the highest too quickly; but this cannot hold in our profession. It need not be necessary to treat any "doctor," however exalted, like the Grand Lama, and make him approachable only by prostrations and "knocking of heads." As to the receiving and forwarding of correspondence, that can be done very well by an envelope; or we may adopt the hint once offered to a colonial governor, who was carrying responsible government to a rather ridiculous length, and try if the ingenious mechanics at Birmingham cannot make a machine that would perform, at no expense but that of original cost, that part of the duties of a superior staff officer. On the subject of inspections, there is a wise paragraph in the Report, that makes remark unnecessary:—

"In the Army Medical Department, the inspector and the inspected are both men of science; and the latter is actually engaged in treating at his own discretion, and on his responsibility, the patients who have been entrusted to him on the presumption of his competency. The assumption, on the part of a superior medical officer, of a peremptory tone in addressing his junior, shows a want of appreciation of the dignity of the profession to which both belong. A rebuke addressed, or a doubt thrown on the treatment, in the presence of the patient, shakes the confidence of the latter in the medical officer in whose hands, without any choice of his own, he is placed, and may even mar his chance of recovery. We are satisfied that such departures from propriety, meriting as they do the severest reprobation, can be but of rare occurrence; and we have made these remarks in the belief that they will strengthen the hands of the Director-General in checking them when they do occur."

Miss Nightingale, also, disposes of the matter in her concise and pointed way:—

"With the slightest knowledge of human nature, with the commonest sense, it is obvious that the inspections, as now conducted in general hospitals, the system of superintendence, and subordination of scientific acquirements to rank, must destroy in a man his sense of responsibility, and (the most important quality, the latest acquired in a man of action, which a medical man must be) his self-reliance."

The plain fact is, and there need be no reason for concealing it here, that there is something in the medical mind that is often apt to unfit medical men for the exercise of authority, a position which, strangely enough, they are, as a rule, particularly prone to covet. They are apt to want the undefinable something—the tact and good-manners—that take the sting from the mere mechanical laying on of external superiority. In saying this, we must, at the same time, express our full concurrence with Dr Smith's opinion, that—

"The governor of a military general hospital should be a senior medical officer, who has shown himself a skilful administrator, and possessed of a thorough knowledge of all that is necessary to the well-working of an establishment appropriated to the reception of sick; and he should be armed with full power to order whatever he shall consider necessary, and be only responsible, except in purely military matters, to the Minister for War, and the Director-General, from whom he should receive his instructions."

The Commissioners recommend that the rank of first-class staff surgeon be abolished. For this one movement in the direction of simplicity, for this one recommendation that does not involve new complications, let the homage of our thanks be rendered. Had they proceeded a little farther on that line, and proposed, for some other sets of officials, some plan of "painless extinction," as an ardent Malthusian once proposed for superfluous babies, but few tears would have been shed in this place.

When they come to the office of supreme administration, which must always exist, and for which there should be provided, what Lord Dalhousie in his statesman-like minute (Appendix, xvii.) demands for the Indian service,—"the one true, right, sound principle, unity of authority, coupled with direct responsibility,"—when they treat of the office of Director-General, the Commissioners, as in other cases, go to civil life for their guide; but, in this instance, they have fixed on the strangest of all administrative bodies, and the Coryphæus who comes forward to chant its praises appears in the guise of a right honourable gentleman whom we had little thought to find so employed. Of all ruling bodies in the world, it is the Board of Supervision of the Poor in Scotland that they have taken as their exemplar; and of all men in the world, it is the chairman of that Board who expounds how the machinery of the one mode is to be applied to that of the other. When it is added that this was in the summer of 1857, the "unities" are complete, and we have all the elements of

a broad farce. It was when the country was yet ringing with the revelations of the Lunacy Commission,—when Mr Edward Ellice was denouncing, in the House of Commons, the neglect and grievous wrongs that our pauper lunatics had sustained at the hands of the Board,—it was, perhaps, on the occasion of his being in London to present to the Home Secretary one of the statements and explanations of their *lâches*, which the public has refused to accept, that Sir John M'Neill took the opportunity of stepping across to Whitehall Yard, and had the courage—of another man we might have said, effrontery—to present, as a perfect model of imitation, the Scotch Poor Law Board. The medical affairs of our army, and the direction of seven hundred and seventy-eight gentlemen, are to be administered after the manner in which a responsible chairman, and a few scarcely responsible sheriffs and bailies, direct—with what results, let the Lunacy Commission say—the Poor Law System of Scotland. Is this then what we have taken so long to arrive at? Is this to be the issue of all our administrative reform associations, Drury Lane platforms, and five columns in the morning papers? Is Bumbledom to be the ultimate goal of all our endeavours and all our aspirations? The Director-General is to be the chairman, the sheriffs and bailies are to be represented by councillors, with this difference, that the latter are not to possess a vote. Coleridge, Hazlitt, and Bentham, made Boards utterly ridiculous in the eyes of our fathers,—so, when new offices are to be created, Council is the modern phrase.[1] The system of a Board has been tried before for the same duties, and it failed. When Dr Robert Jackson was injured by the Board of his day, there was such difficulty in reaching the real culprit, that he was obliged to fight a sort of triangular duel, gibbeting the Physician-General[2] in print, and caning the Surgeon-General, for which latter

[1] Sir John M'Neill, comparing great things with small, quotes the precedent of the great Indian Councils in support of his proposition. Our readers cannot need to be reminded of the striking passage in which another, and a very high Indian authority, tells us, that on the very day after the batteries of Fort William had announced the arrival of the first councillors nominated under Lord North's Regulating Act, "commenced that long quarrel which, after distracting British India, was renewed in England, and in which all the most eminent statesmen and orators of the age took active part, on one side or the other."

[2] The Physician-General, Sir Lucas Pepys, had been an accoucheur, was a mere court physician, and had never seen a soldier except at the palace gates. Yet he had no hesitation in sitting at a Board, and legislating for soldiers. How curiously does the revolution of time bring back to us old phenomena!—In respect of one of his qualifications, Sir Lucas may have lived before his time. Boswell gives us a very interesting account of what Dr Johnson saw and noted when he visited Bennet Langton at Warley Camp. We read, for instance, that "in walking among the tents, and observing the difference between those of the officers and private men, Dr Johnson said, that the superiority of accommodation of the better conditions of life to that of the inferior ones was never exhibited to him in so distinct a manner." It does not appear that he saw, or that Sir Lucas—who, by the way, was a near connection of Bennet Langton—influenced by early predilections, endeavoured to establish, what the *Times* now insists should form an essential part of our modern camps—a strange institution, surely, in a camp of instruction for soldiers—a lying-in hospital. Sir Lucas Pepys would have made an excellent obstetric councillor, and we may yet live to see such a functionary take his seat at Whitehall Yard. This reminds us of a *dictum* of the Duke of Wellington. It was once proposed to him that military surgeons should include midwifery in their practice. The Duke's answer was, "When soldiers are confined, then let military surgeons attend them."

luxury he cheerfully suffered imprisonment. Coleridge said that a Board had neither a soul to be saved, nor a body to be kicked. By the proposed arrangement, it would appear that the councillors are to do the work, and the Director-General is to receive all the kicks. There is to be a medical, a statistical, and a sanitary councillor. As has been said, they are not to vote; but they are to represent, suggest, minute, refer, advise, refer back, refer among each other—need we say more? Is it not all written in the tenth chapter of *Little Dorrit*, and have we not all laughed over the absurdity? A medical assistant and counsellor the Director-General always has had, and always must have; and if his being called a Councillor makes his position more permanent, independence may be increased, and, so far, a gain secured by the change. Statistics have a great fascination for some persons; and if it is always borne in mind that no column of statistical figures can be produced that is not full of fallacies, they may even be useful. It is not a necessary part of the system, but if it is desired that there should be a clerk engaged in the preparation of statistics, let one be employed by all means. The faculty of cunningly manipulating figures can give no claim to being looked on as a good medical adviser, nor need a good statistician be therefore a good administrator. It is to the Sanitary Councillor that we chiefly object. We do so, partly because the idea of a council is opposed to Lord Dalhousie's "sound principle of unity of authority, coupled with direct responsibility," but chiefly because of the great importance that we attach to the efficient carrying out of sanitary improvements. The profession has been gradually coming to the conclusion, that the physician has a duty to perform anterior to the occurrence of disease—to know the external causes, and how to remove them. It is something very like a retrograde movement to propose that he should concern himself only with the disease, and leave the other matter to a separate and special officer. It is almost puerile to say, as the Commissioners very gravely say, that because health officers are employed in towns and districts under certain Acts of Parliament, therefore a health officer should be appointed to sit in Whitehall Yard. There are, in civil life, local interests, opposing interests, and vested interests to contend with, which require a distinct official for the carrying out of these Acts. In civil life there was not a set of officers made to hand for the performance of the duties, and, therefore, it was necessary to create them. In the army, a whole department of educated officers, who are the successors in direct succession of the men who

made sanitary science what it is, is ready, and able and willing to undertake the duties, and we are to pass it by and import a new functionary. Let any one read this enormous book from beginning to end, and endeavour to find some solid reason for this proposal, and we assert that he will find none. A Crimean Sanitary Commissioner was produced, apparently for no purpose but to support a foregone decision. It was not, we may suppose, to tell the story of his "wound" that Mr Rawlinson was examined, or that the judgment of a civil engineer may be passed on the services of the medical officers, although the wound and its attendant circumstances are described with great eloquence, and the judgment is given in very feeling language. We must scan Mr Rawlinson's evidence, as pointing straight to the institution of a sanitary councillor. And what reasons does he give? He is asked, what steps should be taken if fever appears in a hut, and here is his answer: "According to my experience, if fever occurs, and if there are healthy men in a hut where there is fever, you must either shift the men or thin the hut;"—an opinion, the sagacity of which is only surpased by its novelty. Is this science? Again, when more directly showing the advantage of special sanitary supervision, "We found one regiment at the front, an example of what may be done. Lord West was the colonel. The hospital huts were paved inside, and they were paved round the outside, so as to be clean and neat. There was also a convalescent seat prepared for the sick soldier on the shaded side of the hut, and they had loose hospital shoes, lined with fur, to slip their feet into when they required to go to the rear." Is this science? How is the Sanitary Councillor to employ his time? He cannot sit at a board prating all day about "zymotic disease," after the manner of sanitary enthusiasts; and if the sanitary recommendations of the Commissioners are carried out, it really does seem as if he will have little else to do. Let us assume that the recommendations are carried out, by their being incorporated with the general orders of the army, and by the different officers being made to do their duty, each in his own department, and that it can be done at less expense, and with less difficulty, than some noble lords and right honourable gentlemen may be disposed to admit, we entertain an assured belief,—what then becomes of the Sanitary Councillor? His duties are at an end. The sacrifices once made, there need not be perpetual offerings to the two dirty goddesses, Mephitis and Cloacina. Are there any specialities of hygiene—what may be called its mysteries—that a man may not tell on his ten fingers? Is there anything required for a sanitary officer but a certain modicum of common sense, acting on the most common knowledge of the most common things? Are there any of the details on which the student has not received full instruction from such teachers as our distinguished Professor of Medical Police? What we want for carrying on sanitary work, is not so much science as common sense;

"'Tis sense,
Good sense, which only is the gift of Heaven,
And tho' no science, fairly worth the seven."

To conclude, the proposal of this council and of this sanitary element indicates a marked ignorance or disregard of the peculiar feelings of the profession, and cannot possibly tend to the promotion of the objects that we all have in view.

When it was the fashion, three years ago, to abuse and vilify the medical department, and when everybody was writing a more abusive letter than his neighbours about it to the *Times*, by far the most abusive, the most virulent, and envenomed of all the letters that filled the waste basket at Printing House Square, were from members of the medical profession. Although we trust that, in offering a few remarks on the personal status of the officers of that department, we may hope for a more indulgent audience than seems to be promised by the moral of this little story, still, it cannot be denied that the medical officers of the two services are sometimes looked on with little favour by the profession at large. The notion seems to be, that as soon as a member of it puts on a red coat, he, therefore and thereby, becomes deteriorated, and contrasts unfavourably with his brother or fellow-student who has retained his black coat. Need we say here, that it is not a man's clothes that we should look to, but the man himself? Position and circumstances are mere accidents, and affect our mind, the only real part of us, very little. In one or two respects, they should be in favour of the medical officer. He is not rooted, for life, to one narrow spot of earth, and his vision is not bounded, perhaps cramped, by a narrow horizon. He visits many countries, and sees various peoples; and this should expand his mind and make it robust. He has time for other pursuits. He need not direct all his faculties in one line, to such a degree that he comes to merge his individuality in his profession, and ceases to be anything but a mere diagnosing and prescribing machine. He can wear his profession like a cloak, to be put on or laid aside at pleasure. If we appeal to all for a favourable mood, we have a right to ask for it more particularly in this place, which yearly sends forth so large a contingent to the two services, and whose famous medical school owes its beginning, more than to any one else, to a medical officer, whose name, throughout four generations, has been familiar to us all, and whose medical history of one of the German campaigns occupies a high place in professional literature. But, indeed, what does not that literature owe to these men? From Wiseman to Guthrie, there is an unbroken *catena* of worthies, furnished by the two services, who have illustrated every campaign and every expedition. If hygiène has a history and a literature, it is to these men that it is owing. And it is on the successors and representatives of these men that the Sanitary Nuisance of which we have been speaking is to be imposed!

mind to eight or ten years of pinching and unrealised hope. What is most likely to determine him, is that extent of remuneration that may be expected after these eight or ten years have passed. It is precisely to this question that the second scale gives no answer. The only period of life which it scarcely proposes to improve, is the years between thirty and forty, the most useful years of a man's life, and, as it happens, the years at which the military surgeon is the most important official of his class, when he is most likely to have the responsible and direct charge of sick. It should be added, that the second scale contemplates the removal of the first-class staff surgeons, while the first provides for their retention; so that, in the event of their being abolished, the aggregate cost of the more liberal scheme would be materially reduced.

"A participation in military honours for medical officers," is a delicate question. When the soul of truth and of original intention has departed out of any old institution, it is little better than a dead, putrescent mass. Even in these latter days, one may be able to appreciate the truth and beauty that characterised the old orders of knighthood; but

> "The old knights are dust,
> Their good swords are rust,
> And their souls are with the saints,
> We trust."

It may be owing to dimness of vision, but we cannot recognise the marks of a direct descent, when we think, on the one hand, of the Cids and Sir Bediveres of olden times, and when, on the other, we look on a modern medical knight, or, indeed, some of the other knights that one meets now-a-days; and the surgeons who signed the memorial would have done well to consider, that, while they are taking their fair share in the heat and the burden of a critical day, the "honours" may be reaped by some spruce administrative gentleman, who, somewhere in the neighbourhood of their labours, is issuing ungrammatical orders, or inspecting groceries, or engaged in the by no means irksome task of superintending the duties of others.

Competitive examinations there are to be, of course. It is much too late in the day to enter an objection to that. But one remark on its bearings on this particular subject may not be out of place. In the exercise of his duties, the medical officer is brought in contact with a class of men who, more perhaps than any other, attach importance to a certain arbitrary standard of feelings and external conduct, which are supposed to distinguish what is called a gentleman. The candidate may be highly charged with science—so highly charged, that it sparkles off in all directions, much to the inconvenience of bystanders; but without the freemasonry to which we allude, which examination papers can certainly never discover, it may tend very little to harmonious and effective co-operation. No witness seems to have said that this qualification has been better

supplied by the competitive than by the nomination system. Should the competitive examination monomaniacs succeed in deteriorating the present standard in the case of military officers, all classes would stand more on a level, and our objection would of course fall to the ground.

We have expressed ourselves very imperfectly, if it has not been long ago apparent that we wish to speak of all these matters in a conservative spirit, and to look at them from a conservative point of view. The present writer has, in his very humble way, and keeping his opinions very much to himself, been an army reformer ever since he knew what a soldier is. He may, therefore, claim to have been longer on the list than some who are now foremost in the cause—longer, for instance, than the veteran statesman who was Secretary at War when Lord Wellington was in the Peninsula, contending with the impediments of the War Office, more formidable than all the marshals of the Empire, who has been a member of nearly every administration that has been formed since, and has therefore had countless opportunities of carrying out the improvements of which he has recently become so ardent a partisan;

> "Fast friend is he to reformation,
> Until 'tis gone quite out of fashion."

As that of an old reformer, then, if this writer's feeble voice could be heard in influential quarters, it would be raised to entreat that a cry for revolutionary changes should be avoided by the prompt concession of what is just, right, and necessary. Let our army be as bad as it is painted by the lowest Sunday newspaper, still that army, badly officered, badly cared for, it may be, has in its time done, is now—while we in England do no work to-day, but talk, talk, always talk—doing, some world-famous things, the recollection of any one of which should make our pulses bound with national pride, and should teach us to pause before yielding to a torrent of popular outery, that may lead us—whitherward, no man can tell.

Let us not conclude without paying a tribute of admiration to the judgment, ability, and good feeling, with which Mr Herbert conducted the duties of the Commission. Let us forget the unlucky deeds of 1854-5, or, better, remember them only as a warning for the future, not as a text for mere idle recrimination; and may the revolution of parties speedily place Mr Herbert in a position, for which no man in England is better fitted, in which he will be given the opportunity of acquiring a title that few men in England, except Earl Grey, have already done so much to deserve—a title that we venture to think would be very dear to him—the proud title of the Soldier's Friend.

Transactions of the Pathological Society of London. Volume Eighth. Including the Report of the Proceedings for the Session 1856–7.

The present volume of the Pathological Society's Transaction is in no respect inferior to its predecessors. It contains a large number of interesting reports, embracing almost every department of morbid anatomy. Our limits, as well as the nature of the work, forbid a detailed analysis of its contents, we propose therefore to confine our remarks to the section embracing the diseases of the supra renal capsules.

Our readers are aware, that about three years ago Dr Addison directed the attention of the profession to a fatal form of anaemia, associated with a peculiar coloration, since termed "bronzing" of the skin, and which he believed to depend upon diseases of the supra renal capsules. This announcement excited much interest; special attention was immediately directed to the subject, and within the last three years pretty numerous cases have been recorded, some confirming, others opposing, Dr Addison's views. Accordingly, pathologists are at present divided in opinion; some believing with Dr Addison that the capsular disease and the bronzed skin are associated as cause and effect; others maintaining that their concurrence is accidental, and that no real connection between them exists. The question is one not of theory but of fact; and although it cannot at present be considered as decided, materials for a solution are gradually accumulating. The volume before us makes an important contribution to these materials.

The controversy has been by some limited to a consideration of the replies to be given to the following questions:—First, Is disease of the supra renal capsules invariably associated with bronzed skin? and, second, Is bronzed skin invariably associated with disease of the supra renal capsules? Now, although we believe that both of these questions must be answered in the negative, still it by no means follows that we are to reject entirely Dr Addison's hypothesis, although we may look upon it as less general in its application than its author and his followers have supposed. Two sets of observations, opposed to Dr Addison's views, have been recorded; in the first are included cases where the capsules have been found diseased, and where there was no discoloration of the skin; while, in the second, we have cases of bronzing of the skin occurring without disease of the supra-renal capsules. These cases are generally attempted to be disposed of in the following way:—To explain the first set, it is maintained that the disease of the capsules has been recent, and that the patients have died before the bronzing of the skin (necessarily a slow process) could have had time to take place; while as regards the other set, it is argued, that the observers may have mistaken discoloration from some other cause for the true supra-renal bronzing. Without entering into particulars, we can at present

Sieveking, judging from the different results which have been attained by different observers, considers that there is evidence sufficient in favour of a peculiar state of mal-nutrition of the brain, probably allied to chronic inflammation, constituting the *causa proxima* of the disease. Chapter eighth is devoted to "the theory of epilepsy." First of all, we have the views of various authors unfolded, and to this succeeds a statement of Dr Sieveking's own opinion. Like Aretæus, who has written well on this disease, styling it, in an especial manner, a disease of the head—ἐπιλῆψίη δὲ κεφαλῆς, our author believes the seat of epilepsy to be in the brain; that wherever we meet with it, there is some fundamental weakness of the nervous centre; and that "an irritation produced by derangement in the amount or quality of the blood circulating in that organ" is its efficient cause, more especially on its first invasion. The two remaining chapters, ninth and tenth, concern treatment, which is properly divided into these two main considerations: the proceedings to be adopted during the fit, and the course to be pursued in the intervals of the paroxysms. Distrusting what has been denominated a specific treatment, the author adopts in all cases a rational procedure. His observations, as well upon the medicinal as the dietetic and regiminal treatment of the disease, are eminently philosophical, and entitled to the careful consideration of all readers. Physicians' experiences of disease are drawn from so many and so different quarters, that it is not easy to recommend other than a general plan to be pursued, when something more than "a specific" is felt to be required. Dr Sieveking found that a tonic treatment was necessary for his patients, while in all his cases he attempted, by such means as we possess, to equalise the intra-cranial circulation.

On Cough: its Causes, Varieties, and Treatment. By Robert Hunter Semple, M.D., Member of the Royal College of Physicians of London, etc., etc. Churchill, London, 1858. Pp. 174.

Dr Semple viewing cough to be "not so much a morbid condition in itself, as a symptom or indication of some general or special disease of the system," is of opinion that "it would be highly unphilosophical to treat empirically a symptom which may be induced by a great variety of causes, and may require the most varied and even the most opposite modes of treatment."

The plan of Dr Semple's little work is formed in accordance with this view of the pathology of cough. First, the anatomy of the parts concerned in cough, including from the tonsils to the liver and diaphragm, is briefly described. Next, the physiology of these parts in reference to cough, with especially reference to the theory of reflex action, is discussed. Thirdly, the pathology and

treatment of cough founded on etiology are laid down: "simple" cough, cough from teething, and faucial, laryngeal, and tracheal coughs, are first treated of; then a few remarks on "the stethoscope as an aid to diagnosis" introduce "chest coughs;" and the volume ends with an examination of coughs from gastric and hepatic disorder, and of those observed in hysteria.

Dr Semple's work is a concise, clearly written, and practical summary of the present state of our knowledge as to the pathology and treatment of the symptom he discusses.

The Army Sanitary Commissioners' Report. Supplementary Notice.

In our remarks on the recent Sanitary Report, in last month's *Journal*, and also, on previous occasions, we ventured to say that for efficient and useful sanitary work, science, strictly so called, is much less required, and is of much less avail than common sense or mother wit; and we supported the opinion with such arguments as occurred to us. We are now enabled to put forward an argument of the best sort—a practical illustration of our views. In the subjoined paper from the *Saturday Review* of 1st May, no less important a matter than the health of the army in India is treated by a reference to those considerations only for which we expressed a preference.

THE HEALTH OF THE ARMY IN INDIA.

The rate of mortality among our soldiers in India is ten per cent. per annum—four times as great as the mortality among all ages in this country. It costs L.120 to replace each dead soldier; so that the necessary reinforcements to keep up an army of 100,000 men (which some think requisite) would cost us L.1,200,000 a year. Thus a most serious question of expense, as well as of humanity, will arise, unless something can be done to improve the health of the troops. Persons of much practical experience think that this may be done, if the Government are willing, by changes in the present system; for the mortality among the officers, who can choose their own quarters, *and get to the hills*, is only half that among the privates.

Let us begin with the first landing of the soldiers in India. Every medical man well acquainted with the climate will say, that it is of the utmost importance to bring the new comers, who have been shut up for some time on board a ship, into the country at the beginning of the cool season—that is, not sooner than the end of October—so that they may have at least five months before them in which they can take moderate exercise, recover a good state of health, and accustom themselves by degrees to the climate, before the great heats at the end of April set in. Now, this precaution has hitherto been utterly neglected. It may be confidently affirmed, that out of every three European regiments sent to India, two have been introduced there in the hot season, and, perhaps, worst of all, in the midst of the rainy season. The men are transferred at once from the comparative coolness of the ocean climate to the stifling heat of the shore, to which they have never been accustomed. They land with their bodies in a bad state, from long want of exercise; they are shut up in their dreary barracks for ten hours at least of the broiling day, or else, worse

still, they escape into the sunshine; and the consequence is, that before a week's end nearly ten per cent. of the whole are on the sick list. Surely, with common forethought, it would be as easy for our Government to provide, in ordinary years, that soldiers should enter India in the interval between the latter half of October and the beginning of March, as during the rest of the year.

And now, supposing the soldiers landed in the Bengal Presidency, where are they located, and what sort of quarters do they find? The chief stations hitherto for British soldiers have been Calcutta, Dumdum, Berhampore, Dinapore, Ghazeepore, Benares, Chunar, Allahabad, Cawnpore, Agra, Meerut. All these stations, excepting those of Benares, Cawnpore, Ghazeepore, and Meerut (seven out of eleven), are notoriously and in a peculiar degree unhealthy in the hot season.

To begin with Calcutta. The soldiers on landing are placed in Fort William. The spot upon which this fortress is built was a most pestilential swamp. Although now thoroughly drained, and therefore, in the cool season, harmless enough, and even pleasant, no sooner does the rainy season set in than the excessive heat with moisture calls forth unmistakeable signs of miasma. Now, in order to preserve health in India, it is absolutely necessary to have refreshing sleep *by night*—not in the day, for that cannot supply the want of nocturnal sleep; and it is the want of this for weeks and months together, when our soldiers lie upon their cots bathed in sweat, tossing about restlessly to and fro, and rising up as tired as when they lay down, that lays the foundation for climatic diseases. But in order that Europeans may have refreshing sleep during the hot season, and especially in the rainy part of it, it is absolutely needful that a gentle air should blow upon them; and, of course, in places subject to miasma, it is also necessary that the sleeping apartments should be placed high above the noxious exhalations. In the *soldiers'* barracks of Fort William (we do not speak of the officers'), neither of these conditions is observed. The buildings are so constructed that it is impossible for the cool breeze to pass through them during the hot season, and they are not placed high enough to be above the reach of the marsh miasma. The wretched men, suffocated with heat, attempt to bring out their cots into the open air, in the hope of an hour or two's cool repose, but are sternly thrust back on two pretexts—decency and the care of their health. The consequence is, that the mortality of our soldiers in Fort William during the hot season is truly awful.

Secondly, as to Dumdum. This is a station surrounded by *paddy fields* (old Indians know what the word indicates) and swamps; and it is so ill-drained, that in the height of the rainy season one cannot pass from one part of the cantonment to the other—except on made brick and concker roads—without being over one's shoes in water. The soldiers' barracks here, though not so bad as in Fort William, are yet very hot and not sufficiently ventilated; and the same remarks apply to the hospital at that station. A great deal remains yet to be done at Dumdum before it can be pronounced tolerably healthy for Europeans, if, indeed, it can ever be made so in the hot and rainy season.

Next we come to Berhampore, whither it has been the custom to send newly-arrived recruits; and it has even been made the head-quarters and depôt of more than one regiment, as if it were a peculiarly convenient and healthy place. But the fact is, that this station is peculiarly unhealthy. It is almost surrounded by deadly swamps, and the greater part of its dwellings are actually below the level of the river, when its waters are flooded during the three or four months of the rainy season. It is no wonder if our soldiers die off quickly here.

Dinapore is a very pretty station, as the passing traveller would remark, with its barrack-square nicely built and neatly kept. But when one comes to examine into the matter more closely, one finds that the *soldiers'* barracks are so constructed that no refreshing breeze can reach them by night, for the length of the building runs from east to west, and the windows are north and

south. The breeze at night, in these parts of India, comes from the west in the hot, dry season, and from the east in the rainy season. Entrance, therefore, is forbidden to both in the soldiers' barracks at Dinapore.

Next we pass to Ghazeepore, and then to Benares. We have nothing particular to say against either of these stations. Of course, from April to October, they produce, as all stations in *the plains* of India must, the average fearful rate of mortality among our troops.

Luckily, very few English soldiers are posted at Chunar; and therefore we will only say that the heat of the fort is something almost beyond the imagination of an Englishman to conceive, and that if any commander wished his soldiers to die quickly, he could not do better than put them there during the hot winds and rains. Much the same may be said of the fort of Allahabad. When the Europeans had fled thither for refuge, during the late mutiny, they found it so intolerable to remain there, even for a few days, that they preferred returning to their dwellings in the open country, even at the risk of being caught by the mutineers. In that fort there are ranges of two-story buildings constructed by English engineers, in the ground floor of which, by means of sitting in utter darkness, with a well-watered *tatty* at one of the windows, one may pass through the season of the hot winds in tolerable coolness. The upper story is, without exaggeration, a burning oven. But the English soldiers are not placed in these European buildings, though four-fifths of them remain generally empty, but are quartered in the Indian buildings of the fort, where the old story of intense heat and no ventilation is repeated. It need hardly be added that our troops drop off there very fast.

Of Cawnpore we would only remark, that whilst most of the barracks are well enough, there is one large barrack along the whole length of which runs, not many yards distant, an open drain, which serves as the sewer to the whole place. The heat of Cawnpore is notoriously excessive, far above most localities in that part of India. Concerning the fort at Agra, it need only be said that in its defects it is almost precisely similar to those of Chunar and Allahabad, only perhaps a shade more unhealthy. Of Meerut we have nothing to say in dispraise. The cool season in that part of India and in the Punjab is much longer than in the provinces lower down and in Bengal, and the rainy season, the most unhealthy part of the year, is much shorter. The consequence is, that our soldiers seem to thrive better in those provinces.

There is a remedy for the evils we have described, which has been actually tried in the West Indies, and found to answer the most sanguine expectations. Every one acquainted with the history of the West Indies will remember that they were formerly spoken of, and justly too, as the very grave of English soldiers. Even officers have quitted the army rather than go there. No wonder that such a mortality prevailed, when our troops were always cantoned in the burning low country. If any one island was infamous above all others for sickness it was Jamaica. There the soldiers used formerly to be cantoned in a place as low as could well be chosen, and the crowded burial grounds soon received them. Latterly, however, the British Government has been better advised. The military authorities have opened their eyes to see that there are *mountains* in Jamaica, in many parts of which the climate is as cool as in the countries of the Mediterranean, if not cooler. They have tried the experiment of making cantonments in those mountains; and our soldiers now stationed in those cantonments do not suffer from a mortality as great as in the so-called pleasant and healthy climate of the Ionian Islands. An English clergyman, travelling in the West Indies during the winter months of 1848 and 1849, for the health of his child, was invited by a gentleman well known in Jamaica for his zealous support of railroads there, to come and spend the next *summer* in that island, instead of returning to England; and when he asked with astonishment how an English gentleman and his child could get safely through a Jamaica summer, he was answered, "Oh, I can offer you a delightful dwelling in the mountains, quite close to my own house and the Archdeacon's, who spends the hot weather

always there; and we shall not be far from the soldiers' camp, so that we shall have plenty of company." And when he inquired how the officers and soldiers fared in the hot weather, the answer was—"They are quite as healthy as in England. You will see rosy faces there; and they are out of doors nearly all the day long." That same clergyman was in Barbadoes for some months in 1849. The yellow fever was then raging among the troops, and depression of spirits was universal among them. But as soon as the commanding officer removed them from their cantonments to Gun-hill (which, however, is less than 1000 feet above the level of the sea), the sickness almost immediately ceased; and so, in the other West India islands, at a certain height above the level of the sea, it is well known that yellow fever never attacks Europeans. The question is, whether the experiment, so successfully begun in the West, ought not now to be carried out in the East Indies.

It is hardly forty years since the British became thoroughly acquainted with the mountain regions of India and their climate. Few of our stations then were near them, and we believe that, even yet, a foreign territory intervenes between Simla and our own stations on the plain. They were visited only now and then by some solitary traveller or sportsman, and were supposed to be merely unhealthy jungles, habitable, if at all, only by the barbarous aboriginal people of India, who existed there in the lowest misery of savage life. But as our increasing territory approached nearer and nearer to the hills, it was discovered that many districts among them were blessed with an excellent climate, and, by degrees, advantage was taken of this. The Governor-General and the Commander-in-Chief soon had bungalows constructed for themselves, and were followed, not long after, by persons of rank and fortune, by whose favourable reports public attention throughout the Bengal Presidency was aroused to perceive the benefits that might be secured by a residence in those regions during the hot season. And now, many pleasant stations have been constructed at various points in the hills, whither all sick persons who can afford the expense, and who can obtain leave of absence, flock for refuge. Officers, within a reasonable distance, will ask for leave, even if only between the monthly musters, to run up to the hills and enjoy a few weeks' coolness there. The question is, whether the same advantage might not be extended to the men, by building stations for them in the hills, and sending them there in large bodies every hot season.

The whole of India, from north to south, and from east to west, is intersected by continual chains of hills—divided, we may say, into small triangles by them, so that one or other of them may be reached from all the stations where our soldiers are placed, within a fortnight's march at the utmost. It may be granted that all these mountain ranges are not equally healthy; but upon all of them may be found spots infinitely more healthy than the burning plains. It is true, also, that all the mountain ranges are not equally high; but they are all sufficiently so to secure a desirable and healthy coolness. At the height of only one thousand feet above the level of the sea, cool *nights* begin. They will give our soldiers refreshing sleep, and enable them to bear without injury the heat of the day; and, we repeat, it is the want of cool nights in the plains, and the consequent want of refreshing sleep, that lays the foundation for those climatic diseases under which our troops perish. At the height of four thousand feet, one finds a comparatively cool climate, and at six thousand feet the climate nearly of England. Such a height as four thousand feet is easily attainable in any of the mountain ranges.

As to the question of expense, supposing that the Government engineers were ordered to erect at each hill-station, in brick and stone, the usual buildings supposed to be necessary—viz., barracks, hospital, magazines, officers' quarters, and (as the prevailing custom is) a handsome church—the outlay would be enormous. But Anglo-Indians know that the best buildings to keep off heat—ay, and rain too—are not those in the European fashion, of brick and stone, but the native huts, whose walls are made of bamboo poles and matting, and the roof of thick grass thatch. The whole cantonment might be made entirely

of these, and, if properly cared for, would last in good condition for three years. The expense of constructing one such hut, capable of holding in comfort twenty men, ought to be, at the most, one hundred rupees—that is, L.10; for, at this very cost, chapels for native Christians, capable of containing a hundred worshippers conveniently (and not ugly either), have often been built. To quarter a man, therefore, in safety during the hot season would not cost more than 10s.; while to *lose* him in the plains will cost L.120. We do not reckon their marching to the hills as much, if any, additional expense; for things are supposed to be always in readiness, and the men in marching order, and they carry themselves on the road.

So much for the expense of the novel experiment. But, indeed, it is not entirely novel, even in India, for we hear of two English regiments already having been cantoned near Simla, which were brought down to the plains, together with the Commander-in-Chief, on the first news of the mutiny breaking out. And this example seems to meet the natural objection as to the danger of withdrawing English troops from the plains during six months of the year. We do not find that the two English regiments just alluded to were much behindhand in rendering assistance at the beginning of the campaign. But supposing—what is very unlikely—that a general revolt of the ill-armed native population were to break out at one moment throughout the whole of India, English soldiers, descending from the nearest hills in bodies of three, four, or five thousand men, would probably soon render a good account of the revolters. In the same manner as the mere report of the approach of General Havelock began to quiet the district around Agra, so it would be in this case. The English would not have to come to blows, for the mere knowledge of the fact that they were near at hand, healthy, strong, and well-armed, and in tolerably sufficient numbers, would so discourage the would-be revolters, that they would remain as quiet as mice. In our opinion, therefore, the *whole* of the English troops might be safely sent for six months to the hills; but if that cannot be granted—if some small force must be kept to garrison the forts and watch over the magazines in the plains—arrangements might be made that every soldier should spend two at least out of every three hot seasons in a cool climate; and this alone would support the spirits and keep up the health of the men more than can be imagined.

Some may object that, at the foot of all the mountain ranges, there is a belt of deadly jungle to be passed through, in which our soldiers would be struck down by jungle fever, and so put upon the sick list before they arrived at the place which was to restore health and strength to them. The answer is, that the jungle, at the widest part, is not above twenty miles broad, and in some places not half as much. An opening half a mile wide might easily be cut, the land on each side thoroughly drained, and a hard road made in the centre for our troops to march through; and not one in twenty would experience the least inconvenience. The unhealthy belt does not frighten away our Governor-Generals and our Commanders-in-Chief, nor the rich, who may, though sick, manage to pass through it safely; and so will our soldiers, with proper care. The objection, that there are diseases peculiar to the mountain regions, which might prove as fatal to our men as those of the plains, need hardly be answered, except with this remark—they are of the same character as those they would meet with in England. And, to conclude, the natives of those parts would receive our troops with open arms as soon as they understood the objects of their settling there; and they would be soon allured to bring the necessary provisions in sufficient quantities, while they themselves would be civilized by coming in contact with Englishmen. These remarks apply to the mountain ranges all over India.—*Saturday Review.*

Not the least merit of this very able paper, in our eyes, is that, unlike the utterances of the sanitary specialists, it does not once, from beginning to end, use either the much-abused term "science,"

or the unscientific term "zymotic." No one will pretend to say that the officers who selected the sites, or constructed the barracks spoken of, were wanting in science; and the reader may be disposed to agree with us, that they would perhaps have thought more of such considerations as the usual direction of the winds, and the neighbourhood of *paddy fields*, if they had been less encumbered by scientific technicalities.

Our review was, of necessity, so short in proportion to the enormous book that it professed to consider, and the very many points embraced by the Commissioners' Report, that we may take this opportunity of craving permission to make a few supplementary remarks.

We pointed out the radical difference between the general and regimental hospital, that there need not be, for the requirements of the service, more than one general hospital; and we showed how much the Commissioners had brought themselves to put forward erroneous suggestions, in consequence of their having reasoned *from* the shortcomings of the vast and exceptional general hospital at Scutari, *to* new arrangements for the small regimental establishments. We also showed how quite impossible it was that the Scutari hospital could be anything but a failure when, to say nothing of definite rules of administration, there is not even now extant a thing of such primary importance as a schedule of furniture and utensils for a general hospital. In such a state of utter anarchy as these wants necessarily caused, all must have depended on one or two accidents, principally on the immediate medical chief; and from Miss Nightingale's statements, it would appear that the officer selected at Scutari was unequal to the vast and more than embarrassing task that was assigned to him.

A similar current of fallacy seems to run through what is said of the duties of the Director-General. We are asked to believe that these duties are so overwhelming that no one individual can possibly overtake them, and it is after this opinion has been presented in the strongest possible light, that the Council of three is recommended. Now, if there is no code of regulation; if the system is such that, in any emergency, the surgeon rushes, trembling and embarrassed, to the Director-General, the accumulation of letters and references in his office must be such as no man or set of men can attempt to cope with. There being no code of positive rules, every subject, however trifling, must be considered without reference to what has gone before; and the decision on that subject cannot be quoted as ruling on what may come afterwards. All this one can easily understand. But when the Commissioners, stating all this, propose that regulations, and system, and method be introduced, they propose the simplest and surest remedy for the evil; and the three councillors, one reason for proposing whom is that they may relieve the Director-General of much of his work, will be, as far as that reason goes, unnecessary. It may be possible to imagine a system of administration so perfect, with such well-adapted methods, that the amount of

work would be minimised, until there ceased almost to be any work at all. Indeed, the system might almost be made to carry on itself like a piece of self-acting machinery.

As to the gifts and qualities required in the Chief of a medical department, again, we have the misfortune to differ from the Commissioners. We do not think it necessary that he should be "at once an authority in sanitary science, in statistics, in medicine, and in surgery"—not, at least, as we understand these terms. It is not a Professor of scientific technicalities that is wanted, and a great physician or surgeon may make the very worst Director-General. Above and beyond such endowments, it is necessary that he be an accomplished, courteous, upright, truth-loving, God-fearing gentleman. He must know, thoroughly and intimately, the habits, tastes, prejudices, weaknesses—the ins and the outs—of that somewhat unintelligible individual—a British soldier. He must have seen him, too, in most of the many positions in which he is liable to be placed; and he must know how he comports himself under these varying circumstances. His mind should be stored and educated rather by Observation than by Instruction. He should not fear a charge of inconsistency—that hobgoblin of little minds. He should possess the high and rare courage that enables him to "speak what he thinks to-day, in words as hard as cannon-balls; and to-morrow, what to-morrow thinks, in words as hard, though it contradict everything he said to-day." He must be capable of standing on his own proper legs. He must be able to assume towards all, the shams, cants, sentimentalities, and unveracities of this quack-ridden world, an attitude, offensive and defensive. "He should," as Sir Thomas Browne says, "bring candid eyes unto the perusal of men's works, and let not Zoilism or detraction blast well-intended labours; let well-weighed considerations, not stiff and peremptory assumptions, guide his discourses, pen, and actions; value the judicious, and let not mere acquests in minor parts gain his pre-existimation." He should entertain an enlightened appreciation of the value—nay, the necessity—of a rational routine; and we may conclude our estimate by saying that he should possess that amount of individual force and self-concentration that would enable him to reduce his councillors to absolute silence, and, in the course of a very short time, make them fulfil their destiny—by ceasing to exist.

To the system or no-system by which promotion has hitherto been regulated, we make no reference, partly because we do not wish to re-open wounds which the Commissioners were under the necessity of deeply probing: partly because we wish to avoid, here as elsewhere, any allusion, by hint or reference, to any individual whatever. The subject is much too important to admit of mere personal considerations being imported into the controversy. As to the future—every one must agree with the Commissioners, that the vague and unknown *lex tradita* which seems to have caused so many heart-burnings, should be, as speedily as possible, exchanged for an intelligible and publicly-declared *lex scripta*. It is quite dreadful to think of the anarchy that might have prevailed, had anything occurred to close the mouth of the present Director-General before Mr Stafford and Mr Herbert gave him an opportunity of publishing the complicated traditions which he inherited from his immediate predecessor. With all the recommendations on this head, we cordially agree. Let promotion from the first rank to the second be by strict seniority; and let subsequent promotion be by selection only. If a medical officer is fit for the duties of an assistant-surgeon, he is fit, after a few years, for the similar, but more extended duties of a surgeon. On the other hand, to reward a good surgeon by putting him in a position in which he almost ceases to be a surgeon at all, is injurious to both the individual and the service. It may be so arranged that it would be rather a compliment than a slur to leave the surgeon in that position in which he most truly and usefully discharges professional duties; but, in that case, there must be such an alteration in the relative pay and status that he would have no reason whatever to regret missing the change. Certainly, a good surgeon may make a very bad administrator; and if our estimate of individual, administrative merit is to be derived from gazettes, and despatches, and newspaper correspondents, it may be safely asserted, on the other hand, that a highly-lauded and extensively-decorated administrator may be an exceedingly bad surgeon.

One of the grounds on which an increase of pay is recommended, is that the effect of all the recommendations will be to impose more severe duties and more onerous responsibilities; but the Commissioners can scarcely be aware of the immense additional labour that must be caused by one of their schemes. At present the surgeon is, most properly, liable to be called on for documents by the superior medical authority, and by the military authorities; the purveyors give an increasing amount of unnecessary trouble: greater, probably, than would be occasioned if the purveying were in the surgeon's own hands; but, when there are three new special departments created, with three sectional chiefs, who must show some result for their pay, and who may even be required to produce, each of them, an annual blue-book, the amount of work imposed on the surgeon will be something hitherto undreamed of, and quite appalling. It must be remembered, too, that the peculiar class for which these offices are provided—that class that is born, as Mr Henry Drummond would say, to pull at the teats of the national sow—has a singular knack of making others do its work, of requiring something more than the mere materials of reports from the unfortunates at the bottom of the scale. This brings us to the complaint of an excess of clerical work under the present system, as to which, we would fain hope, that there has been some misapprehension. An accurate record of the facts and phenomena of disease is so necessary, and it affords a mental discipline, so simple and valuable, that we trust the vague objections are not directed against that practice. What

officers do object to, under this head, as we understand their objections, is that in the record of every case, no matter what, an amount of quite unnecessary particulars is required to be stated, the very copying of the directions regarding which, as Dr Maclachlan remarked, would occupy a good half hour. They object, too, we presume, to these regulations putting it in the power of inspecting officers to offer offensive and puerile criticisms on what a surgeon should be left to look on as very much his own private property—a medical journal. Every medical officer whose mind is in a healthy condition, will systematically note, at the time of their occurrence and at the bedside of his patient, the appearances presented by each case; but if a useless and cumbrous form is attempted to be enforced, it will meet with a mere formal compliance. A "man of science," with pen in hand, calling on a costive imagination to supply him with a mass of facts, each one of which has utterly escaped his memory, is a spectacle by no means exhilarating; and the facts resulting from so dismal an invocation may, without lack of charity, be characterised by Dr Cullen's famous paradox.

One section of the Report is headed "Relative Rank"—an unfortunate and misleading phrase. In point of fact, a medical officer has no rank, can have no rank, and should not desire to have any rank. "The true glory of the profession," as Miss Nightingale told the Commissioners, "lies in medical skill and practice." This phrase only means the grounds of claim for certain material advantages, and it is of consequence that it should be extended as conveying the right to a higher degree of these advantages. It may be deemed expedient to make the proposed increase of pay take the form of increased relative rank, the meaning of the term being strictly limited to the sense we have indicated; but while we object, on the one hand, to the medical officer being degraded into a mere inspector of barrack nuisances, we more strongly object, on the other, to any addition of rank being bestowed with a view to conferring greater power of interference with the course of military administration. At present, even with imperfect regulations, a discreet surgeon is very well able to carry his point, and he will do so all the better if unencumbered with assistance from "medical administration." Confusion only can be the result if the indiscreet are called on to busy themselves with every small matter to which it may be possible, by a strained interpretation, to give a sanitary complexion.

Having, on a former occasion, discussed the question of Chairs of Military Surgery, we need only say here that our opinion remains unchanged; and that neither in the arguments of the Commissioners, nor in the new shape that, in their hands, the question has been made to assume, do we see anything to induce us to alter it. In time of peace, the Netley Hospital is little likely to supply sufficient means of clinical instruction; and if young surgeons are what they were when we knew them, now, alas! some years ago, they will be little disposed, after obtaining their diplomas, to pass again into the

state of pupilage. In war time, there will be an ample field for instruction, but, unluckily, no pupils, as the urgent demand for officers will render the long noviciate impracticable. The Commissioners show great ability in the art of converting mole-hills into mountains, especially when new functionaries are to be the result. In this instance, the noise and thick smoke with which three new professors at Netley are heralded, are so great that they may be apt to obscure the real fact;—that the special instruction required for an otherwise well-informed young medical officer, is not very extensive;—that a good regiment is the best school, and that the best teacher is a good regimental surgeon.

We have now passed in review nearly all the suggestions in the Report, and having objected to many of them—not in any captious spirit, but with a sincere respect for the good, however mistaken, feeling that has induced the Commissioners to submit them—it is right that we should specify in what manner we would improve on them; having essayed to pull down, we ought to show in what fashion we would build up.

The first and grand want is a well-elaborated code of regulations, and the preparation of this will be no easy task. To speak of one section only, the gentlemen at the War Office have for some time back been so busy with the manufacture of new orders and circulars, that the labour of codifying the War Office regulations, so many of which bear on hospital matters, will be something like that of cataloguing the library of the British Museum. The regulations should define everything that can be defined. Let there be thorough ventilation. Let the sun's rays and the blessed air of heaven reach the mysteries of the medical department. Let these bracing tonics penetrate even to the inmost recesses of the War Office—

"Ignavi domus et penetralia Somni."

Utterly abolish the Purveyor's department. Consign it to the Limbo reserved for what is useless and offensive. Let there be published a complete schedule of furniture and utensils for hospitals. Let the barrackmaster supply his stores in accordance with the schedule. Let the apothecary supply drugs. Let provisions be furnished, either under commissariat contract, or better, by the surgeon himself. In the first item there is room for increase of expenditure. In the two last, there is much room for greater simplicity and for economy. Two, at least, of the present diets may be dispensed with. As to drugs, it is absurd that the military surgeon should require for his patients the same "elegant preparations" that a fashionable physician, with great propriety, prescribes for a Countess in Belgravia. Indeed, it is high time for us to change altogether our notions of what a hospital is. We must abandon the idea that disease is a citadel to be assaulted with fire, sword, and artillery; that the practice of medicine is a battle, always raging—not without bloodshed. The true and

wise physician looks to the cause of disease, before the disease itself. As old Burton says, "Empericks may ease, and sometimes help, but not thoroughly root out: *sublatâ causâ tollitur effectus*, as the saying is—if the cause be removed, the effect is likewise vanquished. It is a most difficult thing, I confess, to be able to discern these causes, whence they are, and in such variety, to say what the beginning was. He is happy that can perform it aright! I will adventure to guess as near as I can, and rip them all up, from the first to the last, general and particular, to every species, that so they may be the better descried." We must realise the truth that disease is the objective evidence of a transgression, conscious or unconscious, of the natural laws under which we are appointed to live. A hospital, then, is a place of seclusion for those who have sinned against these laws, in which they are to be provided with the means of safely passing through the period of punishment. Under this idea, the surgeon's *armamentarium* need comprise only some half-dozen simples, and there can be no objection to this being laid down by regulation. We cannot admit that such a regulation would be at all inconsistent with the freedom of judgment that we have demanded. The poor patient would have reason to rejoice, not to complain; and what a load it would take off poor Bull's back!

Against Miss Nightingale's contemptuous opinion of the surgeons who "wish to keep the book-keeping and housekeeping in their own hands," we set the well-advised words of the Queen's Regulations for the army—

"The responsibility for the order, regularity, and cleanliness of the regimental hospital, for the diet and care of the patients, and for the general conduct and economy of the whole establishment, rests entirely with the surgeon."

Miss Nightingale may rest assured that a surgeon who does not know how to make beef-tea, or how to scour a floor, or how to fold a bed, is not worth very much.[1] In a regimental hospital there should be two non-commissioned officers—one the senior, "in charge" of the whole, the surgeon's-clerk, and concerning himself with the receiving, issuing, accounting for and paying for the provisions—the junior, in immediate "charge" of the wards; responsible, at all times, for cleanliness, order, and the necessary amount of care being

[1] One would be puzzled to know Miss Nightingale's meaning when she says, that "the cleaning and airing of the wards in the morning, would make a housemaid laugh," if the very next clause did not show that she is applying what she saw at Scutari to the condemnation of quite dis-similar establishments that are scattered all over the empire. As a rule, regimental hospitals are, always excepting lighthouses and military prisons, the cleanest habitations that one can visit; and they may sometimes be found as clean as a dairy or the main-deck of a man-of-war. The best of them are cleaner than the best civil hospitals in England or Scotland, and most of them may be said to be cleaner than any civil hospitals in Ireland, even than those in charge of Sisters of Mercy. But, to effect this, the surgeon must think of something more than science; and he must not mind being called such names—and by a lady, too!—as "a sort of maid-of-all-work."

bestowed on each individual patient. Considering the general nature of the cases, the present allotment of orderlies—we are speaking of regimental hospitals only—is sufficient. Every, the most minute duty, should be "in charge" of some one individual. If, for instance, a door-handle is not cleaned, or a pillow-case changed at the proper time, the surgeon should know at once who is the culprit. The accounts should be kept by the surgeon, and audited by the district commissary, or by a board of officers, before leaving the station.

Proceeding one step from the regimental establishment, we propose that a medical officer be attached to the Staff of every district general officer; let us call him Assistant-Surgeon General. He should be the medico-sanitary adviser of the General, and should assist him in his inspections, especially on all professional points. He should be placed on the Staff, just as other divisional Staff-officers are; and, as in their case, any order emanating from him should be treated as coming from the general officer himself. Any medical officer of sufficient standing should be eligible to hold such a Staff appointment as this for a certain period, at the end of which time he should return to his regimental position, just as other Staff-officers do. One step more, and we reach the Director-General or Surgeon-General, as we would rather call him—the medico-sanitary adviser of the Commander-in-chief. He should be the head of a principal department at the Horse Guards, and, like the other heads, should be assisted by his Deputy-Surgeon General, Assistant-Surgeon General, and Deputy Assistant-Surgeon General. Here is a plan that we venture to think combines simplicity with the promise and possibility, at least, of efficiency. It will be observed that we propose, instead of six, four ranks only, or rather three, as one of them need be temporary only, not substantive. One word more. If, with duties defined, and ranks defined, any one of these officers is found to neglect his duty or to pervert the freedom of judgment and the discretion allowed him, in the direction of jobbery, let there be no mistake about the punishment; give him "Jeddart justice;" lead him out to instant execution! After that, the newspapers may say what they please.

This report has now been before the country for more than three months. It has been a sort of nine days' wonder, and has occasioned, perhaps, a greater amount of frothy, purposeless talk, than usual. What has been *done*? Literally nothing. What is likely to be done? There is a rumour which we cannot credit, but which we mention, as the mere fact of its being in men's mouths goes to confirm some remarks of ours last month. It is reported that one change is only to be made, that all the anomalies and imperfections are to remain untouched, that soldiers are still to gasp for fresh air, and that their rate of mortality is still to be more than twice that of night printers, but that the three Councillors are to be forthwith appointed; and further, that they are to be selected from the gentlemen whose names appear at the foot of the Report. Strange and mournful coincidence! In these days of promotion by merit and

competitive examinations, the three right men for these very wrong places, can be found only, out of the thirty million inhabitants of these islands, among those who humbly recommended to her Majesty the institution of the offices! One might have fancied that such an opportunity for the outpouring of speech would not have been lost sight of by the House of Commons. The House contains a pretty strong brigade of old and young soldiers, who do not fail to make themselves heard when anything affecting the immediate interests of their own class is before the public. We may have had some reason to look to them for enlightenment, and for correcting some of the commissioners' erroneous ideas. A gallant young Guardsman, it is true, attacked the Report, and has achieved a ludicrous defeat from Statistics,—the only enemy that gallant young Guardsman should never attempt to cope with. Otherwise, the question has only been rescued from silence, as far as the House of Commons is concerned, by the well-meant but quite abortive efforts of an Oxford Street coachbuilder! The House and the country have been far more intent on the question, whether Foodle or Boodle or Coodle shall sit on the Speaker's right hand; and on the still more engrossing question,—how Boodle and Coodle, who mortally hate each other, can be induced to sit, with apparent concord, on the same bench, and undertake together the governing of us, with the certainty that one will be tripped up by the other in the course of a very few weeks—"Decidedly that course of procedure will no longer serve. Parliament will absolutely, with whatever effort, have to lift itself out of these deep ruts of do-nothing routine: and learn to say, on all sides, something more edifying than *Laissez faire*. If Parliament cannot learn it, what is to become of Parliament?"[1]

[1] Since the above was written, there has been a desultory conversation on the subject in the House of Commons, and Lord Ebrington has committed the House to the opinion, "that the long continued excessive mortality of the army has been mainly caused by the bad sanitary condition of barrack accommodation." This is a short step, but still a step, in the right direction. Will some honourable member, of a practical turn of mind, now propose that, "to save life, each soldier be provided with a cubic space of not less than 600 feet?" How much the House still misses the real point of the controversy is well shown by the fact, that the late Under Secretary for War was actually permitted to boast, that in the three years, 1855, 1856, 1857, the enormous sum of L.1,500,000 was spent in the enlargement and repair of barracks at home. The attempt to fix responsibility for past errors on individuals was earnestly decried, and properly so, if the attempt is made with the mere object of bandying personal accusations. But it is very certain that, if our only remedy is to consist in a still more lavish expenditure of money, and if we do not inaugurate a new system by which it is to be expended, we shall, after a few years, have added enormously to the national burdens, and still have Dr Farr's terrible statistics repeated to us over again. It is a pity that Mr Herbert, holding such a brief as these statistics placed in his hand, was content to speak in so low a tone. Indeed, Miss Nightingale is the only person who seems disposed to apply the good word THOROUGH in the matter, and seeing that, we may be permitted to regret that she is prevented from taking a more direct share in the correction of abuses that she knows so well how to describe, by what Mrs Hominy calls "the conventionalities of that a-mazing Europe."

months. She had a blanched appearance, as a good deal of blood had been lost before Dr Thomson saw her; and as there was still considerable hæmorrhage, the vagina was plugged. The plug was removed next morning, and the placenta came away on the 18th or 19th. She made a good recovery, and Dr T. paid his last visit on the 31st. The fatal attack occurred on the 5th of November. She became ill about 8 o'clock in the morning, and was seen by Dr Thomson about 2 o'clock in the afternoon. There was slight tension of the belly, with general tenderness, which was not, however, increased on pressure. The pain was mainly referred to the right side, over the region of the ovary, but generally extended over the whole belly. She complained of nausea, sickness, and occasional vomiting, and had a look of intense prostration. The pulse was feeble, soft, and frequent; and the breathing laboured, without the slightest suspicion of any affection of the chest. She was restless and uneasy, and could not keep still. These symptoms continued during the day, and increased in urgency They were those of abdominal perforation, and were treated accordingly. She died on the morning of the 6th, having survived the attack 26 hours.

Post-Mortem Examination.—The stomach and intestines were very carefully examined, in the expectation of detecting a perforation in their coats. No lesion, however, was discovered. There was no exudation or hæmorrhagic effusion in the cavity of the abdomen. Dr Thomson having received a hurried professional call during the inspection, the remaining organs of the abdomen were rapidly examined. The right ovary was found to have sustained a linear rupture throughout its entire length. The ovary was not increased in size, and its texture appeared healthy, with the exception of slight induration at one extremity. A small tenacious clot of blood was embedded in the rupture. The uterus was not opened, but seemed to be in its normal condition.

Part Second.

REVIEWS, ETC.

1. *The Army List for November* 1858.

2. *Report on the Site, etc., of the Royal Victoria Hospital, near Netley Abbey.* June 1858.

We congratulate the profession generally, and that section of it which is the Army Medical Department, on the publication, after so many delays and frequent disappointments, of the recent Royal Warrant.

For three long years, everything connected with the health of the soldier, and the present machinery of administration by which that is affected or cared for, has been made the subject of investigation and report. From a hospital for a thousand beds down to the materials for shirts, from a new Nosology that is to banish Cullen down to the fashion of a saucepan, nothing has been too great, nothing has been too small to escape research. Even now, Commissioners are painfully rushing about the country, visiting every barrack;—to see what? Nothing that they could not have learnt all about, if they had stayed in London. They see the same barracks, the same latrines, the same wash-houses, all built and fitted on the same uniform bad plan, every one exactly like the other. Doubtless, they make copious notes; but when a remedy comes to be applied, it cannot be the Commissioners' note-books that will be referred to, but the plans and elevations that were resting in pigeon-holes at Whitehall, long before the Commissioners were ever dreamt of. When the first Blue-books appeared on these subjects, we endeavoured to keep our readers informed of the progress of the inquiry; but Commission has followed Commission with such surprising rapidity, that no mere monthly journal can attempt to keep pace. In one instance, a Commission has been appointed to report on a Commission, and then was seen a manœuvre such as sometimes strikes the public with wonder on a field day. When a body of troops is engaged with some imaginary enemy, the singular phenomenon of two friendly battalions chancing to find themselves in front of each other, and then firing straight into each other, sometimes astonishes the uninitiated spectator. A similar manœuvre seems to have been performed by the Netley Hospital Commissions, excepting in so far as it is not always BLANK cartridge that Science employs in its contests. We have not cared to discuss that controversy. The Netley Hospital, improperly situated, planned on erroneous principles, ill adapted for the purposes it is required to serve, costing vast sums of money, will supply a want not thought

of by the minute inquirers who have been reporting on it. It is well that an Englishman, on leaving or returning to his country, should be reminded, with all the emphasis supplied by so solid a monument, of the mad year 1855.

The first most gratifying feeling that the appearance of this warrant occasions is this;—that out of all the mass of talking and reporting, there has come one real, palpable, articulate fact. Something has at last taken shape and been done; and we may augur from that that greater and more pressing wants will be ere long supplied. We would gladly have seen some other matters have precedence. The most clamant demand proved by the Commissions is for increased living-space; but that question has, as yet, got no further than is expressed by the publication of the Secretary for War's "approval of the principle" that a soldier should have double his present allowance of air, and an order that existing accommodation shall be, as far as possible, appropriated in conformity with that principle. The present barracks are now so fully occupied that the order can be hardly more than a dead letter. Some months ago, the House of Commons declared, by resolution, that "the long-continued excessive mortality in the Army has been mainly caused by the bad condition of barrack accommodation." If this opinion is correct,—and no one has yet, with anything like success, attempted to gainsay it,—it is for the House of Commons to enable the Minister to carry out its resolution. As long as the present unfortunate mode of construction is persevered in, the expense must be very heavy; but money devoted to the saving of life is always well laid out.

From causes which need not be specified, which, indeed, it would not be very easy to specify, there has been, within late few years, an altered proportion between the demand and supply of medical men for all positions. The large demand caused by the Eastern War, and again by the great Indian Trouble, brought into greater prominence, but did not create, the disproportion. When an urgent call is insufficiently met, there is apt to be a further inconvenience;—the article offered in the market, and of necessity taken, may be of inferior quality. The improved condition now accorded to the medical department is not merely an affirmative answer to the "indignation meetings" in the Crimea and at Dublin, or to the movement of the different medical corporations, much as the latter may have helped to bring it about. The object is not merely to advance those already in the service, and dependent on it. We must look on the Warrant as a means by which it is hoped to procure a full supply of well qualified men for the future. A similar attempt was made on a small, and what may be called a huckstering principle, just twelve months ago, and failed as it deserved to do. The attempt is now made on a broader, more comprehensive, and more statesmanlike principle, and we heartily wish it success.

We propose, by the new light of this Warrant, to make a few re-

marks explanatory of the position in which the young surgeon who is induced to enter her Majesty's service may expect to find himself placed,—the advantages that are held out,—the inconveniences that must be anticipated. To do so is not to put the ribbons in our cap, and play the part of Sergeant Kite, but it is strictly in the line of our vocation as medical journalists. There must be many of our readers who are just now hesitating and embarrassed as to their future path. Not many weeks ago, the attainment of the students' goal may have seemed to them the final realisation of all that they could wish. But it only marked a particular stage of the journey. They have taken the *sacramentum;* they have buckled on their knapsacks, and have had arms put into their hands. The question for them now is;—Whither? What is to be their line of march?—Should any of them have turned their eyes in the direction of which we have been speaking, we shall endeavour, at least, to help them to an answer.

In certain religious orders, the Novice takes the three vows of Obedience, Celibacy, and Poverty. In the case of the medical officer,—in the case of every officer who rightly apprehends the requirements of his commission,—these vows, dictated by no priest or bishop, witnessed by no pageant of a day, are imposed by the far higher authority of Necessity, and the investiture is prolonged through a life-time. Obedience, subordination, is a very good thing in its way, a wholesome mental discipline, and, sometimes, one can scarcely have too much of it. Outside the sacred precincts of the Family Life, he must be content to stand, as "the Peri at the gate of Eden stood,—disconsolate," comforting himself for his unfulfilled life with such scraps of comfort as can be picked up on his flinty path, uncheered by companionship, but along which he must always carry himself manfully and bravely. It is to the Poverty part of the question that the Warrant chiefly addresses itself.

The army medical service has always held out certain advantages to those who either lack the means of entering themselves for the race to distinction and competence in civil life, or who are content to resign their chance of attaining these for the sake of a comparatively independent life. In no section of the profession is the race to the swift or the battle to the strong, neither are riches to the man of understanding; and many have, at all times, been induced to prefer a career which gives them a decent maintenance, a respectable social position, and large opportunities of addressing themselves to other pursuits. The army has, at least, enabled them to see the world, to wear broadcloth, to provide themselves with a clean shirt and to fare sumptuously, if so inclined, every day. What more can a man want?—When he can "live like a gentleman," and pay his debts like an honest man, he is in a position, as far as externals go, than which many are more unpleasant. This Warrant gives a certain increase of pay to nearly all periods of service. The Assistant Surgeon, beginning at 10s., rises to 11s. 6d., and eventually to 13s.

recently the rate of Surgeon's pay. The Surgeon, beginning at 15s., rises to 18s., 22s., and eventually to 25s. The two higher grades are paid in like proportion. Considering that this is a fixed stipend, only to be lost through gross misconduct, and considering the nature and extent of the claims on one's purse in the army, these figures represent a really respectable income. The rates of half-pay are increased in like proportion. As the Warrant has been so frequently published, we need not again specify them beyond stating this note-worthy fact;—that a medical officer who is deemed unfit for further service at forty-six years of age,—and there are few who cannot prove a disability at that age,—is, for the future, to receive half-pay for the rest of his life, without chance of being recalled, at the rate of 18s. 6d. per diem. How many of the most eminent physicians and surgeons could retire at that age, with an annual income of L.338, secured on the public credit of the country? This is, we fancy, the greatest pecuniary boon offered by the Warrant. There is an increase of the other rates, but we need not specify them.

We gather from the second clause that there are to be two preliminary examinations: one, the first or entrance examination, competitive; and the other "in military medicine, surgery, and hygiene, after attending the authorised course at a general military hospital." When the number of vacant commissions exceeded the number of candidates, as was the case when competitive examinations were first instituted, these were simply ridiculous, very fit to be boasted of before Section F of the British Association by that redoubtable whole-hog champion, Mr Edwin Chadwick, but not certainly touching on any point of principle. When, however, the conditions are reversed, as there is every reason to hope that they will be under the Warrant, it becomes a matter of some consequence to consider how far this new system is likely to benefit the service. If the man best fitted to perform the duties of a military surgeon is that one who is best fitted to answer a series of questions, then there is nothing more to be said, and it will only be necessary for all the schools to establish—and avow the establishment of—a mill by whose grinding the service is to be supplied with "officers and gentlemen" so curiously qualified. If, on the other hand, there are important qualities that go to the making of a good officer, which no mill or other piece of inanimate mechanism can ever produce; if these qualities even transcend, in their importance, the technical knowledge to which we have alluded, it may be worth while to consider that there were not a few advantages in the old nomination system. We can quite understand why the head of a department should prefer a system which removes all responsibility from off his own shoulders, and, as we have on a former occasion remarked, such a system is in accordance with our present administrative tendencies; but we are old-fashioned enough to think that office is nothing without responsibility, and that he is the best and bravest official who boldly faces and assumes responsibility.

It seems likely, from this same second clause, that the three professorial endowments will be transferred to Netley, and bestowed on teachers of military medicine, of military surgery—whatever these may be—and hygiene. May we hope to see another faculty added, —one much needed in these latter days,—a Professor of Common Sense?

"Assistant Surgeons shall, as a general rule, be promoted to the rank of Surgeon in the order of their seniority."—Good. "In case of distinguished service, however, an Assistant Surgeon may be promoted without reference to seniority." There seems to be some little explanation needed here—Is the distinguished service to be that of a trooper or of a surgeon?—The reward ought surely to take different directions according to the character of the service. "All promotion from the rank of Surgeon to that of Deputy Inspector . . . shall be given by selection for ability and merit." About this we have a word or two to say.

This subject of the disposal of promotion has, within a short period, gone through three very distinct phases, and the medical department has exhibited these as much, perhaps more, than others. First, patronage, as it was called, was looked on as private and personal property, to be conferred according to the humour or mere motion of the individual in whose hands it was placed. This was very intelligible. Then came a period which was by no means intelligible, when, public opinion having demanded certain guarantees, it was necessary to profess the influence of merit, while the old system was still acted on and, with the whole heart, believed in. Nothing could be easier than to substitute the word "merit" for the old word "interest." After that, we approach what may be termed the present epoch, when "merit" is the word of force. The future and higher development will consist in asserting that *fitness* for the office should be the sole ground of claiming it. When merit is the password, we imply that the service exists for the good of the individual; when fitness is the phrase, it is implied that the individual is there for the good of the service. A foreshadowing of that state of opinion we are glad to think that we recognise in the word "ability." But even then, in this relation, a great difficulty presents itself. Let us sketch two surgeons, the types, doubtless, of numerous classes. One, with a fair amount of knowledge and intelligence, quietly, systematically, and after a certain fixed method, does his duty. He shows his zeal by doing, not by speaking,—by quite silent, practical endeavour, not by obtrusively displaying it. He governs that microcosm of his, the regimental hospital, wisely, temperately, efficiently. No consideration has power to make him deviate, by a hair's-breadth, from the strict line of duty. He is, in the highest sense of the word, a meritorious officer, but he has never had the opportunity of showing capability for administration. He deserves promotion, but the service may suffer by his being promoted. Besides, the very calm and order of his proceedings have prevented his merit from becoming

known. On the other hand, we may imagine one who, whether a good or bad surgeon, has certain administrative qualities. He knows the rules of the service, and he acts up to them. He possesses tact, courage, discrimination, is well informed in medical generalizations, and can apply them on a large scale. Above all, he is able to express his ideas on half-margin foolscap, and is skilful in the manipulation of red tape. He is just the man to put into the administrative ranks; but, if a bad surgeon, why should he be promoted? and, whether a good or a bad surgeon, how are his qualifications to be discovered? Just as there is indubitably existing on the earth, *the* most Foolish man, whom the great modern Humourist once expressed such anxiety to see, so there is, with equal certainty, extant somewhere, *the* most fit and able man. How strange, good Reader! you may have sat in the same room, conversed, face to face, with him, and yet that discernment on which you pique yourself so much may have failed to authenticate him! If authenticated, how out of all proportion would be the allotment of the post of an Inspector of Hospitals! Should we not rather make him Minister of Justice, Captain of Industry, General of the Sanitary Army, or Governor of British Columbia? However that may be, this clause explicitly directs that he shall be searched for, and, irrespective of all other considerations, forthwith invested. The author of *Friends in Council*, in one of his charming essays, speaking of negro slavery, and the paternal government principle on which it is sometimes defended, says that, having known many of the best and wisest men of his day, he has not met six whom he would entrust with the sole dominion over a fellow-man; and the remark applies closely to the vast, scarcely assailable power, that has, in this instance, been allotted to one man. On the whole, it must be said, that in proposing or accepting this clause, the Director-General has undertaken a task and a responsibility, greater perhaps than that of any other man in England; but, in strict accordance with sentiments that have been more than once declared in this Journal, we must express our respect for him for doing so, and wish him all the discretion, temper, and judgment that are required for so awful an undertaking. Certain it is that this clause, however administered, must cause many heart-burnings, and perhaps, the better and more honestly it is administered, the more numerous will be the heart-burnings. One effect of it will be to place the Director-General in the midst of solicitations and pretensions that may well turn the head of any man. The best way for the surgeon to consider it will be to make up his mind that he will never achieve promotion, but, at the same time, to do more,—deserve it. To deserve it has not always been to obtain it. Lord Palmerston once asked, in his scoffing way, what is merit? and no answer seems yet to have been discovered. It may be difficult to define the phrase in set terms, but the greatest difficulty is to find a person with a Seeing Eye capable of ascertaining it. To speak of "ability and merit," and then to find them only

existing along with the faculty of drawing the Queen's pay for a longer period than your neighbours,—and, after a certain experience, that is just what seniority means,—would be to look through a pair of rejected and much discredited spectacles; and, to act on such a dim sort of vision, would be to keep the word of promise to the ear and break it to the sense. We have no reason to assume that such will be done.

After the silly outcry raised against the medical officers of the army, three years ago, had somewhat subsided, and the light of a little reason had been let in on the matter, it began to be thought that it might be of advantage to the service if the class most competent by instruction and general mode of thought for the task, were authorised to interfere directly in sanitary arrangements. The question was,—Is it possible to give power of direct interference and control to a class of men whose function is altogether distinct from the channel of authority, without great risk of impairing unity of action and destroying the required co-ordination of duties? This was one of the questions which current thought presented to Mr Herbert's Commission. The problem is a very difficult one, and we do not pretend to be able to say how it could be solved. But it is to solve questions, difficult to other men, that Royal Commissions are, we apprehend, appointed. The Commissioners have scarcely answered it. They have contented themselves with recommending that surgeons shall always submit, in writing, to commanding officers, sanitary suggestions,—a process that has been going on, time out of mind, with what results we can see; while some of the Commissioners, at least, must have known full well that, with sanitary matters, officers commanding corps have, of all men, scarcely anything to do. It rests with certain civil or quasi-military departments. The Commissioners further recommend an elaborate system of sanitary instruction at Netley. Such a scheme is in sympathy with the general tone of their recommendations, which is much towards complication, but it is certainly opposed to the present views of the best informed teachers, which make instruction by lectures very secondary to other methods; and, curious enough, almost the only point on which the various Commissions and Committees seem to be agreed, is that the Royal Victoria Hospital will be quite unadapted for a system of teaching. It is now vaguely rumoured that medical officers are to have much more direct power of interference. Heaven grant them grace and judgment to use the power with discretion!

In a regiment, and in an army which is an aggregate of regiments, certain functions group themselves around a central one, and it is by the harmonious action of each that efficiency is attained. The business of the military officer is to drill the soldier and to make him most skilful in fighting. The business of the surgeon,—of the other adjuvant functions we need not speak,—is to keep the soldier's body, the perishable outer garment in which, for a brief

season, he walks about the world, in the best possible state of repair. The degree of resultant good that is obtained by the effective co-operation of all the functions is an exact measure of the confusion and loss of effect that must ensue from jarring or isolation. Peace, good feeling, and brotherhood, are such blessed means to a good end, that to further them it may be sometimes expedient even to sacrifice one's vanity. It would be difficult to exaggerate the influence which the surgeon exerts for weal or woe, according as he accepts his true signification and acts up to it, or the reverse. His personal dignity, or what he may consider his personal dignity, is a very secondary matter indeed. He is a small link in a great chain, and, as regards his duty, the individual must be forgotten for the sake of the whole. If his first thought, on any new occurrence, is to consider how, in his own way and with reference to the occurrence, her Majesty's service can be best promoted, it may be safely predicated of him that, after the measure of his gifts, he is a just and faithful steward. If his first thought is to reflect how his personal consideration or dignity is affected, he may be able to gain the applause of the unthinking, and he may feed a vulgar, petty vanity, but he so far shows that he has mistaken his vocation, and is a traitor to his commission. There must be many occasions on which a calm, unjealous temper, and one which makes allowance for the defects of others, will save him from much mortification. When we say that medical men have the character of being arrogant, opinionative, dogmatic on shallow grounds, that they are often distrusted, we say what may be unpalatable to the reader, but what has been asserted over and over again by philosophers and farseers in all ages. "My aversion to medicine," says Montaigne, "is hereditary, like my disease. They say that a new-comer, named Paracelsus, changes and overthrows all the order of the ancient rules of medicine, and maintains that, up to this time, it has only served to kill men. I think he will be easily able to prove this; but as to putting my life in his hands, I don't think it would be a mark of wisdom." "In general," says Niebuhr, "I do not like medical men. They form the most arrogant and unprincipled of all classes, next to the nobles, and rival the priests and the political economists. And no wonder, for they too must have a consciousness of internal untruthfulness from the contrast between their pretensions and what they really are, and they try to conceal this from themselves by self-conceit. And, just as it is very difficult for a statesman not to be corrupted by degrees, unless he is a thoroughly upright man, because the contemplation of the blunders that he cannot help making is all too painful, so the same takes place with the physician, who, besides, depends more than the statesman on reputation, and cannot, like him, gloss over his mistakes." If such are the feelings or the prejudices of men of culture and observation, how much greater must be the antipathy of those who perhaps

think from the impulse of a narrow education, and all whose sympathies are with an order of mind to which that of the greatest physician or surgeon is antagonistic in the very ratio of its greatness! The mere military mind, which is one to which preliminary instruction is comparatively unnecessary, is offended by anything that breaks uniformity or detracts from a certain regular proportion. It turns away from that which mars completeness. What wonder, then, if sick soldiers are apt to be looked on, quite unconsciously, as an encumberance? what wonder if a disposition is manifested to thrust them out of sight? And it is very natural that the surgeon should be placed in the same category with his patients; and should be apt to be slighted, except, perhaps, when some personal necessity calls for his aid. All this the man of highest culture will see most clearly, and will tolerate with the greatest indifference. There is one important practical fact which these and similar considerations bring to his mind;—that he is often the soldier's best friend, and sometimes, it may be, his only friend. In view of so much personal kindness and consideration that we see every day, remembering many active philanthropic efforts, speaking, in fact, of a body of English gentlemen, it would be worse than childish to say that the military officer treats the soldier with harshness or indifference. What we say is, that the necessities of discipline and position may make it imperative on him to put aside the dictates of kind-heartedness, and to forget the man in addressing himself to the soldier. The more he realises his function, the more he may feel compelled to do this. The surgeon, on the other hand, is not a soldier; and no names, or titles, or regulations can ever make him a soldier. The more he appreciates soldier-like sentiments and modes of thought, the better and more effectually will he act his part; but, in essence, his position is that of one who is not a soldier, but, at the same time, imbued with soldier-like notions, influencing those who are soldiers, and exercising that influence in the discharge of an art which, more than most others, appeals to the heart and the better part of our nature. His is a superior intelligence, and a superior social position, addressing themselves to an inferior grade, and to an intelligence which, if not always inferior, is, at least, less instructed and also imperfectly educated. The soldier does not see the surgeon in the character of either a prosecutor, or a juryman, or a judge. He meets him only when offering and acting kindness. When one has seen much of the British soldier, especially under circumstances that call out the graces and touches of sympathy that make all akin, —when he sees what a precious jewel there may be lying under a rough, dust-begrimed exterior,—when he sees, in one word, what good, cheerful, willing, hearty fellows our soldiers are or may be induced to become—how uncomplaining in misfortune, how tender to an unlucky comrade, how self-sacrificing in a common disaster; and when he carries his mind back, and thinks what a bringing or dragging up these men have had, where they have come from;—

when he reflects whither they are going; how many a harsh word, provoking to wrath, they are exposed to; how often a piece of most fair paper has been blurred and blotted by human handwriting, he may be pardoned for thinking that there is some substance, some fibre of truth, in the dreams of the optimist. In the most debased mind, under the rudest covering of earth, there may be found a vein of pure metal which, let the right talisman be only used, we cannot be long to discover. Let a delicate hand strike the true chord, and melodious music will be given forth in answer. Rub off the defacements imprinted by baneful circumstance, and the palimpsest will reveal the fair characters written by the finger of God.[1] Something has been discovered which seems to have been little known to those who commanded at Blenheim, Fontenoy, and Minden;—that a soldier has a soul as well as a body. Into the many improvements that have been made since that notable discovery, and in consequence of it, this is not the place to enter. All that we have to do is to indicate the attitude towards the spiritual part which the surgeon should assume. He may depend upon it, that the more tenderly he treats his patients—the more he surrounds them, when in hospital, with kindnesses, and with what are known and sometimes decried by short-sighted people under the name of "comforts," the better, more manageable, more efficient a soldier is the man likely to be when he leaves hospital. And to accomplish that is the one object of the whole vast system of military administration.

The surgeon must make himself acquainted with all orders and regulations which bear on his duties—a most difficult labour, and a

[1] We sometimes hear most wonderful stories about soldiers. For instance, Mr Rawlinson, C.E., said at Liverpool, the other day: "He had heard these fellows, in their drunken brawls, adding fresh horrors to the already terrible horrors of wounds, disease, and war." And, again, "when he had the misfortune to be wounded, the orderly told off to attend him was seized with cholera, and the poor fellow lay down beside the bed, screaming and dying, no one coming near either of them for more than three hours." Here was a dainty dish to set before the assembled Sociologists! When is the world to hear the last of Mr Rawlinson's "wound?" It was sung in Mr Russell's Epic; it was paraded, with great pathos, before the Sanitary Commissioners:—

"Look, sirs! my wounds;
I got them in my country's service."—

And now it appears as a pendent to Miss Nightingale's paper on "Hospital Construction," in asking for the publication of which the *Edinburgh Medical Journal* is happy to associate itself with the Sociologists. When Thomson's *Sophonisba* was first played, where the line occurred—

"My wound is great because it is so small;"—

a wag in the gallery completed the couplet thus:—

"And 'twould be greater, were it none at all."

As to soldier orderlies, this writer may perhaps claim to know as much about them as Mr Rawlinson, and he is bound to say that he has found them as tender, if not so skilful, as a sister of charity,—much more so than the hired nurses of civil hospitals.

most chaotic mass. Having mastered these, having dug out of all the mysteries and hidden nooks of all the departments the necessary knowledge, he must use it to gain for his patients all the comforts and appliances to which they are entitled. At this point his labour is very apt to resemble that of Sisyphus. He rolls the heavy stone up a difficult ascent, and then the mere *vis inertiæ*, the dead weight of the departments, rolls it back again. He must not, however, abandon his task, but valiantly push on. There is victory at the summit. After the revelations of the Weedon Commission, the public may not be surprised to be told that there may be delay and difficulty before stores are issued. There may be much knocking at the door necessary, before a cup, or some more ignoble utensil, can be got from the gentlemen on high stools, through whose hands these things pass; but the cup or the utensil, once procured, may be priceless treasures to many a stricken sufferer.[1]

In respect of direction and practical thought, there are two very distinct lines which it may be well to specify. There are many shades between them, but they are really antagonistic, and can never sympathise. In one, it is assumed, as far as there is any conscious reflection, to be an ultimate law of nature that there shall be a certain per-centage of sickness. To combat that, recourse is had to routine and obsolete means. When the per-centage is exceeded, the subject is represented or talked about in the smoothest and mildest manner; great respect is paid to jealousies and prejudices; Grammar is not made much account of; Logic is the only authority that is utterly set at defiance. This, with a good deal of "chin-chinning," may represent a well-marked class. On the other hand, the individual may stand firmly on the foundation of truth, and bow the knee before no altar but that of progress. He inquires eagerly, and, having once found the solid basis of reality, having once elaborated or found elaborated for him a logical result, he goes straight to his mark, heedless of the inconveniences and the consternation that he may scatter around him. Above all, the idea to which he tends, that to accomplish which he strives, is, that there shall be no sickness at all. When sickness does come, he addresses himself to it with reason and discretion, gathering up for the task all the aids which progressive knowledge and observation offer for his use. The first class is, let us hope, becoming more and more antiquated, and the operation of the admirable eleventh clause of the Warrant seems likely to make serious inroads on the number of its professors. It

[1] We advise any one who wishes to know more about this subject, to study the evidence given by Miss Nightingale to the Sanitary Commissioners;—a wonderful display of insight, admirably stated, which we agree with a recent *Builder* in hoping to see published in a separate form. After studying that evidence, he may address himself to the late proceedings at Weedon. We have some pride in remembering, that when speaking of the general subject of administration, last May, we made marked allusion to Lord Panmure's Clothing Department, then in all the pride of supposed efficiency.

is under the other banner that we hope to see those to whom we speak enlisted. Towards one or other they must certainly tend. They cannot serve in both camps. The one army has gained nothing but by numbers, by ponderous habituality and mere indolence of intellect. The other is full of fire and youthful vigour, willing to suffer loss and disappointment, as good soldiers should be, for the sake of ultimate victory, which is prophesied by the whole heart. And, when speaking of this higher development of thought and action, it would, in this place, on this subject, before this audience, be wrong not to acknowledge the impulse that has been given to it,—by no learned pundit, by no pedant prating about science,—but by the altogether silent, practical effort, thought articulately expressed in deeds of an English Lady.

Foolish persons sometimes say that medical practitioners in the public service are, in their social relations, and in the personal demeanour exhibited towards them, apt to be placed on a lower level than their personal claims, apart from their profession, entitle them to, and that this is owing to their profession. He who says so is self-condemned. It is for every man to set his own rate. "It is a maxim worthy of all acceptation, that a man may have that allowance he takes. Take the place and attitude which belong to you, and all men acquiesce. The world must be just. It leaves every man, with profound unconcern, to set his own rate. Hero or driveller, it meddles not in the matter." There cannot be a greater or more mischievous mistake, than to suppose that an army practitioner who adheres to the plain line of his own calling will, speaking generally, meet with anything but support and encouragement from his military superiors. Standing, as we seem to do, between a bad system and the promise of a better one, with this document under the Sign Manual to define the boundary, we wish to say as little as possible of the past; but if that were the only means of predicting future conditions, we would say to the future medical officers that it is not by military authorities that their efforts will be decried, that their honest zeal will be scoffed at, that their office will be degraded, or that their personal conveniences will be hindered.

"Surgeons, after twenty years full-pay service, shall be styled Surgeons Major."—The intention of this clause is very evident, and it is not to be cavilled at; but the phrase seems to be an incongruous and an unhappy one, an expression, under one term, of two very distinct ideas. We can fancy some of the surgeons whom we have attempted to sketch, saying,—"Major me no Majors. I prefer to be known by the title which I bear in common with Percival Pott and John Hunter, Cline and Cheselden. Staff-Surgeon John Hunter was an illustrious brother of the craft, and his memory is precious. What increase of honour or of worth could he have derived from this mechanical sticking on of the gaudy plumage of others?" As we have said, however, the title has been offered with the best intentions, and must be accepted for the sake of these intentions. The same

must be said, but in a far more emphatic and more extended sense, of the very remarkable sixteenth and seventeenth clauses,—the most revolutionary parts of the whole Warrant. We believe, thoroughly and entirely, that a man's influence should depend on and spring from his own independent native force, that the eternal laws of mind adjust the relations of all persons to each other by the mathematical measure of their havings and beings; we think that the place of a surgeon is one that should not be confounded with any other, that—

> "As the Prince
> Of Poets, Homer, sung long since,
> A skilful leech is better far
> Than half a hundred men of war."

Yet, the world being still governed by names and the mere shows of things, these two clauses offer an immense boon. They mark, more than any other part, a distinct leap that has been made towards a greater incorporation with the military system. We are likely to be understood when we add, that they are an evidence of a great concession that has been made by military traditions,—a concession which, we may be very sure, would not have been made without the compulsion of an urgent necessity and a strong sense of duty. It remains for the medical officers to show their appreciation of this concession. Higher rank, with all its "privileges and precedences," has not been bestowed on them, they may be very certain, merely that they may strut about the world with stars on their collars and brass on their heels. It implies higher duties and heavier responsibilities. A greater number of talents has been committed to their charge, and for the use made of them, they will have to answer in some court or another.

Two omissions we may mark as much to be regretted. An earlier attainment of the relative rank of captain for the junior grade would have cost the country nothing, and would have placed assistant surgeons on a better footing of equality with those of their own age, while it may have added to their wholesome influence among the isolated duties which are so frequently allotted to them. The other desideratum is earlier permissive retirements. This has been long and loudly asked for. As Dr Smith shrewdly remarked,[1] it would be so little taken advantage of that the public purse would suffer very little, if at all; but it would be something to know that, after a few years' service, you could retire to private practice, if you pleased, with some stipend, however small. Many enter the service with the full resolution of only remaining in it for a few years, and these are often the best men in it. If assured of a certain early retirement, more might be induced to enter. Ultimately they would, in all probability, remain; but the permission would save much grumbling. The Warrant is a good Warrant; and the more we look at it, the more we like it. These two additions would, perhaps, make it perfect. Alas! alas! "On the churchyard of the whole world," as Richter finely says, "should be placed this universal epitaph;—Here lie the beings who never knew when to be content."

[1] Report—House of Commons Committee. Appendix IV.

Of administration, so called, and how it is affected by the Warrant, we have not much to say here, tempting as the subject may be. It is odd that the word, so singularly applied, and on which so many changes have been wrung, does not once occur in the whole document. Matters are not yet, perhaps, quite ripe for the abolition of all impediments, but with the blow which has relegated certain officers to the practice of their profession, we can express entire sympathy. The extinction of one of the administrative grades is an unmixed good, and a topic of unalloyed congratulation. We may look for increased efficiency and greater directness of action from the removal of an embarrassing obstruction, the breaking down of one of the walls of hindrance which circumlocution had reared. There is another vexatious Institution which may, with much advantage to the service and much consequent ease to the machinery of administration, be made to follow the late junior administrative grade to the place to which Her Majesty has been graciously pleased to consign it. If the line of simplicity indicated by the Warrant is followed much further, it cannot be long before the Purveyor's Department, too, will, with the First Class Staff Surgeons, be—swept into the dust-bin. One of the inconveniences of administration seems likely to be considerably abated. In Mr Sidney Herbert's Report, after inveighing, in terms of well-merited scorn, against those who import the manners of a sergeant-major into the delicate relations of medical practice, he concludes with a touch of delicate sarcasm that shows the hand of a master. "We have made these remarks in the belief that they will strengthen the hands of the Director-General in checking" "such departures from propriety," "when they do occur." Should the summary process of elimination, necessitated by the Warrant, leave, in a state of activity, any administrators who are disposed to attempt the continuance of a vile, demoralising, soul-destroying system, it may be well for them to be reminded that the Director-General who is now the ultimate judge of appeal is one whose whole career has been a practical protest against what is condemned in the Report, and in favour of individual independence of thought and action, and whose singular success proves, if it proves anything, that subservience to superiors and insolence to inferiors, worrying the pigeons and letting the crows go free, are not, in every case, the passports to departmental eminence.

The Medical Act of last session conferred on the profession at large a means and capability of self-elevation, by providing definite means of cohesion and by furnishing a common starting point. The Scotch University Act of last session drew closer the bond of sympathy between our graduates and their Alma Mater. We read this Warrant very badly if it does not express a solemn and authoritative affirmation, on the part of the public, that those sections of the pro-

fession which are in the service of the public, should be placed on a much higher pedestal than had been before conceded to them. It is impossible that the march of progress can be arrested at this, the first stage of the journey. The medical service of the Navy, for instance, to which, both in days gone by and in the present, the country is under so great obligations, must participate in the general elevation; and we cannot doubt that the present so enlightened First Lord of the Admiralty, who stands out so prominently for a quick apprehension of liberal views, and who has already done so much good in his department, will rightly apprehend the requirements of the branch of the profession now under his care. In the Queen's local army of India, again, the medical officers have long complained of an anomalous position, made doubly irksome when all society is coloured and, in its most intimate relations, affected by a military tone. Here too, fortunately, the question falls to be considered by a liberal and enlightened statesman, and a remedy cannot fail to be speedily applied.

We counsel those whom we are addressing to exercise themselves in the use of the pen. There is the authority of Lord Bacon for saying that writing makes an "exact man." With a dread of pen and ink, there go a loose manner of expression and a loose habit of thought. Writing, no matter what about, if only the bedside report of a trifling case, calls up, in however slight a degree, the faculties of arrangement, expression, and description, and a greater precision of thought must be the result. Once upon a time, there was a great Bogey whose eye, to the fearful and distempered imaginations of his victims, pervaded everywhere, and seemed to arrest all independent efforts. To be known for a habit of disfiguring paper with ink was to be looked on as dangerous, and to be avoided; and the natural consequence was, that, when some very small literary effort was absolutely required, the result was very likely to justify Sir William Hamilton's reproach about our being all *Doctores indocti*. Luckily, the Bogey has been exorcised, has vanished back to Chaos and Old Night, and the atmosphere has been much clearer ever since. There is another consideration that may be mentioned here. Formerly, it used to be said that while the life of the military officer was one of utter idleness and vacuity, that of the medical officer was one of work, and hard work. Whatever truth there may have been in this, it certainly does not hold good now. Excepting on extraordinary occasions, it must be very seldom that the medical officer has not twenty-one of the twenty-four hours at his own absolute disposal. During that time all space is open to him, to ramble whithersoever he pleases. It is an advantage above all price, open to very few other working men. On the other hand, the whole condition of the military officer, in every respect, has been so changed, that he must become a laborious student if he wishes to attain the goal which his father thought was to be reached by hard fighting only. Just as, at a pantomime, we see a pig put into one

end of a machine and sausages and scrubbing brushes produced at the other, so we seem to be coming, more and more, to the opinion, that a true General can be produced by a life-long process of mechanism which is to begin at Burlington House. It is not to every generation that Heaven vouchsafes a General, and it used to be thought that for any such rich and rare gift we should reverently wait; but, nowadays, it is by drill all day and study all night,—Lloyd, Jomini, and the Archduke Charles, on the one hand,—an intimate knowledge of the rivers in Kamschatka and the œconomical productions of Mesopotamia, on the other,—by multiplying examiners and inspectors, and adding to the mighty torrent of Cant, that we hope to produce men like Maurice of Saxony, who could not spell his own name, and who when *La Cademie*, as he called it, offered him the high honour of its membership, declined in one line, every word of which was mis-spelt,—like Marlborough, who, in the literary line, could not do much more, although he could write pretty sharp letters to poor Queen Anne when his pay was in question,—like Wellington, whose Oxford oration was written for him by Sir Henry Halford, and who said that Waterloo was won by a public school training which is not the training of pedants,—like Charles Mordaunt, Earl of Peterborough, who, scholar as he was, was more of a man about town, and whose greatest accomplishment, apart from his campaigning wonders, was that of love-making, which is the lightest of all,—and like Robert Clive, the truant schoolboy, who, ignorant of all that schools can teach, was shipped off to act the glories of Arcot and Plassy, and to found the Indian Empire. When muscle is so much subordinated to brain, may there not be a fear of our future Generals, the gallant boys from Eton and Harrow, becoming what the competitive examination doctors give them so good an example of—Prigs? And, as that very remarkable captain of infantry, Sir John Falstaff, says, "There's never any of these demure boys come to any proof; for thin drink doth so over-cool their blood, and making many fish meals; that they fall into a kind of male green-sickness; and then, when they marry, they get wenches." But we are wandering from our text.

We have enumerated several points of improvement which those who now enter the service may expect to find. There is one more, and it is a very important one. Once, a long time ago, it used to be said that there was only one public office in all London in which rudeness was the rule, and a deference to the common courtesies of life was a marked and rare exception; and that was an office in which was transacted the business of a department which consists entirely of officers, and relating to a profession which is essentially a democratic one. As has been said, this was a long time ago; but there may be persons still living to whom the recollection of it comes as the remembrance of some hideous nightmare. It is said that that is all altered—such, at least, is the report that has come to these

northern latitudes,—that in place of repulsion and misappreciation, you are likely to find a frank demeanour and a genial presence. Is not this worth shekels of gold and shekels of silver?

Here this too spasmodic commentary of ours must close; and to the ingenuous youths whom we have attempted to address, and who may have accompanied us thus far, it only remains to wish a hearty Godspeed. They are now about to leave port, with a favouring breeze, under a serene sky; when their life's-voyage is over and they return, after the storms and encounters that must, sooner or later, overtake every son of Adam, with battered bulwarks and rent sails, may the Flag be still proudly flying, never struck to fear, never soiled by hypocrisy, meanness, or evasion. These remarks are offered to them by one who has known some of the trials and felt some of the responsibilities that are before them; who, in the transactions of a petty life, has learnt to think that when God gives a man an office, He bestows on him some powers with which to fill it; who has learnt to know how infinitely small, how quite immaterial is the Individual as compared with the bright Ideal that may be set before the tenant of the meanest office. It would have been very easy for him to run in the popular groove, and to prophesy smooth things; but he has preferred truth, however unpleasant, to unreality. Whatever may have been the tone of what he has said, he is satisfied that he has not set down aught in malice. If he has spoken strongly, it is because he feels strongly. He thinks that, within a quite recent time, the practice of medicine has entered on a new and brighter phase, of which this document is a public evidence and proclamation. Our profession is, in very deed and truth, not in mere words, a glorious one. It affords a field and an opportunity for the display of the brightest graces and the most precious endowments,—love, hope, charity, the highest and best benevolence. To exercise it rightly we must banish envy, malice, jealousy, timidity, self-seeking,—the invisible but not less real devils that haunt our path and obstruct our usefulness. The culmination of honour predicted by the aspirations of all the wise and good who have adorned the profession must be reached, sooner or later. The signs of the times declare its nearer approach. It is for those who are in the vaward of their youth to determine what is to be their part in hastening or retarding the accomplishment of it.

Observations on Diphtheritis. By WILLOUGHBY F. WADE, B.A., M.B., etc. London, 1858. Pp. 32, 8vo.

DR WADE published these Observations, in the first instance, in the *Midland Quarterly Journal of the Medical Sciences* for 1858. He supplies a very full and faithful description of the disease termed Diphtheritis or Diphtheria, but more particularly points out an

OBSERVATIONS

TO ACCOMPANY THE

Annual Return of Sick and Wounded

OF

H. M. XVTH, OR KING'S HUSSARS,

FROM 1st APRIL 1844 to 31st MARCH 1845.

BY J. MOUAT, M. D.

SURGEON H. M. 15TH HUSSARS.

From the Calcutta Journal of Natural History.

Calcutta:

BISHOP'S COLLEGE PRESS.

1845.

MEDICAL HISTORY OF H. M. XVTH HUSSARS.

[THE most valuable contributions that have hitherto been made to the statistics of disease among European troops within [the Indian presidencies, are undoubtedly the tables furnished by the late Dr. Murray to the Second Volume of this Journal: unfortunately only two of them had appeared, when they were put a stop to, by the close of his active and energetic career.

The following elaborate report by Dr. Mouat, now acting Inspector General at Madras, gains additional weight, from the great experience which he has had of the diseases of soldiers, of the climate of India in general, and especially of Bangalore, at which station he has so long resided. It is especially interesting at the present time, when a plan for assimilating the returns of all the presidencies is believed to be under consideration, as being quite a model of an annual report, and as affording information on every head on which it can be required.

There has been for the last three years a general tendency towards the assimilation of the forms of the returns of the Queen's and Company's troops in Bengal, and the particular form, under which the matter of this report is arranged, has been in use among the Company's troops in Bengal since November, 1842.

At least six years ago, Major Tulloch and Dr. Marshall declared all the Indian returns which they had seen, to be quite useless for general statistical purposes, and accordingly they have not included any portion of India (Proper) in their statistical reports.

We do not know that measures of any consequence have been hitherto adopted to improve this state of things, as regards the Company's troops, and it does not redound to the credit of any one, that up to the present date, owing to the imperfection of our returns, we are not able to ascertain many points of the utmost importance, as regards the health and welfare of our vast and widely scattered armies. We even doubt, whether there are in existence, any adequate materials for giving a medical history of so recent an event as the late Gwalior campaign.

It is almost needless to remark, that it is only by general investigations, by throwing together a whole series of returns, and thus combining the experience of many years, that the accuracy of the results of more limited enquiries can be fairly tested, and that questions regarding the healthiness of particular stations, and the various effects of climate, can be satisfactorily decided.

To attain such important ends, it is necessary to improve our present system of returns, and to enforce uniformity throughout the three presidencies, as also highly desirable to have copies of all returns sent to Calcutta as a centre.

As to the new forms of returns to be employed, the simplest way would be to adopt those now in use in H. M.'s Service, perhaps with some slight modifications.

It is far from unlikely that each presidency may be unwilling to alter the forms now in use, and it is no doubt quite possible to point out many imperfections in H. M.'s returns, but they answer admirably for all practical purposes, and the annual returns compiled by H. M.'s Inspectors General since the year 1826, at a vast expense of labour, ought already to be yielding valuable results.

If a system of centralising all the returns were once adopted, it would increase very considerably the duties of the Members of the Medical Board in Bengal: but, if after an addition to their office establishment, they found the burden of arranging and compiling them to be too heavy, Government would no doubt relieve them of this additional duty, and would find it its interest to appoint a separate officer for the special purpose of superintending the returns of all India.

The monthly returns of H. M.'s Service give merely a bare list of diseases, and attempt no classification of them; it might be as well to adopt some practical classification, such as that now used in the annual returns. But the sooner any forms, based on theoretical views, such as the monthly ones now in use for Company's troops, which are founded on Good's classification, are got rid of, the better. They are ludicrous in many of their details.—J. M. P.]

H. M. 15TH HUSSARS STATIONED AT BANGALORE.

Average Strength 722.

Remained last return,	46
Admitted,	797
Discharged,	783
Died,	9
Remaining,	51
Proportion of deaths to diseases,	1 in 94
,, of sick to well,	1 in 13

Changes during the year.

Officers Joined,	6
,, Exchanged or removed,	1
,, Died at Head-Quarters,	3
,, ,, Elsewhere,	0
Men Invalided from Poonamallee,	10
,, Sent home effective to join Depôt,	2
,, Transported as criminals,	1
,, Discharged by purchase,	6
,, ,, Free,	1
,, Enlisted at Head-Quarters,	1
Recruits from England,	41
Transfer Joined,	0
,, Given,	1

Constitution of the Regiment.

	Sergeants.	Corporals.	Trumpeters.	Farriers.	Privates.	Total.
English,	35	25	4	7	501	573
Scotch,	2	1	..	..	29	32
Irish,	11	5	3	1	81	101
Foreigners,	..	..	..	..	15	15
Total,	48	32	7	8	626	721
Under 18 years of Age,	..	..	..	..	4	4
From 18 ,, to 20,	..	..	..	..	16	16
,, 20 ,, to 25,	..	6	1	4	137	148
,, 25 ,, to 30,	12	16	1	3	318	250
,, 30 ,, to 35,	18	5	5	1	69	95
,, 35 ,, to 40,	13	3	..	..	64	80
,, 40 ,, to 45,	4	2	..	..	18	24
,, 45 ,, to 50,	1	..	..	..	..	1
Upwards of 50,	0	0	0	0	0	0
Total,	42	32	7	8	626	727

Return shewing the composition of the Regiment, according to the periods the Men have been stationed in the East Indies, for the annual period; commencing 1st April 1844, and ending 31st March 1845: as well as the relative admissions and deaths in the different classes specified for the purpose of determining whether the liability of the Men to sickness and mortality is lessened by length of residence.

Period of Residence.	Strength of each class.	Admission of each class.	Death of each class.
Under 1 Year,	43	28	..
From 1 to 2 Years,	17	23	..
,, 2 to 3 ,,	5	11	..
,, 3 to 4 ,,	22	84	..
,, 4 to 5 ,,	124	327	4
,, 5 to 6 ,,	472	193	4
,, 6 to 7 ,,	2	5	..
Above 7 Years,	86	126	1

Section I.

Topographical description of Station—its Vicinity—nature of the Climate—atmospheric Phenomena, &c.

Bangalore, the Head-Quarters of the Mysore Division of the Army, is situated 12° 57′ North latitude, and 77° 46′ East longitude, about 200 miles West of Madras, on a table-land or plateau; forming an area of about sixty miles by fifty, including Nundy Droog, Colar, and Ossoor.

The climate of this elevated region is comparatively cool.

The country in the vicinity of the station is undulating, and, though well cultivated of late years, yet at certain seasons possesses a peculiarly dreary and sterile appearance, intersected by ravines studded with granite rocks and masses of boulders, and each valley headed by a tank or series of tanks. But the cantonment itself is beautifully wooded, with a luxuriant vegetation, and ornamented with gardens, containing a profusion of flowers, shrubs and ornamental trees, and affording an ample variety of vegetables throughout the entire year. Hence to the European visitor it possesses peculiar attractions, and recalls many pleasing associations.

The soil is very fertile. It requires, however, both water and manure, (as the decayed vegetable matters, which form

so fertile an alluvial deposit in many other places do not exist, except in the valleys, the jungles, and under the bunds of the tanks,) being generally a red ferruginous clay with nodules of iron and particles of sand, formed by the decomposition of the granite from the surface exposed to the action of the atmosphere.

The rocks are principally gneiss; and there is much granite, consisting of mica, felspar, and quartz. The former is often in a state of disintegration, well adapted for China crucibles, &c., and the felspar disintegrates into a clay used for pottery by the natives.*

Iron ore is found in great abundance; but the other mineral products are as yet little known, and doubtless will yield to future enquirers and explorers, a rich harvest.

The agriculture, the vegetable productions, and much that is interesting to the medical enquirer, must be omitted in a report like the present; as well as the physical appearance of the country, its mountains, valleys, rivers, &c.

The station itself is situated on an elevated crest running east and west, about two miles from the fort of Bangalore, and extending, when the new Barracks are built, to the Race-course. Of its eligibility for a Cantonment, we shall copy from last year's Report.

Bangalore as a station for European troops, possesses peculiar advantages, as being on the centre of a plateau 3000 feet above the level of the sea, enjoying the constant refreshing breezes of two monsoons, and an atmosphere exceedingly pure and elastic. To the human frame and feelings it is very agreeable and refreshing; and to vegetable life, exceedingly well adapted, as is evinced by the luxuriant crops and variety of fruits and vegetables, which it yields during the entire year.

If it possesses many advantages, it likewise has some drawbacks as a station for troops. The former it derives from its elevation, its central position, its freedom from swamps,

* Vide Benza, in the Madras Journal of Literature and Science.

jungles, and other sources of malaria, the frequent refreshing showers, constant strong breezes, and a bracing elastic air with cloudy or hazy mornings for several months, which mitigate the fiery rays of a sun that is vertical twice in the twelve months.

Hence, though the air is almost always cool and refreshing, yet in the day-time outside, when exposed to the sun's influence, it is hot and oppressive; and the injurious effects are as great as in other less favoured situations. In fact, the transitions from heat to cold are great, and, when due precautions are not observed, trying to the delicate, and conducive to inflammatory attacks in those predisposed to them.

In the house the annual average of the thermometer is 74 degrees, with an annual variation of only 7 degrees. Exposed outside, however, it ranges from 50° to 129°, with an annual variation of no less than 44½°.

Here at once we have the explanation of its extreme salubrity, as well as of its very trying effects on the frame exposed unprotected to its influence; together with the violence and frequency of inflammatory attacks, the rapidity of convalescence, the small proportion of deaths to treated, and the exemption which certain classes possess altogether to the assaults of those very affections: leading, as the subject does, to the very important consideration of the entire economy of the soldier, as it is influenced by these physical considerations, and reconciling the strange paradox of a place being very healthy, and at the same time exhibiting much violent and inflammatory disease, and, under certain circumstances, a very heavy list of casualties.

It tends, however, to the conclusion, that the benefits possessed by the station are its own; the disadvantages or drawbacks those of faulty economy, or capable of being mitigated or removed by better Barrack accommodation, by care to avoid exposure, by absence of extreme fatigue, dissipation, and of unnecesary restraints, as well as ill adapted dress.

These subjects have been especially noticed in previous reports. What is so intimately associated with health and disease, as the atmospheric phenomena, we should give in detail, as they form one of the great links of statistical and hygienic enquiries.

Atmospheric Phenomena.

April, 1844. Weather.—Mornings and nights cool; days hot, and at times close and oppressive: sun exceedingly powerful.

Wind.—Variable; westerly in the mornings, and easterly at night.

Rain.—Showers 15th, 17th, 20th, 22nd and 26th, and 1 inch 30 cents fell.

Dew.—None.

Clouds.—Occasionally on the days it rained, otherwise clear.

Haze.—Light, a few mornings.

Fogs.—None.

Health.—Corps very healthy. Catarrh among the children, and epidemic among the horses.

Prevailing diseases.—Numerous local affections, chiefly venereals and contusions.

Deaths.—None in hospital, but one man shot himself in Barracks.

Thermometer.	Extreme range during the month,	77° to 88°	Exposed in the house.
,,	Ditto difference in the 24 hours,	8°	
,,	Least ditto ditto,	4°	
,,	Average ditto ditto,	6°	
,,	Highest when exposed to the sun,	126°	Exposed outside.
,,	Lowest when exposed to the weather,	64°	
,,	Extreme variation when exposed outside,	62°	

May. On the whole, hot and oppressive; and the sun exceedingly powerful in the mornings.

Weather.—Still cool; the evenings and nights often cool, but as frequently close, hot, and oppressive.

Wind.—Westerly and S. W., and at times variable.

Rain.—Fell twelve days, indicated 4th, 6th, 13th, 16th, 21st, 22nd, 23rd, 24th, 25th and 27th, and 5 inches 32 cents fell.

Dew.—None.

Clouds.—Occasional clouds on these rainy days.

Haze.—Much hazy weather, which made the mornings cool and pleasant.

Fogs.—None.

Health.—Corps very healthy.

Prevailing diseases.—Fevers, dysentery, venereals, and contusions.

Deaths.—None.

Thermometer.	Extreme range during the month, from	74° to 88°	In the house.
,,	Ditto difference in the 24 hours,	7°	
,,	Least ditto ditto,	2°	
,,	Average ditto ditto,	5°	
,,	Highest when exposed to the sun,	124°	Exposed outside.
,,	Lowest when exposed to the weather,	63°	
,,	Extreme variation when exposed outside,	61°	

June. Weather.—Delightfully cold, and pleasant at times; high, disagreeable winds; mornings and nights very cold; evenings pleasant and cool: sun at times very hot.

Wind.—W. and S. W., generally very high during the day, and squally in gusts, dry and parching.

Rain.—Fell fourteen days, but only indicate by gage 2nd, 3rd, 6th, 15th, 16th, 17th, 25th, 26th and 29th, and about 1 inch 95 cents fell.

Dew.—Generally heavy in the mornings.

Clouds.—Generally cloudy.

Haze.—Mornings nearly all hazy till 8 or 9 o'clock.

Fogs.—None.

Health.—Corps very healthy.

Prevailing diseases.—Acute dysentery, cephalalgia, and ophthalmia amongst the children.

Deaths.—Four deaths; one cholera 1nd., one hepatic, one dysentery acute, and one febris cont. com.

Thermometer.	Extreme range during the month, from	72° to 83°	In the house.
,,	Ditto ditto in the 24 hours,	7°	
,,	Least difference ditto,	3°	
,,	Average ditto ditto,	4° to 25°	
,,	Highest when exposed to the sun,	124°	Exposed outside.
,,	Lowest when exposed to the weather,	62°	
,,	Extreme variation when exposed outside,	62°	

July. Weather.—Cold, bracing, and delightful; hazy till 8th or 9th, and the days cloudy or cool; but with high, disagreeable, cold, gusty squalls.

Wind.—Westerly and S. W., occasionally W., and squally during the day.

Rain.—On 2nd, 5th, 10th, 11th, 12th, 13th, 16th, 18th, 19th, 20th, 21st, 26th, 27th, 28th, 30th and 31st, but only indicates sixteen days, and 3 inches 65 cents fell.

Dew.—Occasionally heavy in the morning.

Clouds.—Generally the days clouded the entire month.

Haze.—Mornings all hazy and cool.

Fogs.—None.

Health.—Corps very healthy.

Prevailing diseases.—Acute rheumatism, dysentery, venereal cases, contusions.

Deaths.—None.

Thermometer.	Extreme range during the month, from	72° to 78°	In the house.
,,	Ditto difference in the 24 hours,	6°	
,,	Least ditto ditto,	3°	
,,	Average ditto ditto,	4° to 10°	
,,	Highest when exposed to the sun,	112°	Exposed outside.
,,	Lowest when exposed to the weather,	59°	
,,	Extreme variation when exposed outside,	53°	

August. Weather.—Cold, bracing, and most agreeable; at times cold, occasionally rain, damp and frequent showers: cloudy with heavy squalls, and at times high winds.

Wind.—Westerly and W. S. W., and at times W. N. W.; occasionally squalls, and high winds.

Rain.—It rained twenty days, and indicated 1st, 2nd, 4th, 5th, 7th, 8th, 9th, 10th, 11th, 13th, 15th, 17th, 19th, 21st and 29th, and 4 inches fell.

Dew.—Heavy some mornings.

Clouds.—Clouded weather the whole month.

Haze.—Mornings all hazy, even to 9 and 10 o'clock, or later.
Fogs.—None.
Health.—Corps very healthy.
Prevailing diseases.—Hepat. rheumatism, and local diseases.
Deaths.—One, from hepatic abscess. Capt. Baird died also of hepatic abscess.

Thermometer.	Extreme range during the month, from	71° to 79°	In the house.
,,	Ditto difference in the 24 hours,	6°	
,,	Least ditto ditto,	3°	
,,	Average ditto ditto,	4° to 9°	
,,	Highest when exposed to the sun,	124°	When exposed outside.
,,	Lowest when exposed to the weather,	59°	
,,	Extreme variation when exposed outside,	65°	

September. Weather.—Cool and delightful end of month, at times close and oppressive; but mornings all cool and refreshing, and nights cool.
Wind.—Westerly till 22rd; then variable and easterly, ranging from west A. M. to easterly at noon and P. M.
Rain.—Five inches 90 cents fell in thirteen days, indicated only 1st, 3rd, 4th, 7th 22nd, 23rd, 24th, 25th and 30th.
Dew.—A few mornings.
Clouds.—Much cloudy weather.
Haze.—Mornings almost all hazy.
Fogs.—One morning.
Health.—Corps healthy.
Prevailing diseases.—Rheumatism and venereals.
Deaths.—One death, from phthisis pulmonalis.

Thermometer.	Extreme range during the month, from	70° to 81°	In the house.
	Ditto difference in the 24 hours,	6°	
,,	Least ditto ditto,	2°	
,,	Average ditto ditto,	4°	
,,	Highest when exposed to the sun,	126°	When exposed outside.
,,	Lowest when exposed to the weather,	60°	
,,	Extreme variation when exposed outside,	60°	

October. Weather.—Cool, pleasant, very delightful: mornings delicious, days cool, and nights cold.
Wind.—Easterly till 8th, then westerly and variable till 20th; after which E. N. E. or N. W., or variable.
Rain.—Rained twelve days, indicated on 7th, 8th, 9th, 12th, 14th, 16th and 18th, and 2 inches 30 cents fell.
Dew.—Generally heavy in the morning.
Clouds.—Several cloudy mornings and days.
Haze.—Generally heavy until about the 22nd, and then clear
Fogs.—None.
Health.—Regiment healthy.
Prevailing diseases.—Fever, dysentery, hepatitis, and rheumatism.
Deaths.—None.

Thermometer.	Extreme range during the month, from	71° to 79°	In the house.
,,	Ditto difference in the 24 hours,	6°	
,,	Least ditto ditto,	1°	
,,	Average ditto ditto,	4° to 2°	
,,	Highest when exposed to the sun,	113°	When exposed outside.
,,	Lowest when exposed to the weather,	63°	
,,	Extreme variation when exposed outside,	50°	

November. Weather.—Most delightful the whole of the month; mornings and nights cold, and the days and evenings cool, bracing and elastic, and very cold at times.
Wind.—N. E.; at times N., and occasionally N. W.
Rain.—None the entire month.
Dew.—Heavy the first half of the month, and not much afterwards.
Clouds.—Scarcely any cloudy weather.
Haze.—Only a few hazy mornings.
Fogs.—Light, three or four mornings.
Health.—Corps healthy; some sickness in Right Wing returned from Arnee.
Prevailing diseases.—Febris, dysenteria, hepatitis, rheumatism, and catarrhus.
Deaths.—One, from paralysis, and one shot himself in Barracks.

Thermometer.	Extreme range during the month, from	66° to 79°	In the house.
,,	Ditto difference in the 24 hours,	8°	
,,	Least ditto ditto,	3°	
,,	Average ditto ditto,	53°	
,,	Highest when exposed to the sun,	115°	When exposed outside.
,,	Lowest when exposed to the weather,	55°	
,,	Extreme variation when exposed outside,	60°	

December. Weather.—Very cool and delightful the entire month: indeed at times very cold; and while the rain lasted, damp and chilly, scarcely any sun, and the wind keen and bracing.
Wind.—N. E.; at times E., occasionally varying to N.
Rain.—Rained thirteen days, but indicated only on 7th, 8th, 14th, 15th, 18th, 19th, 20th, 21st, 27th, 28th and 29th, and 4 inches 80 cents fell.
Dew.—Generally heavy in the morning.
Clouds.—Much cloudy weather, especially the days it rained.
Haze.—Mornings mostly hazy.
Fogs.—Three or four foggy mornings.
Health.—Regiment healthy.
Prevailing diseases.—Hepatitis, rheumatism, and dysentery.
Deaths.—None.

Thermometer.	Extreme range during the month, from	67° to 75°	Exposed in the house.
,,	Ditto difference in the 24 hours,	7°	
,,	Least ditto ditto,	2°	
,,	Average ditto ditto,	3° to 8°	
,,	Highest when exposed to the sun,	124°	Exposed outside.
,,	Lowest when exposed to the weather,	55°	
,,	Extreme variation when exposed outside,	69°	

January, 1845. Weather.—Cool, agreeable, and most delightful; mornings and nights delightful.
Wind.—Easterly, North-east, and once or twice Southerly and South-east.
Rain.—Rain fell four days, indicated 1st, 3rd and 4th, and one inch 55 cents fell.
Dew.—Generally heavy in the morning.
Clouds.—Cloudy mornings first week, then clear.
Haze.—Hazy till nine o'clock, then clear.
Fogs.—About eight foggy mornings.
Health.—Corps very healthy.

Prevailing diseases.—Hepatitis, rheumatism, and dysentery.
Deaths.—None.

Thermometer.	Extreme range during the month, from 65° to 78°		Exposed in the house.
,,	Ditto difference in the 24 hours,	7°	
,,	Least ditto ditto,	2°	
,,	Average ditto ditto,	4° to 22°	
,,	Highest when exposed to the sun,	123°	Exposed outside.
,,	Lowest when exposed to the weather,	59°	
,,	Extreme variation when exposed outside,	64°	

February. Weather.—Mornings cool and delicious, days rather warm; but the air cool, and the weather delightful and fine: evenings agreeable, and nights cold.
Wind.—Easterly and North-east the entire month.
Rain.—None.
Dew.—Heavy till middle of month, then light, or none at all.
Clouds.—Scarcely any all the month.
Haze.—A few hazy mornings.
Fogs.—Three foggy mornings.
Health.—Corps very healthy.
Prevailing diseases.—Hepatitis, rheumatism, and dysentery.
Deaths.—One, disease of colon, and Captain Chambers shot himself.

Thermometer.	Extreme range during the month, from	73° to 81°	Exposed in the house.
,,	Ditto difference in the 24 hours,	7°	
,,	Least ditto ditto,	4°	
,,	Average ditto ditto,	53°	
,,	Highest when exposed to the sun,	125°	Exposed outside.
,,	Lowest when exposed to the weather,	62°	
,,	Extreme variation when exposed outside,	63°	

March. Weather.—Mornings cool, but the days getting hot and close; sun powerful; evenings and nights agreeable, but at times hot.
Wind.—Easterly till about the 22nd, then variable or Westerly A.M., and Easterly P.M.
Rain.—Only 16th and 17th and night of 31st, and 1 inch 75 cents fell by gauge.
Dew.—None all the month.
Clouds.—Occasionally middle of the month.
Haze.—A few hazy mornings, &c. 10th to 25th, but light.
Fogs.—One morning.
Health.—Corps healthy, but admissions more numerous.
Prevailing diseases.—Hepatitis and dysentery.
Deaths.—One death, dysentery.

Thermometer.	Extreme range during the month, from	75° to 87°	Exposed in the house.
,,	Ditto difference in the 24 hours,	8°	
,,	Least ditto ditto,	2°	
,,	Average ditto ditto,	55°	
,,	Highest when exposed to the sun,	122°	Exposed outside.
,,	Lowest when exposed to the weather,	66°	
,,	Extreme variation when exposed outside,	65°	

Scale of Thermometer exposed in the open Air for 1844-45.

Months.	Lowest. 6 A.M.	Highest. 3 P.M.	Lowest. 8 P.M.	Average. 6 A.M.	Average. 3 P.M.	Average. 8 P.M.	Greatest difference in 24 hours.
April, 1844.	64°	126°	74°	64°	118°	73°	62°
May,	63	124	73	62	120	77¼	61
June,	62	124	69	63	110	71	62
July,	59	112	66	61	109	67	53
August,	59	124	64	61	117	64	65
September,	60	126	63	63	112	64	66
October,	63	113	62	63	109	63	50
November,	55	115	59	60	113	61	60
December,	55	124	58	61	107	63	69
January, 1845.	59	123	66	61	108	67	64
February,	62	125	67	64	114	69	63
March,	66	129	72	67	127	73	63
Annual Average,	60°6	122	65°8	62°5	112°5	67°9	61°5

Scale of Thermometer in the House for 1844-45.

Months.	Lowest.	Highest.	Greatest difference in 24 hours.	Least difference in 24 hours.	Average difference in 24 hours.
April, 1844.	77°	88°	8°	4°	6°1
May,	74	88	8	2	5°11
June,	72	83	7	3	4°25
July,	70	78	6	3	4°10
August,	70	79	6	3	4°9
September,	71	81	6	3	4°11
October,	70	79	6	1	4°2
November,	6	79	8	3	5°3
December,	67	75	7	2	5°8
January, 1845.	65	78	7	2	4°22
February,	72	81	7	4	5°3
March,	75	87	8	2	5°3
Annual Average,	70°7	81°3	7	2°5	4°74

General Observations.

The past twelve months have been cool, and, we may add, very healthy. The mortality has been small, and we have had no epidemic affection. This may be referred to the very low average difference of temperature in the house, only 4¾ degrees, whereas it is usually 7 degrees. Hence, with good Barracks thoroughly ventilated, and the absence from ex-

posure to the sun, and a suitable covering for the head, and bedding at night, it would give this station an exemption and immunity from disease possessed by few places within the tropics.

We have had twelve deaths during the year, but two shot themselves in Barracks, and one was killed by his horse throwing him against a bandy. This at once illustrates, what has so often been urged. Here out of 723 men at Head Quarters, only nine have died from disease in Hospital. Some of these would have died in any part of the world, others have fallen a sacrifice, to remaining out of Hospital till disease had induced organic change: and we are thus led to the conclusion, and to the confirmation of the statistical reports* in other parts of the world, that an elevation of 3000 feet even within the tropics, renders that place as salubrious as Great Britain itself.

Table of Humidity, from 1st April 1844 to 31st March 1845.

Months.	Quantity.		Number of rainy days noted by the rain gauge.	Number of rainy days not noted by the gauge.	Total number of rainy days.	Remarks.
	Inches.	Cents.				
April, 1844.	1	30	5	4	9	
May,	5	32	12	1	13	
June,	1	95	14	5	19	
July,	3	65	16	7	23	
August,	4	0	20	5	25	
September,	5	90	13	2	15	
October,	2	30	12	6	18	
November,	0	0	0	0	0	
December,	4	80	13	3	16	
January, 1845.	1	30	4	1	5	
February,	0	0	0	0	0	
March,	1	75	3	1	4	
Total,	32	27	112	35	147	

If the annual fall of rain be compared for a series of years, it will be found subject to great fluctuation, as may be seen from the accompanying Table.

* By Major Tulloch.

Table of the Humidity, from January 1835 to March 1845.

Months.	1835.		1836.		1837.		1838.		1839.		1840.		1841.		1842.		1843.		1844.		1845.	
	Quantity.	No. of rainy days.	Quantity.	No. of rainy days.	Quantity.	No. of rainy days.	Quantity.	No. of rainy days.	Quantity.	No. of rainy days.	Quantity.	No. of rainy days.	Quantity.	No. of rainy days.	Quantity.	No. of rainy days.	Quantity.	No. of rainy days.	Quantity.	No. of rainy days.	Quantity.	No. of rainy days.
	Inches. Cents.		Inches. Cents.		Inches. Cents.		Inches. Cents.		Inches. Cents.		Inches. Cents.		Inches. Cents.		Inches. Cents.		Inches. Cents.		Inches. Cents.		Inches. Cents.	
Jan.	: :	1	: :	:	: :	:	: :	:	: :	2	: :	:	: :	:	: :	3	: 50	5	: 80	1	: :	4
Feb.	: :	:	: :	:	: :	2	: :	3	: :	1	: :	:	: 10	1	: 20	2	: 50	3	: 80	3	: 30	3
March	: 35	1	: 20	2	: 12	2	: 55	9	: 92	5	: 30	3	: 20	2	: 20	1	1 : 50	4	1 : 30	4	: :	:
April	1 : 16	3	: 35	3	: 55	3	: 52	11	: 45	3	: 40	4	: 25	3	: 30	3	: 30	3	: 30	3	: :	:
May	: 50	3	1 : 35	4	: 32	4	: 52	11	: 62	5	: 80	5	: 25	3	: 30	3	: 30	3	: 30	3	: :	:
June	: 38	4	: 45	5	: 14	3	: 50	9	: 82	5	: 80	5	: 30	3	: 30	3	: 30	3	: 30	3	: :	:
July	: 45	4	: 45	5	: 30	4	: 50	9	: 82	5	: 80	5	: 30	3	: 30	3	: 30	3	: 30	3	: :	:
Aug.	: 45	4	: 45	5	: 30	4	: 50	9	: 82	5	: 80	5	: 30	3	: 30	3	: 30	3	: 30	3	: :	:
Sept.	3 : 45	13	: 45	5	: 30	4	: 50	9	: 82	5	: 80	5	: 30	3	: 30	3	: 30	3	: 30	3	: :	:
Oct.	3 : 45	13	: 45	5	: 30	4	: 50	9	: 82	5	: 80	5	: 30	3	: 30	3	: 30	3	: 30	3	: :	:
Nov.	3 : 45	13	: 45	5	: 30	4	: 50	9	: 82	5	: 80	5	: 30	3	: 30	3	: 30	3	: 30	3	: :	:
Dec.	3 : 45	13	: 45	5	: 30	4	: 50	9	: 82	5	: 80	5	: 30	3	: 30	3	: 30	3	: 30	3	: :	:
Total,	44 : 02	147	29 : 02	103	5 : 90	37	37 : 50	120	28 : 33	123	31 : 95	120	41 : 42	134	35 : 56	189	38 : 51	117	50 : 52	113	: :	:

Section EE.

Position of Barracks and Hospitals, with the extent and the nature of the accommodation they afford—Means of ventilation, &c.

Description of Barracks.

Site elevated and dry, on a gentle slope: erected in 1808, and consists of eight ranges running north and south, calculated to hold 672 men.

Were it not that the married families live in patcherries, and for the number of men in hospital or on duty, they would be incapable of holding 712 men, the present strength of the corps, without injurious crowding.

Each room is 224 feet long, 20 wide, 12 high, having eight doors and thirty-two windows, surrounded by an 8-feet verandah: at the corners are four rooms for non-commissioned officers, with one door and three windows each.

The ranges are 126 feet apart, and 58 feet from the south, and 400 feet from the north wall; this latter space being used for parade, &c.

The whole is surrounded by a 9-feet high wall, having three entrances and one wicket, and contains Barrack rooms, officers' guard-room above the archway, standard guard-room, three rooms for prisoners, serjeant-major's quarters, solitary cells, orderly room, ball court, artificers' and tailors' shops, sadler-serjeant's quarters, skittle alley, theatre, canteen, privies, armourer-serjeant's quarters, school-room, school-master's quarters, married soldiers' huts, regimental serjeant-major's quarters, trumpet-major's quarters, defaulters' room, gram godown, regimental store-room, two wells and eight bathing rooms.

The horses are picqueted on the outside in the open air on the south parade. The Barracks are good, but the verandahs are too narrow, and almost useless from being unenclosed, and badly ventilated from the doors and windows being of solid plank, and admission of fresh air being attended with pernicious currents; and this remark applies to all the buildings occupied by the Regiment, except the hospital, which has been enclosed, and the new guard-house.

The married families occupy a patcherry, an assemblage of mud-huts, in our opinion, in every way most objectionable; they are low, often very dirty, badly constructed with mud-floors; and are confined, ill ventilated, and take the soldiers from under the care of their non-commissioned officers, and are, it is alleged, a concealment for much depravity, traffic, and the sale of spirituous liquors.

We should therefore recommend the families being accommodated in barracks, as is done in Bengal.

The faults of the barracks are generally,

1st. The verandahs are not enclosed.

2nd. The verandahs are too narrow for real utility.

3rd. The doors and windows being of solid plank, when they are shut there is no light or air; when open, the glare, the wind loaded with dust and sand, or injurious currents of cold damp air are admitted; they are in consequence not only ill ventilated, but incapable of being well ventilated; the ventilators lately made in the roof of each barrack are of little use.

4th. The roofs themselves are bad, the bamboos decayed, and swarming with bugs; the application made use of to destroy those vermin was but a very temporary benefit.

There are two urine tubs to each Troop, enclosed by a wall adjoining the wash-houses; they are emptied and cleaned twice a day. There are eight small bathing or washing-houses: that they are of use it is needless to deny; but that they are too small for real utility, too far from a supply of water, and ineligibly situated, too close to the barrack rooms, between the ranges, preventing ventilation, is alike evident and objectionable, the water running from them causing injurious exhalations. These baths should have been large buildings, situated near the patcherries, with wells made

close to them, so as to insure a sufficient supply of water, and of easy access to all classes, including the women and the children.

The water for drinking, cooking, bathing, washing utensils, and the married families, is brought by Puckallies, of which sixteen are allowed to the Regiment, and each is calculated by the Quarter-Master to bring 160 gallons daily, a quantity we should say in a hot climate, quite inadequate to the consumption of 721 men, 137 women, 181 children, and such of the followers as are employed within the Barrack Square, for all the purposes of domestic economy and cleanliness.

Barrack Furniture.

In India.	In England.		
Tables and Forms.	1 Iron pot and lid,	For every eight men.	For every man.
1 Cot, or bedstead for each Man, consisting of 3 teak boards placed upon 2 trestles of the same wood.	1 Trivet,		1 Bason,
	2 Pot hooks,		1 Plate,
	1 Iron ladle,		
	1 Flesh fork,		
	2 Meat dishes,		
	2 Water cans,		

The foregoing contrast will shew the relative situation of the soldier at home and within the Tropics at Bangalore.

Those trestles or bedsteads are so infested with bugs, that we should recommend iron cots to be substituted; these bedsteads are placed in pairs, quite close to each other, without any intervening space; at the distance of 6 feet are two more, with a window or a door intervening.

The soldier has no bedding, he has merely a cotton quilt renewed every two years, which serves the double purpose of bed and covering. It is totally inadequate either for comfort or for health; he has no means of change, and consequently no means of promoting cleanliness; and as a soldier is often covered with perspiration and dirt from the very nature of his duties, it may well be imagined what their state must be in a hot climate, at the end of two years, saturated as they must be with filth and sordes.

At home the Royal Warrant provides them with one iron bedstead, one palliasse, one bolster, two blankets, one rug, two sheets, and these washed or changed, as they become soiled or useless.

Description of the Hospital.

Built in 1808, on a high dry slope about 320 feet to the east of the Barracks, and consists of two buildings, the largest, 3 sides of a square surrounded by an enclosed verandah 12 feet wide, with venetians and glass above; but the ends are not enclosed, which materially detracts from the appearance of the building and the comfort of the sick.

The building consists of four wards; the largest to the south is 101 feet long, 18 wide, and 12¾ high, with three ventilators; the one to the east is 61 feet long, 81 wide, and has two ventilators; that to the west is divided into two wards, which are respectively 24 and 27 feet by 18 in width, and are appropriated for the women and the worst cases. These wards are well ventilated and very comfortable.

To the north, and detached, at a distance of sixty-three feet, is the convalescent ward; it is 84 feet long, 18 wide, and 12¾ high, and has been altered and surrounded with a 12 feet enclosed verandah, similar to the rest of the hospital.

The hospital is calculated to contain 60 patients; but in the event of an emergency, the verandahs being now enclosed, it will contain as many more. The hospital is surrounded by a wall 9 feet high, and forms an oblong, 279 feet from north to south, and 199½ feet from east to west. The distance from the hospital to the wall on the east, west and and south, is about 33 feet, and on the north 43 feet. It contains the hospital Serjeant's quarters, the guard-room, cook-room, surgery godown, or store-room, privy, and dead house; in the centre is a shed for holding water, or for shower baths.

As a general remark, the wards of the entire hospital are too narrow and also too low, which gives them a confined

appearance, and leaves no room for tables for the patients at which to eat their meals; the compound is too small, and the space is insufficient for the convalescents to take exercise.

The Riding School, on two sides close to the hospital wall, is a great nuisance, from the noise and dust; it destroys that quiet and repose so necessary in all well regulated hospitals. The compound should be extended, and new out-offices erected. Application for building a conjee house for the reception of noisy, turbulent, and mad patients was made last year, and has been sanctioned by Government.

The hospital bedding consists of a wooden painted cot 6½ feet long and 3 wide, which takes to pieces, and is taped; it is in every respect a most suitable, clean, soft, elastic bedstead; the beds are stuffed with straw, with a cotton quilt, and Europe blankets and sheets; only 10 per pair per 100 of effective strength, however, are allowed and Surgical cases are excluded from the benefit of clean linen.

The Guard-house lately erected is a splendid building and well ventilated, with sufficient room for prisoners; it answers the purpose for which it is intended, and consists of guard-room, cells for defaulters and a capacious verandah.

The guard-room, 22 feet high, 20 wide, and 50 feet long with arched doorways. The cell is 22 feet high, 20 wide, and 20 long, with a verandah in front 17 feet high, 12 wide, and 71 long. It affords ample accommodation, is cool, flat-roofed and free from vermin. The new cook-houses erecting, also conjee house and prisoners' guard are very superior buildings, but not completed.

The men on line guard have temporary guard houses, which have had a favourable influence on the health of the men employed on that duty. On several of the sentry walks however the men are much exposed, and more or less likely to contract disease, either from direct exposure to a vertical sun, the heat and glare reflected from the walls, the damp dews at night, or pernicious currents of air, and miasmatic exhalations.

Section III.

Rations and Diet, detailing the nature of the Soldiers' meals and facilities the Station affords for improvement in this respect.

Rations of Diet.

The diet for the troops is furnished by Government, and consists of 1 pound of bread, 1 pound of meat, 4 ounces of rice, 1½ oz. of sugar, 5-8ths of an oz. of tea or coffee, 1 chittack of salt, with allowance of 3 pounds of wood for cooking. Beef is supplied two days, and mutton every third day.

Each troop is divided into 3 messes, and the men have three meals per day. For breakfast a pint of coffee, occasionally tea, with bread. For dinner a pound of meat cooked according to directions given by each man in his turn, with a proportion of vegetables, roots, &c. For supper one pint of tea with the residue of any of the cold meat and bread left at dinner. The bread and meat are of excellent quality, and supplied by the Commissary as per G. O. of 8th July 1840, and are inspected by the Orderly Officer, and Quarter-Master previous to issue. The rations are so cheap, that it would conduce to health and comfort were these articles of the best or first quality.

The cooks are placed under the general superintendence of a man selected from the Regiment, who is struck off duty for that purpose. These meals appear plentiful and nourishing, and afford a reasonable variety, and have had a beneficial influence on the health of the men; it however would be an improvement, if it were imperative that a portion of the meat were daily made into good broth with vegetables, &c.

The water is brought, as already stated, by Puckallies, and when allowed to stand and filtered, is very good.

Section IV.

Duty and employment—specifying whether these are in any respect so severe as to be likely to prove prejudicial to the health of the Troops.

Duty and Employment.

This subject has been considered in the Sanatory report: here we shall enter more into the detail, as well as quote from the report to the Secretary at War.

Dr. Burke alludes to the greater sickness in Cavalry Corps in the Bengal command, and this we consider attributable, in this country, to the nature of the duties the Dragoon has to perform, for even with every care, attention and modification, it entails much exposure. That those performed by the 15th Hussars have been mild, is evinced by the small proportion of acute disease and few deaths; had the rigour of severe, harassing, or protracted drills been superadded, it must soon have had an unfavourable influence.

The duty and employment must vary and fluctuate, therefore the following is given as the nearest approximation to those usually ordered.

Days.	Morning.	Evening.
Sunday, ...	Church parade, Line duties, and Surgeon's Inspection at 10 A. M.	Line duties.
Monday, ...	Riding School, or Adjutant's drill and Line duties, ...	Inspection drill for awkward men, and line duties.
Tuesday, ...	Brigade exercise and line duties.	Do.
Wednesday, ..	Watering order and line duties.	Do.
Thursday, ..	Squadron drills or Riding school and line duties.	Foot parades under arms and line duties.
Friday, ...	Field exercise, or Adjutant's drill, and line duties, ...	Instructing drill for awkward men, and line duties.
Saturday,.. ..	Watering order and line duties. ..	Inspection of saddlery, or necessaries and line duties.

The Barrack and Line Guards alone take nearly 50 men for those duties, and the sentries are much exposed, whereas

in Bengal most, if not all, exposed duties are done by Sepoys. This becomes important to note, as the Forage cap in use with the the 15th Hussars, appears but an imperfect protection to the head, and may have had much influence in predisposing to the numerous cases of paralysis during the past two years, and was therefore noticed in the Sanatory Report.

The following is the Commanding Officer's scale of guard for the past year.

"The daily detail of duty generally performed at this station, by the Regiment under my command has been as under."

	White Troops.						
					Sentries.		
	Serjeants.	Corporals.	Trumpeters.	Privates.	By day.	By night.	Officers.
Guard at Barrack Gate, ...	1	1	1	30	10	10	1
——,,——Hospital, ...	0	1	0	6	2	2	0
——,,——Lines, ...	1	2	0	18	6	6	0
——,,——Mess and Paymaster, ...	0	2	0	6	0	2	0
——,,——As Police, ...	1	2	0	9	0	3	0
Total.	3	8	1	69	18	23	1

The Mess Guard and Pay Master's guard we have only seen at this presidency, but the men on that duty have now a comfortable guard house, still we should recommend their abolition.

The foregoing detail of duty is very large for a tropical country, yet it does not give an accurate statement of the actual duty performed by the men, who are thus actually occupied, and the following table will illustrate this.

Return of men variously employed in addition to the daily detail of duty in the return A. No. 3 of the Sanatory Report.

		Serjeant Major.	Trumpt Major.	Serjeant.	Corporals.	Farriers.	Privates	Total.
Daily.	Staff,	1	1	5	1	0	0	8
	Regimental orderly,	1	0	1	0	0	0	2
	Room Guard,	0	0	0	0	0	8	8
	Barrack Police,	0	0	1	1	0	9	11
	Orderly Sick Corporal,	0	0	0	1	0	0	1
Weekly.	Defaulter's room,	0	0	0	2	0	0	2
	Sick line orderly,	0	0	1	0	0	0	3
Permanent.	Canteen,	0	0	1	0	0	1	2
	General Store,	0	0	1	0	0	0	1
	Orderly room,	0	0	1	0	0	4	5
	Band,	0	0	0	0	0	21	21
	Bat men,	0	0	0	0	0	29	29
	Tailors,	0	0	1	0	0	2	3
	Riding department,	0	0	1	0	0	3	4
	Drill ditto,	0	0	1	0	0	0	1
	In charge of Cooks,	0	0	0	0	0	2	2
	Saddler's Shop,	0	0	0	0	0	3	3
	Total.	2	1	14	5	2	73	97

All those who are noted in this table, should be taken from the gross strength of the Regiment, and though it may be in a slight degree influenced by a few other employeès being in hospital, yet as these will generally be replaced from those detailed in return A. No. 3, of the Sanatory Report, it shews that in estimating the actual detail of duty performed by the Regiment, the whole of the foregoing details, should have due consideration, as well as the average number of sick in hospital, in estimating the influence of a conjoined agency of the effects of a particular duty and climate on the health of the soldier in India:—

Thus the Commanding Officer's state gives,	57
Detail of men on other duties, ...	97
Annual average daily sick, ...	53
Making a total of	207

to be deducted from 722 men, the average strength of the Corps during the year, which leaves 515 men for the duties of

guard, lines &c. Hence the great necessity of attention to guard room accommodation, head dress, and exposure, &c. on the sentry walks.

The guards usually mount at 10 o'clock, an hour certainly too late in this country, and entailing an exposure which nothing but absolute necessity should sanction.

Section V.

Internal Economy, particularly as regards the measures for repression of Intemperance—the prevalance or rarity of Crime and Punishment among the Troops and—Measures employed to furnish them with healthy exercise and amusements.

There have been 269 acute cases treated during the year, of which only 26 appear to have been caused by intemperance. Drunkenness therefore apparently has had more influence as a predisposing, than an exciting cause of the soldiers' maladies. Facilities for obtaining intoxicating drinks always exist.

It is the same at all stations throughout India; a variety of fermenting substances are easily obtained, and the natives are adepts at converting them into alcoholic potations. The abkarry contract legalizes the sale of spirits to the Natives, and thence the Europeans can, and do obtain it, notwithstanding the prohibitions which exist to such sale. Some impute much of the intemperance to this source, though others, for whose judgment we entertain great respect, consider that the abkarry contract secures a better kind of spirits, and rather conduces to health by substituting a less pernicious beverage, for the poisonous trash concocted by the natives.

There has been, according to the Commanding Officer's return, an increase of crime and punishment, as compared with the preceding year. 61 have been tried and sentenced, which is greater than the number in the previous year, as 61 is to 55, but as there has been only the same number of deaths and less sickness, the increase of crime does not seem to have influenced disease.

The cells for prisoners in the Barrack Square are in good repair and well ventilated, but those in the Fort, now seldom used, are highly objectionable, being close, confined, with little light, and quite unventilated.

The mid-day punishment drills continue, and the objections formerly urged against them still exist, and indeed increased so far, as they may have contributed, with other causes of exposure, to our numerous list of paralytics, and tendency to cerebral diseases in the Regiment, particularly last year.

There is a Skittle Alley, and Racket Court, and the men occasionally amuse themselves at Cricket, Long bowls and Quoits, every requisite being furnished at the expence of the canteen fund, and in the Serjeant's room of the Canteen there is a Bagatelle Board.

The men of certain troops get books from their troop libraries, of which there are three established in the Regiment, and supported by the men of those troops. The rest of the Corps get books from the Station Soldiers' Library, and the Theatre has just been converted into a Library, Reading and Coffee room.

We have already reported our sentiments on the dress regulations; it is however but very seldom that the Hussar is decorated in full panoply, but it would be an improvement if he had a peak to his Forage Cap, as he is much exposed; indeed the Sanatory Report of last year will shew the importance we attach to this subject, whilst endeavouring to account for the numerous cases of paralysis. The following general observations from our Sanatory Report for the Secretary at War, may be introduced in this place.

It is proved by the Statistical Report, published by order of the British Government presented to both Houses of Parliament by command of Her Majesty, that all intertropical stations for H. M. Troops, enjoying an elevation of 3,000 feet, possess an immunity to disease as great, as if serving in England. Hence Bangalore, from its elevation, its coolness, its freedom from swamp, jungles, and all sources of malaria, should be equally healthy, as is evinced by the comparative healthiness of Natives and European women and children. There is however much sickness, and chiefly confined to the soldiers, and it is therefore much in the power of Government and its officers to preserve the health and efficiency of the troops.

The following suggestions are consequently submitted for consideration.

1st. Enclosed verandahs to the Barracks, similar to those of the Hospital, as a means of promoting ventilation and comfort.

2nd. The dress regulations to be modified and strictly enforced, agreeably to Sir Stamford Whittingham's order. The Forage Cap to be made of a useful size, worn well on the head, and furnished with a peak.

3rd. Suitable protection to the men on the several sentry walks, by erecting thatched sheds.

4th. The abolition of Mess and Pay Master's, and all superfluous day and night guards.

5th. The deficiency of bedding must be, and is, a source of privation and discomfort, as well as of filth and disease, in a hot climate; it is recommended that the quantity be assimilated to that in use in H. M. service at home and abroad.

6th. The roofs of the Barracks to be constructed of proper materials, to avoid that great source of irritation and loss of rest, from bugs.

7th. The abolition of the miserable, small, low, badly constructed, huts with mud floors, called "patcherries," used for married soldiers and their families, often the receptacles for vice, infamy, and sale of liquors, &c.

8th. Native Hospitals should be established, which might receive diseased females, especially in a country where there are no public institutions for their cure, and the entire re-

sources and revenues are appropriated for the use of the State.

9th. The removal of all vegetation and unauthorized temporary erections from within the Barrack Square, as well as the extermination of all dogs, goats, poultry and other sources of vermin and filth.

10th. The exposure to the sun at this station is known to be so prejudicial, that no duty should be exacted during the hot months, that exposes the soldier after 8 A.M. or at any period after 9 A.M., or a little before 5 P.M. during the entire year.

11th. Men should not be employed at Lines before it is light, as they get cold and chilled, and its injurious consequences are fully borne out by the obstinacy, inveteracy, and frequency of rheumatic diseases.

12th. All that can distress the mind in health or harass the frame in disease, or disturb that order and quietness so essential to the economy of a well regulated Hospital, should be avoided, such as large funeral parties, signing accounts in Hospital (now dispensed with in most Corps), or visits by the various religious ministers for spiritual and religious purposes, being employed for temporal purposes.

Section VI.

The average strength of the Force throughout the year, distinguishing White from Black Troops, and showing any changes in its composition by the removal of one Corps and the arrival of another: followed by a detail of the Deaths and Admissions into Hostipal—also distinguishing White from Black Troops.

The annexed tables of White and Black Troops composing the force at the Station throughout the year, are separately arranged, so as to afford at two views the information required under this head. These tables have been prepared with considerable labour, requiring no fewer than 300 distinct calculations.

Table of White Troops at Bangalore from 1st April 1844 to 31st March 1845.

Months.	H. M. 15th Regiment, or King's Hussars.					Horse Brigade of Artillery.					1st Madras European Regiment.					2nd Madras European Infantry.					R. Company 2nd Battalion Artillery.					Garrison details.				
	Strength.	Admitted.	Died.	Ratio admitted per cent. of strength.	Ratio died per cent. of strength.	Strength.	Admitted.	Died.	Ratio admitted per cent. of strength.	Ratio died per cent. of strength.	Strength.	Admitted.	Died.	Ratio admitted per cent. of strength.	Ratio died per cent. of strength.	Strength.	Admitted.	Died.	Ratio admitted per cent. of strength.	Ratio died per cent. of strength.	Strength.	Admitted.	Died.	Ratio admitted per cent. of strength.	Ratio died per cent. of strength.	Strength.	Admitted.	Died.	Ratio admitted per cent. of strength.	Ratio died per cent. of strength.
April 1844.	705	57	—	8·0	—	163	21	1	14·7	0·7	...	...	...	...	...	901	69	1	7·7	0·1	325	13	—	4·0	—	3	—	—	—	—
May, —	707	68	—	9·6	—	182	15	—	10·5	—	...	...	...	...	...	902	91	1	10·0	0·11	324	6	—	1·8	—	3	—	—	—	—
June, —	708	70	4	10·0	0·56	140	19	—	12·4	—	...	...	...	...	...	903	66	1	7·3	0·11	324	6	—	1·8	—	3	—	—	—	—
July, —	703	60	—	8·5	—	136	22	—	16·9	—	...	...	...	...	...	905	99	1	10·9	0·11	324	6	—	1·8	—	3	—	—	—	—
August, —	700	60	1	8·5	0·14	133	13	—	9·7	—	...	...	...	...	...	908	70	1	7·7	0·11	325	8	—	2·4	—	3	—	—	—	—
Sept. —	698	35	1	5·0	0·14	135	10	1	7·4	0·74	...	...	...	...	...	904	77	—	8·5	—	325	8	—	2·4	—	3	—	—	—	—
October, —	694	37	—	5·3	—	133	21	1	15·7	0·75	...	...	...	...	...	903	110	1	12·1	0·11	325	8	—	2·4	—	3	—	—	—	—
Nov., —	788	56	1	7·0	0·12	34	4	—	11·7	—	...	...	...	...	...	907	125	2	13·7	0·22	325	9	—	2·7	—	3	—	—	—	—
Dec., —	737	47	—	6·3	—	37	5	—	13·5	—	...	...	...	...	...	918	117	1	12·7	0·11	325	6	—	1·8	—	3	—	—	—	—
Jan., 1845.	737	47	—	6·3	—	38	5	—	13·1	—	...	...	...	...	...	883	130	—	14·7	—	325	5	—	1·5	—	3	—	—	—	—
Feb., —	739	51	1	6·9	0·13	134	13	—	9·7	—	418	30	1	7·1	0·23	868	66	—	7·6	—	317	10	—	3·1	—	3	—	—	—	—
March, —	743	87	1	11·7	0·13	135	5	—	3·7	—	476	13	—	2·7	—	840	135	—	16·0	—	324	24	—	7·4	—	3	—	—	—	—
Aver. of year.	663	5·67	0·75	8·5	0·13	146	12·6	0·25	8·6	0·16	1267	0·56	0·08	4·4	0·06	883	78	0·67	8·8	0·07	324	11	0·1	3·4	0·1	3	0·1	0·1	3·4	0·1

Table of Black Troops stationed at Bangalore from 1st April 1844 to 31st March 1845.

Months.	E. Troop Horse Artillery.				3rd Regiment Light Cavalry.				B. Company 6th Battalion Artillery.				Sappers and Miners.				9th Regiment Native Infantry.				43d Regiment Native Infantry.				Garrison details.			
	Strength.	Admitted.	Died.	Ratio admitted per cent. of strength.	Strength.	Admitted.	Died.	Ratio admitted per cent. of strength.	Strength.	Admitted.	Died.	Ratio admitted per cent. of strength.	Strength.	Admitted.	Died.	Ratio admitted per cent. of strength.	Strength.	Admitted.	Died.	Ratio admitted per cent. of strength.	Strength.	Admitted.	Died.	Ratio admitted per cent. of strength.	Strength.	Admitted.	Died.	Ratio admitted per cent. of strength.
1844. April,	104	4	—	3.7	518	21	—	4.0	116	4	—	3.4	1,426	—	—	—	1167	57	1	5.6	0.08	—	—	—	—	—	—	—
April,	107	10	—	9.3	512	21	—	4.1	105	5	—	4.7	—	—	—	0.4	—	65	1	0.4	0.08	—	—	—	390	12	1	3.1
May,	110	16	—	14.5	518	27	—	5.2	105	8	—	7.6	1,427	8	1	0.4	1152	115	—	9.9	—	—	—	—	447	9	—	2.0
June,	110	16	—	14.5	518	27	—	5.2	105	9	—	8.5	1,427	8	1	0.4	1153	116	—	10.0	0.16	2	—	15.7	458	7	—	1.5
July,	109	14	—	12.8	512	25	—	4.8	107	6	—	5.6	1,427	8	1	0.4	1159	105	—	9.1	—	—	—	—	456	6	—	1.3
Aug.	135	17	—	12.5	532	19	—	3.5	107	6	—	5.6	1,427	8	1	0.4	1163	96	—	8.2	0.08	1	—	9.1	454	5	—	1.1
Sept.	75	6	—	8.0	532	12	—	2.3	107	4	—	3.7	1,427	17	1	0.4	1167	73	—	6.2	0.08	1	—	9.1	451	10	—	2.2
Oct.	75	8	—	10.6	512	05	—	5.0	107	4	—	3.7	1,427	23	—	1.6	1167	103	1	9.4	0.08	—	—	9.0	453	3	—	0.6
Nov.	110	17	—	15.0	505	40	—	8.0	122	6	—	5.0	1,427	46	—	3.0	1014	93	—	9.0	—	—	—	—	1092	25	2	2.6
Dec. 1st,	110	6	—	5.4	—	—	—	—	110	8	—	7.6	1,427	57	—	3.5	—	—	—	—	—	—	—	—	1092	69	2	6.2
Jan.	111	8	—	7.2	—	—	—	—	110	3	1	2.7	1,284	68	1	5.3	—	—	—	—	—	—	—	—	1071	55	1	5.0
Feb.	111	11	—	9.9	—	—	—	—	113	4	—	3.6	1,284	19	—	1.4	—	—	—	—	—	—	—	—	1071	10	1	1.0
Mar.	112	9	—	8.0	—	—	—	—	112	3	—	2.6	1,284	57	—	4.4	—	—	—	—	—	—	—	—	1127	10	—	0.8
Aver. of year.	103	10.4	—	9.8	511	26.5	—	5.6	107	4.3	—	4.25	278	29	0.04	10.6	0.13	2138	104	0.75	8.8	0.06	1007	18	1.0	3.11	0.1	532	11	0.4	2.19	0.08

Section VII.

Remarks as to the principal classes of Diseases, by which the sickness and mortality have been occasioned: any peculiarity either as regards the form in which they present themselves, or rarity as compared with former years, or other stations to be carefully noted.

Prevailing Diseases.

The most prevailing diseases have been the usual endemics of the country.

The period embraced by this Report has been free from all epidemic diseases, and the following table would show that disease has not increased during the last four years except Paralysis, which has more than doubled itself.

Table of Diseases admitted into Hospital from April 1840 to May 1845.

Diseases.	1840-41.		1841-42.		1842-43.		1843-44.		1844-45.	
	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.
Febrile affections, ...	132	2	106	3	81	1	86	0	49	1
Pulmonic, ...	32	0	16	0	26	4	28	2	33	1
Hepatic, ...	92	7	87	6	72	2	53	1	32	2
Dysenteric, ...	176	4	121	3	119	5	78	5	140	4
Rheumatic, ...	66	0	72	0	59	0	42	0	46	0
Paralysis, ...	0	0	2	0	3	0	4	0	10	1
Venereal, ...	506	0	357	0	202	2	159	0	184	0
Wounds and accidents, ...	296	2	243	2	252	0	175	1	173	0
Other diseases, ...	469	3	365	2	278	5	183	0	75	0
Total, ...	1708	18	1369	16	1092	19	808	9	843	9

Particular Affections.

Dysentery. There have been 140 cases with 4 deaths.
Average period in hospital, ... 30 days.
Greatest quantity of blood drawn, ... 40 ounces.
Average ditto, ... 20 ditto.
Greatest number of leeches applied, ... No. 250.
Average ditto, ... No. 40.
Greatest quantity of calomel taken, ... 240 grains.
Average ditto, ... 80 ditto.

Fevers. 49 cases treated, with 1 death.
Average period in hospital, ... 16 days.
Greatest quantity of blood drawn, ... 32 ounces.
Average ditto, ... 24 ditto.
Greatest number of leeches applied, ... No. 82.
Average ditto, ... No. 78.
Greatest quantity of calomel, ... 154 grains.
Average ditto, ... 52 ditto.

Hepatitis. 32 cases treated, with 2 deaths.

Average period in hospital,	36 days.
Greatest quantity of blood drawn,	30 ounces.
Average ditto,	30 ditto.
Greatest number of leeches applied,	No. 140.
Average ditto,	No. 40.
Greatest quantity of calomel taken,	180 grains.
Average ditto,	70 ditto.

Rheumatism. 44 cases treated, with no death.

Average period in hospital,	60 days.
Greatest quantity of blood drawn,	40 ounces.
Average ditto,	30 ditto,
Greatest number of leeches applied,	No. 160.
Average ditto,	No. 60.
Greatest quantity of calomel taken,	150 grains.
Average ditto,	70 ditto.

General Observations.

There are few general observations needed. It will be seen by the tables, that acute disease has not increased, and that disease in the aggregate has greatly diminished during the last two years.

Mortality has also decreased, and the deaths in hospital have been reduced nearly one-half since 1843.

Paralysis has been frequent: it merits attention in consequence of being confined entirely to the 15th Hussars, indicating that the sources of the disease, whatever they may be, are in some measure confined to the Regiment.

The first year we have no case; the second, two cases; the third, three cases; the fourth, four cases; and last year, the fifth, we have eight cases—total seventeen cases. Whereas the 13th Dragoons, the first year, had no case; the second year, one case; third year, no case; fourth year, one case—making two cases in four year. This contrast needs no comment.

We shall now briefly illustrate the causes or supposed exciting causes, so far as we possess the materials Such tables if kept for a series of years must be useful, shewing as they will do the influence of external and internal causes, and, above all, their impressions on the sick; for although these be fallacious, yet as the remote or predisposing causes prove a direct influence, they will lead to important practical results.

Table of causes or assigned causes of acute disease from 1st April 1840, to 31st March 1845.

	Causes or supposed exciting causes.	*During the years.* 1840-41.	1841-42.	1842-43.	1843-44.	1844-45.	Total.
1.	Who impute their diseases to cold caught by exposure to currents of air on line or Barrack guard, or lying on damp bed,	11	7	3	4	10	35
2.	Who impute their diseases to cold caught in their posts on the different Regimental guards, at early lines 4½ A.M., or by going round with the relief,	7	11	7	6	7	38
3	Who impute their diseases to cold caught by exposure to the night air, or by sleeping opposite to doors and windows left open in the Barracks, or while prisoners in the guard room or defaulter's room, or on Police or Paymaster's guard, or going to privy, or shoeing horses on the line of march, or by lying under trees,	30	27	33	30	38	158
4.	Who impute their diseases to cold caught, but cannot particularize how,	42	35	33	20	40	170
5.	Who impute their disease to cold caught in the rain, when at watering order, ball practice, going round with relief, washing horses and bathing,	23	19	8	6	6	62
6.	Who impute their diseases to cold caught by change of the weather, cold mornings, neglecting to put on their flannels, or changing clothes when perspiring,	5	3	7	5	2	22
7.	Who impute their diseases to drinking cold water, buttermilk, or lemonade, when heated,	5	2	3	4	1	15
8.	Who impute their diseases to superintending boiling gram, or getting ears picked,	0	0	2	0	0	2
9.	Who impute their disease, to exposure to the sun while on sentry, or barrack line, or gram guard at lines, midday punishment drills, and heat of weather,	4	7	3	5	8	27
10.	Who impute their diseases to diet, as having eat curry and rice, bacon and eggs, pork, mangoes, mango puddings, cucumbers, water melon, guavas, sour oranges, bad coffee, porter, cold water, or ginger beer,	15	6	6	5	6	38
11.	Who impute their diseases to riding or falls or kicks from their horses, or blows, or costiveness, or blowing on instruments in the band, or coughing, and the bite of a mad dog,	12	12	12	6	1	43
12.	Whose diseases were caused by intemperance,	14	14	36	21	28	113
13.	Who know no cause for their diseases, but have been drinking,	5	4	6	6	2	23
14.	Who know no cause for their diseases,	250	243	205	173	96	1007
15.	Who imputes his disease to cold caught when sitting up with race horses,	0	0	0	1	0	1
16.	Who impute their diseases to cold caught in the rain while carrying orders to officers' quarters, walking without shoes, getting wet at funeral parties, or coming from the canteen,	0	0	0	0	10	10
	Diseases re-admitted from the above, changing to other acute affections,	13	21	19	10	14	77
	Total,	476	411	383	302	269	1184

Tables of causes, or assigned causes, of 269 acute Cases admitted into the Hospital of Her Majesty's 15th Hussars, from 1st April 1844 to 31st March 1845.

No. and Diseases.	Causes or supposed exciting causes.	Of each.	Total.
Fever, 48.	To cold caught on line, mess, and bazar guards, ..	5	
	,, by lying opposite doors or windows left open in Barracks, ...	1	
	,, by lying in verandah, ...	4	
	,, by exposure to night air and lying in a wet cloak, ...	1	
	,, by getting wet in the rain, but cannot tell when, ...	7	
	,, by lying on damp ground, ...	1	
	,, at early lines and field exercise at 4 A. M., ...	2	
	To exposure to the sun on duty at stables 10 A. M.	1	
	,, while walking in the bazar 11 A.M.	4	
	,, while out shooting, ...	1	
	Know no cause for their diseases, ...	15	
	Intemperance, ...	6	48
Dysentery, 89.	To cold caught on Barrack guard, ...	2	
	,, by lying opposite doors and windows left open in Barracks, ...	6	
	,, by lying in the verandah, ..	4	
	,, by lying on the cold flags, hospital guard, ...	2	
	,, cannot tell how, ...	13	
	,, by getting wet in the rain at funerals	6	
	,, ditto coming from canteen, ..	1	
	,, at early morning lines, ...	3	
	,, by exposure to a current of air when in a perspiration, ...	1	
	,, by drinking cold-water in a perspiration, ...	1	
	To eating cabbage for dinner, ...	1	
	Know no cause, ...	42	
	Intemperance, ...	7	89
Hepatitis, 34.	To cold caught by lying opposite open doors and windows at night, ...	6	
	,, by lying on cold flags, ...	1	
	,, by getting wet in rain while carrying orders to officers' quarters, ..	2	
	,, by walking without shoes on the cold flags, ...	1	
	,, but cannot tell how, ...	6	
	Know no cause, ...	18	34
Rheumatism, 45...	To cold caught on line guard, ...	3	
	,, by pulling off their jackets when in a perspiration, ...	2	
	,, by opposite doors or windows left open...	4	
	,, but cannot tell how, ...	7	
	,, by a current of air when shoeing horses, ...	1	
	,, by getting wet in the rain, ..	3	
	,, by lying on cold flags, ...	2	
	To a jerk when on horseback, ...	1	
	To intemperance, ...	3	
	Know no cause, ...	19	45

Tables of causes, or assigned causes, of 269 acute Cases admitted into the Hospital of Her Majesty's 15th Hussars, from 1st April 1844 to 31st March 1845.—(Continued.)

No. and Diseases.	Causes or supposed exciting causes.	Of each.	Total.
Diseases of lungs, 15	To cold caught by exposure to night air, ..	1	
	,, by lying on cold ground, ...	2	
	,, but cannot tell how, ...	3	
	,, by getting wet returning from privy,	1	
	,, after exposure to the sun, ...	1	
	Intemperance, ...	2	
	Know no cause, ...	5	15
Cholera, 11.	To cold caught by doors and windows being left open, ...	2	
	To eating cabbage for dinner, ...	1	
	Know no cause, ...	6	
	Intemperance, ...	2	11
Colica, 25.....	To eating salad and cabbage, ...	2	
	,, potatoes, ...	2	
	Know no cause, ...	7	
	To cold caught by exposure to wet and damp on the march, ...	2	
	,, on line guard, ...	2	
	Intemperance, ...	6	
	To cold caught but cannot tell how, ...	4	25
Delirium Trem., 2,	To intemperance, ...	2	2
	Grand Total, ...		269

Venereal Disease.

Syphilis has decreased in a marked manner. This may have arisen from two causes: first, the women either getting themselves cured, or those affected with the worst forms dying, or the men avoiding those from whom they had previously suffered; second, from the disease itself partaking of the general healthiness of the past year, and from the men's improved habit of body, since it is well known that only certain habits and constitutions are subject to the worst form of venereal disease.

The decrease of numbers, however, must arise from the decrease of disease, whatever may be the cause of the improvement.

We have just noticed, that venereal has been less frequent. The following table illustrates the subject more fully than any detailed history we could give of its nature, frequency and treatment.

Table of Venereals, admitted from 1st April 1844 to 31st March 1845.

No.	Treatment.
	Of 60 Syphilis primitiva.
23	Were treated without Bubo and without mercury.
6	ditto ditto and with ditto.
17	ditto with Bubo and without mercury.
4	ditto ditto and with mercury.
	ditto without Gonorrhœa and without mercury.
	ditto ditto and with ditto.
8	ditto with ditto and without ditto.
2	ditto ditto and with ditto.
60	*Of 10 Syphilis consecutiva.*
2	Were treated without primary symptoms and without mercury.
6	ditto with ditto and with ditto.
2	ditto ditto and with ditto.
10	*Of 25 Bubo simplex.*
18	Were treated without mercury.
7	ditto with ditto.
25	*Of 71 Gonorrhœa.*
53	Were treated without mercury.
8	ditto with Bubo and without mercury.
10	ditto with Syphilis and without mercury.
71	

Statistical Tables shewing the treatment adopted in the Hospital of H. M. 15th Regiment, or King's Hussars, from 1st April 1844 to 31st March 1845.

No. 1.

Of 269 acute cases, averaging 25 days in hospital, 9 died.

35	were only bled,	,, 22	,,	0
52	had only leeches applied,	,, 24	,,	0
178	both bled and leeched,	,, 30	,,	8
4	neither bled nor leeched,	,, 27	,,	1
269				9

No. 2.

Of 269 acute cases treated, averaging 20 days in hospital, 8 died.

213	were bled from the arm, averaging 22 days in hospital, with 8 deaths.				
12	were bled between the 1st and	6th hour of attack, averag.	31 days.		0
9	,,	6th and 12th	,,	9	0
5	,,	12th and 18th	,,	9	0
20	were bled on the 1st day of attack, averag.	19 days in hospital, with			2 deaths.
47	,, 2nd	,,	20	,,	1
51	,, 3rd	,,	24	,,	3
24	,, 4th	,,	15	,,	1
8	,, 5th	,,	11	,,	0
9	,, 6th	,,	9	,,	0
9	,, 7th	,,	16	,,	0
3	,, 8th	,,	14	,,	0
3	,, 9th	,,	15	,,	1
1	,, 10th	,,	15	,,	0
3	,, 12th	,,	16	,,	0
1	,, 14th	,,	18	,,	0
2	,, 15th	,,	25	,,	0
1	,, 17th	,,	21	,,	0
1	,, 21st	,,	23	,,	0
3	,, 30th	,,	38	,,	0
1	,, 61st	,,	70	,,	0
213					8

No. 3.

Of 213 bled from the arm, averaging 22 days in hospital, with 8 deaths.

187	were bled once,	,, 26	,,	8
25	,, twice,	,, 25	,,	0
1	,, three times,	201	,,	0
213				8

No. 4.

Of 213 men bled from the arm, averaging 22 days in hospital, 8 died.

3	lost from 8 to 10 oz.	,, 14	,,	0
60	,, 10 to 20 do.	,, 19	,,	2
74	,, 20 to 30 do.	,, 18	,,	2
52	,, 30 to 40 do.	,, 15	,,	3
18	,, 40 to 50 do.	,, 12	,,	1
5	,, 50 to 60 do.	,, 66	,,	0
1	,, 60 to 70 do.	,, 201	,,	0
213				8

No. 5.

Of 269 acute cases treated, averaging 26 days in hospital, 8 died.
230 had leeches applied, averaging 20 days in hospital, with 8 deaths.

10	had from	5 to	10 leeches, averag.	20	days in hospital,	with 8 deaths.
59	,,	10 to	20 do.	,, 15	,,	0
47	,,	20 to	30 do.	,, 12	,,	1
27	,,	30 to	40 do.	,, 17	,,	0
30	,,	40 to	50 do.	,, 14	,,	1
15	,,	50 to	60 do.	,, 16	,,	0
11	,,	60 to	70 do.	,, 18	,,	1
7	,,	70 to	80 do.	,, 31	,,	0
10	,,	80 to	100 do.	,, 35	,,	1
6	,,	100 to	120 do.	,, 80	,,	2
4	,,	120 to	140 do.	,, 104	,,	0
2	,,	140 to	160 do.	,, 17	,,	0
1	,,	210		,, 22	,,	1
1	,,	250		,, 115	,,	1
230						8

No. 6.

Of 269 acute cases treated, averaging 26 days in hospital, 9 died.
266 took calomel, averaging 26 days in hospital, 9 deaths.

36	took from	5 to	10 grains,	,, 9	,,	0
59	,,	10 to	20 do.	,, 12	,,	1
48	,,	20 to	30 do.	,, 15	,,	1
46	,,	30 to	40 do.	,, 17	,,	0
34	,,	40 to	50 do.	,, 27	,,	1
12	,,	50 to	60 do.	,, 14	,,	0
18	,,	1 to	2 drams,	,, 45	,,	3
8	,,	2 to	3 do.	,, 62	,,	2
2	,,	3 to	4 do.	,, 138	,,	0
2	,,	4 to	5 do.	,, 164	,,	1
1	,,	12 drs. 29 grains,		,, 253	,,	0
266						9

No. 7.

Of 269 acute cases treated, averaging 26 days in hospital, 9 died.

266	took calomel,	,,	,,	,,	with 9 deaths.
3	,, no calomel,	,,	,,	,,	,, 0
269					

Of the foregoing 266, that took calomel, with 9 deaths,

10	had ptyalism,		with 3 deaths.
41	had their mouths sore, but without free ptyalism,		with 3 ,,
6	had only their gums affected,	,,	1 ,,
151	had not their mouths affected,	,,	2 ,,
266			9

Of 10 who had ptyalism, with 3 deaths,

2	took from	30 to 40 grains of calomel	with	0
3	,,	40 to 50 do.	,,	0
1	,,	50 to 60 do.	,,	0
1	,,	1 to 2 drams,	,,	1
1	,,	2 to 3 do.	,,	1
1	,,	3 to 4 do.	,,	0
1	,,	4 to 5 do.	,,	1
10				3

Of 41 who had their mouths sore, but without free ptyalism, with 3 deaths,

9	took from	20 to 30 grains,	,, ,,	0
11	,,	30 to 60 do.	,, ,,	0
17	,,	1 to 2 do.	,, ,,	2
2	,,	2 to 3 do.	,, ,,	1
1	,,	4 to 5 do.	,, ,,	0
1	,,	12 to 13 do.	,, ,,	0
41				3

Of 64 who had their gums affected, with 1 death,

44	took from	20 to 40 grains,	,,	0
13	,,	40 to 60 do.	,,	1
6	,,	1 to 2 drams,	,,	0
1	,,	2 to 3 do.	,,	0
64				1

Of 151 who had not their mouths affected, with 2 deaths,

34	took from	5 to 10 grains,	,,	0
58	,,	10 to 20 do.	,,	1
27	,,	20 to 30 do.	,,	1
20	,,	30 to 40 do.	,,	0
8	,,	40 to 50 do.	,,	0
2	,,	50 to 60 do.	,,	0
2	,,	1 to 2 drams,	,,	0
151				2

Recapitulation of the foregoing Tables.

Numbers.	Effect.	Quantity taken. 5 to 10 grains.	10 to 20 grains.	20 to 30 grains.	30 to 40 grains.	40 to 50 grains.	50 to 60 grains.	1 to 2 drams.	2 to 3 drams.	3 to 4 drams.	4 to 5 drams.	12 to 13 drams.	Average quantity.	Total number of deaths.	Proportion of deaths.
10	Ptyalism, ...	..	..	..	2	3	1	1	1	1	1	..	81	3	1 in 3
41	Mouth sore, but without free ptyalism, ..	..	..	9	11	..	..	17	2	..	1	1	84	3	1 in 14
64	Gums affected only,	..	..	44	..	13	..	6	1	..	..	..	37	1	..
151	Gums not affected, ..	34	58	27	20	8	2	2	..	..	..	..	24	2	1 in 75
3	Have had no calomel, ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
269	Total, ..	34	58	80	33	34	3	26	4	1	2	1	58	9	1 in 30
	Deaths, ..	..	1	1	..	1	..	3	2	..	1	..	..	..	..

Abstract of the average period in Hospital, with treatment, &c., of 277 acute cases admitted into Hospital from 1st April 1844 to 31st March 1845.

	Diseases.												
	Fevr. Intermittent.	Febr. Remittens.	Febr. C. C.	Hepat. acut.	Rheumatism acute.	Dysentery acute.	Disease of lungs.	Cholera Ind.	Cólica.	Delirium tremens.	Paralysis cerebral.	Total.	
Total number of acute cases admitted,	4	9	35	34	45	89	15	11	28	2	8	277	
Ditto ditto, ..	..	..	1	2	..	3	5	1	..	..	1		9
Average period in Hospital, .. days,	11	25	15	36	60	30	90	20	15	20	150		
Greatest quantity of blood drawn, ounc.	30	32	30	50	40	40	40	32	20	40	70		
Average ditto, .. ditto,	20	30	20	30	30	30	20	20	15	20	32		
Greatest No. of leeches applied, No.	82	74	80	140	160	250	120	80	80	100	210		
Average ditto, ...	40	30	46	60	60	40	60	20	30	50	100		
Greatest quantity of calomel taken in grains, ...	40	154	40	180	150	240	70	60	60	30	749		
Average ditto, ...	23	40	20	70	70	80	30	30	30	25	70		

A case of Paralysis. Private Kirby, still in Hospital.

Section VIII.

A detailed notice of any Epidemic which may have visited the station in the course of the year, the circumstances under which it appeared, and its subsequent progress, and if it was attended by any atmospherical phenomena.

The past 12 months, or period embraced by this report, has been free from Epidemic disease in the regiment.

Section IX.

If sufficiently extensive materials are possessed, show whether the sickness and mortality at the station has most affected young soldiers or those advanced in life, and whether it has fallen in a higher proportion on those recently arrived than on the long resident.

This will be ascertained by comparing the number alive at each age and each period of residence in the station, with the numbers of the same class who have died in the course of the year.

These calculations however are not required, unless at least 1000 men have been under observation at the station, but the Principal Medical Officer at the station will always be expected to furnish it in his general summary and abstract of all the returns of the command.

Detail of Admissions and Deaths in H. M. 15th Hussars according to Service Abroad, with strength of each class, from 1st April 1844, to 31st March 1845.

	Years of Service Abroad.																											
	Under 1 Year.			1 to 2			2 to 3			3 to 4			4 to 5			5 to 6			6 to 7			7 to 8			Total.		
	Admitted.	Died.	Strength.	Admitted.	Died.	Strength.	Admitted.	Died.	Strength.	Admitted.	Died.	Strength.	Admitted.	Died.	Strength.	Admitted.	Died.	Strength.	Admitted.	Died.	Strength.	Admitted.	Died.	Strength.			
Fevers, ...	4	..	..	23	..	..	1	..	..	6	..	..	31	1	..	4	..	..	1	..	..	1	..	..	49	2	
Diseases of Lungs, ..	..	..	..	1	..	..	1	..	..	1	..	..	12	..	..	2	..	..	..	..	..	..	..	..	17	..	
,, of Liver, ..	..	..	..	..	..	..	..	..	..	1	..	..	8	1	..	1	..	..	..	..	..	..	..	..	10	1	
,, of Stomach and Bowels, ..	1	..	..	3	..	..	1	..	..	2	..	..	10	..	..	3	..	..	2	..	..	..	..	..	22	..	
,, of Brain, ..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	1	..	..	..	..	..	3	..	
All other diseases, ..	1	..	..	9	..	..	2	..	..	4	..	..	12	1	..	6	..	..	1	..	..	1	..	..	37	1	
Total, Admissions,	5			28			5			14			101			17			5			2			177		
Deaths, ..		..			..			..			..			2			..			..			..			2	
Strength, ..			..			..			5			44			163			173			116			135		510
																												795
																												9
																												721

Detail of Admissions into Hospital and Deaths in H. M. 15th Hussars according to Age, from 1st April 1844, to 31st March 1845.

| Diseases. | Admissions, Death, and Strength of each Class not exceeding | | |

THE MADRAS
QUARTERLY MEDICAL JOURNAL.

No. XI.] JULY 1, 1841. [Vol. III.

ART. I.—OBSERVATIONS *relative to the* SICK OF H. M. 41ST REGIMENT *of* FOOT, *from the* 1*st of* JANUARY 1832, *to the* 31*st of* DECEMBER 1834. *Comprising a Medical History of the Regiment during the time it was cantoned at Moulmein.—By* THE MEDICAL OFFICERS OF THE REGIMENT.

Communicated by Dr. White, Deputy Inspector of Hospitals.

Report 1*st.*—From the 1st of January to the 31st of December 1832.—By SURGEON HAMILTON, M. D.

STRENGTH 762.

Remained 31st December 1831	39
Admitted since	1,163
Total treated	1,202
Discharged	1,116
Died	42
Remaining	44
Proportion of deaths to Diseases	1 in 28½
Daily average Proportion of Sick to Well	1 in 11½

On the 1st January 1832, His Majesty's 41st Regiment was at the village of Tindavanum, on its march from Trichinopoly to Marmalong-bridge, where it arrived on the 11th of the same month.

After remaining encamped at Marmalong bridge from the 11th of January till the 17th of the same month, we marched to Poonamallee, where we were quartered until the 11th of February, when, we embarked at Madras for Moulmein.

During the march and voyage our casualties were as follows; 6 cases of Dysenteria, 1 of Pneumonia, and 9 of Cholera Spasmolica—making a total of 17. Of these 17 deaths, 4 occurred during the voyage, viz: 1 of Dysenteria, 1 of Pneumonia, 1 of Hepatitis, and 1 of Cholera. In fact, this constituted nearly one half of the entire number of our fatal cases during the whole year—for the Regiment lost 42 men by death within the last 12 months—thus leaving an average proportion of 2½ deaths per month since our arrival at Moulmein.

Previously to my giving a general view of the diseases, which have occurred in the Regiment under my Medical Charge during the past year, it is expected, I presume, that I should offer some account of the Medical Topography of Moulmein. In justice, however, to myself, I feel it necessary to premise, that, considering the shortness of a few months residence at this station, together with the urgent and harassing duties, which a Medical Officer, in sole charge of a Regiment in India, is called upon to perform, nothing beyond an imperfect sketch can reasonably be looked for from any individual thus situated.

AMHERST is situated at the mouth of the broad and rapid Martaban River, along the low and shelving left bank of which, it extends in a single rude street of about a quarter of a mile in length, and contains a mixed population of about 1,300 persons, chiefly composed of refugees from the Ancient Kingdom of Pegu. In front, Amherst is bounded by the River, and, at one extremity, by the Sea; on the two remaining sides, it is bordered by forest and jungle. At the rocky point (occupied by a small Pagoda) which forms the right entrance into the River, the low bank, upon which, a few hundred paces farther on, the Village is built, here rises to form a little Plateau, and is faced, towards

the sea, by a bold and precipitous rock, which trends away with the sea coast to the S. S. W., and is constantly, therefore, refreshed and purified by the uninterrupted sea breeze. Upon this more elevated spot—which is agreeably shaded with trees, and, as was just remarked, possesses the advantage of a pure and bracing air, besides a fine beach below for sea bathing—I feel persuaded that convalescents, from many diseases, might derive considerable benefit. At the same time, however, it is proper to add, that, along the edge of the River, opposite the Village, runs a mud-bank of about 2,000 yards in length, and 200 in breath, which is left dry at low-water—an additional reason for selecting the high ground, overhanging the sea, as the site of a Convalescent Depot, were such a project ever to be carried into execution. The fact is, that almost every circumstance of situation, capability, facility of communication and transit by sea, &c., serves to prove, that it is Amherst, and not Moulmein, which ought originally to have been selected as a Military Station and Point d' Apui.

Amherst is situated in Latitude 16° 4' 54" N. and Longitude 97° 35' 49" E. The River is here computed—altho' I doubt its accuracy—to be 1,200 yards broad to the woody and picturesque Island of Bate, which forms its right bank, and, stretching in an undulating line of hill and plain, extends about 24 miles, as far as Moulmein.

High water takes place at 2 hours on fall and change of the moon; and, in spring tides, the fall and rise of the tide is from 22 to 23 feet. The velocity of the spring tides is 7 knots per hour; and of neaps 5 knots.

A compound conglomerate Breccia of Madrepore and coarse porous Iron-ore, runs off Amherst in long ridges, and detached rocks, which, with its numerous sand-banks, render the entrance into the River, and the anchorage, both uncertain and hazardous.

Among the rocks and mud left dry along the bank of the river at low water the Mangrove grows luxuriantly. To the S. S. W. and E. by S., Amherst rests, as above remarked, upon a forest and thickly-tangled jungle, which stretches like a belt, along the left bank of the River, covering it to the very water's edge,

from Amherst to Moulmein—an estimated distance of about 24 miles—the river being considerably obstructed by shoals and sand-banks.

MOULMEIN, or rather Mōlà myāing, that being its name in Burmese, is situated in Latitude 16° 54' N, and Longitude 97° 42' E.

Like Amherst, and all new establishments formed in a country almost impenetrably covered with wood and thicket, Moulmein is confined to the mere bank of the Martaban River—at this point a noble, broad, and rapid stream—along the left bank of which, Moulmein runs, for a distance of fully 3 miles, in a continued, but, irregular street of native bamboo-huts It consists, of only one street, or road, upon each side of which, are crowded together the ingeniously constructed mat and Bamboo huts of the Inhabitants, raised upon wooden posts, 2 or 3 feet in height, to defend them from the wet ground during the S.W. Monsoon, as well as from the little stagnant pools of filthy water, which not unfrequently lie unmolested below the open Bamboo-floors of their rudely constructed habitations.

The population of Moulmein is estimated as high as 13,000 souls; and is composed principally of Talains, with a small number of Burmese, Monguls or Turks, Moorish Musselmen, Bengallees, Natives of Madras, and a still smaller number of Armenians and Persians. Not, however, to further extend these cursory statistical notices, it will no doubt be sufficient to add, in a Medical point of view—the only one, of course, to which, Medical Topography ought to be strictly and exclusively confined—that the native inhabitants are cleanly in their person, dress, houses, and habits, with the exception of taking no pains to remove the stagnant accumulations of water left under their cottages, and forming a source of Malaria, to which may, doubtlessly, be traced the Intermittent Fevers, under which the natives so frequently labour. This obvious evil ought, as far as practicable, to be remedied.

Intermittent Fever, it may be remarked, is the only Endemic Disease prevalent among these people. Variola is seldom heard of; Vaccination having been successfully introduced among the Inhabitants by Dr. Richardson.

The Martaban River—as the united streams of the Salween Gain, and Attaran, have been called—runs S. E. until passing the foot of the low wooded range of Hills already mentioned, with which, at a distance of 5 or 600 yards, it flows in nearly a parallel direction, it now becomes wider and sweeping in a semi-circle, S. E. by S., it opens into a bold and picturesque expanse of water, in which unite the three large Rivers already mentioned. Into this Lake, as it may be termed, the magnificient river Salween descends from the N. E. and by N.; the Gain from the E. and by N; and the Attaran from the S. E. and by E. The first of these Rivers is a noble stream, and of long and mysterious course; for, it is believed to flow across the confines of China, from the Province of Yunan, where it is said to bear the name of Loo-Keaung. The breadth of the Martaban River from Moulmein to the opposite bank, which is formed by the Island of Batu, is from a mile and a half to two miles; which is likewise nearly the breadth of the River between Moulmein and Martaban. The course of this River is interrupted by numerous sand-banks, and picturesque wooded Islets. At Moulmein, it leaves, at low water, a deposit of thick slimy mud, averaging 30 or 40 yards in breadth, and, in some places, three feet or more in depth, from which, in all probability, the suns rays produce a noxious exhalation. At present, this settlement is in its infant state; but, hereafter—should the Government retain possession of it—the health of the Inhabitants might be consulted, and both agricultural and horticultural improvements promoted, by this mud being removed.

The left bank of the Martaban River seldom rises higher than 20 feet, and, as formerly noticed, except where occupied by houses, is covered with luxuriant Jungle and Arundinaceous vegetation, to the water's edge.

With regard to the general appearance and state of the adjacent country, its Geological character, and Mineralogical products, its Botany, Zoology, and Climate, a variety of formidable circumstances combine, in the present savage state of this part of India beyond the Ganges, to prevent any scientific enquirer,—whatever may be his zeal, activity, and perseverance, or however hardy his frame and constitution, or ample his leis-

ure—from collecting more than very scanty information upon many of these interesting objects of Medical Topography.

Under these circumstances, I am reluctantly obliged to content myself with the following brief remarks.

Geology and Mineralogy.—The low hilly range, at the foot of which this Military Cantonment is situated, is chiefly composed of Primitive Limestone, which, for the most part, is yellowish white and fine-grained; and contains small embedded veins of Opaque Quartz Clayslate, and Pipeclay, associated with a soft-tinted sand-stone, hitherto discovered only in small quantities, but, which, if found to exist more abundantly, might prove extensively useful for building.

The nearest hill, seen from this rocky eminence, is about 4 or 5 miles distant. Several hills, with a bold indented out-line, rise abruptly from the great alluvial plain, which, from this comparatively elevated point, is seen extending from N. E. to S. E. and is watered by the three Rivers already mentioned. These hills chiefly consist of grey limestone, in some of which exist spacious and extensive caverns, made use of by the Natives as places of Religious worship, and containing magnificient specimens of the Stalactite and Stalagmite. Beyond these, and at a distance of about thirty miles, runs a range of high rocky Hills, which present the same rugged outline, and, like the former, are composed of Limestone. The highest of this chain—the Zogabein Hills—is computed, at 2,600 feet. Fully 50 miles beyond this first back-ground—as a painter would term it—towers the lofty chain of Mountains, which, hiding their summits in the clouds, and sweeping round the whole horizon, from N. E. to S. E. in one magnificent amphitheatre, from the hitherto unexplored boundary of Northern Laos, and of the Kingdom of Siam.

In the last place, nearly due north, at the mouth of the Salween, and immediately behind the long straggling and ruined town of Martaban, is seen terminating a succession of high, jungle-covered Hills—the last of the Zingat range. Here, the land trends away to the N. by W. and is washed by another branch of the Martaban Lake, which, at a distance of about 12 miles, falls into the Gulf of Martaban.

Soil in the immediate vicinity of Moulmein is principally composed of sand and pipeclay. Hence, light rains are speedily absorbed, and the ground and roads soon become dry. At the same time, also, this description of soil, by its absorbent property, must naturally assist in rendering the air less moist during the monsoon, than it might otherwise be, from the vicinity of so large a body of water, and, consequently, may be supposed to tend, in no inconsiderable degree, to render this country of jungle, marsh, and water, less unhealthy than, probably, it would be with a differently constituted soil.

Botany.—In the Vegetable Kingdom, this part of India, presents a wide field for the researches of the Botanist. Fortunately, the Scientific world will now have an opportunity of appreciating the laborious exertions, that have been made by Dr. Roxburgh and Dr. Wallich, in this part of Birmah, to extend our knowledge of this division of medical science. What vast resources may at some future day, be afforded to Medicine by the unknown trees and plants of this wild Region, time, patient investigation, and accumulated experience, can alone determine.

Not to unnecessarily occupy time by a mere enumeration of what, at present, is not known to be of any utility in Medicine, I may be permitted to concisely remark, that the Acacia Catechu, Cardamomum, Zingiber, and Pterocarpus Draco grow in the neighbouring woods; and that, as every body knows several varieties of the Orange and Citron, the Mango, Jack-fruit, Pine-apple, Papau, Pumpkin, water and musk-Mellon, Banana, and Cucumber, are produced here in great abundance. From these fruits, assistance may obviously be here derived in the treatment of disease.

Zoology is still more remotely and contingently associated with Medicine. In fact, they are no farther connected together, than in respect of the Epizootes, or Distempers of the lower, especially the domestic animals, which in some cases, and in certain degrees, may, possibly, influence the health of man, either directly by contact, or indirectly through the medium of their flesh as food, or as a dietetic agent in the management of disease.

In class I.—*Mammalia*—no new individual, not common to the rest of India, appears to have been hitherto discovered here.

Class 2.—*Aves*—however presents several new, or, at all events, little known, varieties. The Vultur fulvus is here numerous, and useful in removing putrid animal matter; as well as members of the Genus Falco, especially the Falco Milvus. Of the Genus Corvus, some varieties with singular notes, are met with. The Corvus Stolleri, so much prized for its beautiful colours, is a common variety. The Strix Cops is also met with, as well as the Ploceus Philippinus, Upupa Epops, Columba Lacernilata, Gallus Sonnertii, &c. &c.

The *Reptilia* are very numerous, especially the Order Ophidia, of the various species of which, a fine collection might be formed, were the lower classes of Burmese in this place less apathetic, and more anxious to exchange their labour for a little money.

Pisces—of this great class likewise, so many species are met with in these Rivers, that the mere enumeration of them would extend this Report beyond endurable limits. It may, therefore, be sufficient to state, that our markets are in general abundantly supplied with wholesome, and, in some cases, delicate fish, e. g. the Mango-fish, Mullet, &c.

Climate.—Lastly, with regard to the Climate of this part of the Tenasserim Provinces, its prevailing character is well known to be the remarkable length and severity of the wet, or S.W. monsoon. The rains this year commenced in April, and ended in October; during which time, it rained, more or less, upon 126 days; and there fell above 15 feet perpendicular depth of water;—having been accompanied, generally speaking, by a steady light breeze from the S. W. The complete setting in of the rains, which did not take place till May, was attended with loud thunder and vivid lightning. From about the middle of October till the middle of April, the dry monsoon still prevails, with the wind from the N. E. During the last wet monsoon, the Thermometer ranged from 73° to 96° in the shade—but, the average maximum temperature was 82°. From 72° to 87° is the general heat during the remainder of the year, altho', in February, it has sunk as low as 65° at sunrise, and 72° at the hottest part of the day.

The Barracks, and other buildings occupied by the Troops, are situated within the extensive area of an ancient fortified position, immediately on the other side of, and overlooking, the native village. Round three sides of this area—nearly a Parallelogram—runs a vast breast work, or bund, constructed of earth and stones—a surprizing monument of the labour of former ages. A small wooded and rocky hill, of about 2 miles in length, upon which the two short extremities of the bund rest, forms the remaining side of this Military ground, the extreme circuit of which, is nearly two miles—a well formed road, by which it is encompassed, within the bund, measuring one mile, 5 furlongs.

By dint of vast labour, this enclosed space has been completely cleared of jungle—a few trees having been spared, for shade and ornament—thus leaving a Park like elevated field, of considerable superficial extent, for Parade and other military exercises.

The Hospital appropriated at present, for His Majesty's 41st Regiment, like all the other Public buildings in Moulmein is a mere temporary wooden structure. It consists of three large detached Teak-wood and thatch rooms, together with a smaller one of the same materials and construction—the former being intended for the male, and the latter for the female, patients.

The following are the dimensions of the buildings. Each of the three large Wards measures in length 100 feet, in height 22, and in breadth 18. To ward No. 3, is attached a small room, with Iron-barred windows, for insane patients. The ward for Women and Children is 30 feet long, and 18 feet in breadth and height. The space within which the Hospital is erected, is surrounded by a teak-wood palisade 8 feet in height and 1,200 feet in circumference.

This Hospital can accommodate 100 patients, without crowding them; and, considering the numerous disadvantages under which it must have been originally erected, is really very well adapted to the purpose for which it was intended. Of course, were it decided that the Provinces should be permanently occupied, many improvements might be made in these buildings, as well as in their site. New floors; more spacious varandahs to enable the convalescents to take exercise in the shade; an immediate connection between the present detached wards, so as to admit of the requisite communication during the rains; better protection, in their mode of construction, against both monsoons; a quieter and a healthier situation, for, at present, the hospital is bounded on two of its sides by publicly frequented roads, and is placed too near the jungle and neighbouring marshy plain.

I have already remarked that, during our journey and voyage from Trichinopoly to Moulmein, we had 17 fatal cases; and that, our total number of deaths during the year having been 42, we must, consequently, have lost 25 since our arrival on this coast—or, somewhat more than an average proportion of 2½ per month.

Of these 42 deaths, 10 sank under Febris Communis Continua, 2 died of Pneumonia, 5 of Hepatitis, 15 of Dysentery, 1 of Apoplexia Sanguinea, and 9 of Cholera Spasmodica.

Subjoined, I have given a tabular view of the more remarkable morbid structural changes, which were discovered on dissection.

MORBID APPEARANCES DISCOVERED ON DISSECTION.

Names.	Disease at the time of death.	In the head.	Thorax.	Abdomen.
Solomon Cox	Feb. Cont. Com	Nothing remarkable	Lungs arborescent and congested	Abscess in the Liver; Spleen soft; and colon ulcerated
Samuel Metton	do.	Vascularity Tunges & Serum	Nothing remarkable	Liver indurated; Spleen pulpy
Thomas Davies	do.	Nothing remarkable	Extensive adhesions	Liver enlarged, and containing a collection of Pus
George Palmer	do.	Turgescence and Serum		Spleen enlarged, and spongy
Bernard Mulhollan	do.	Vascularity		Liver pale, and spleen soft
James Lough	do.	Heart small; Lungs ad.		Liver large, and exhibiting cicatrices
		Increased Vascularity		
Abraham Fyson	do.	3 ij of Water	hering	Spleen large, and pulpy
			Lungs adhering, Heart	
John Sheppard	Dysenteria.	Nothing remarkable	sous and flabby	Liver enlarged and discolored; Colon ex
				tensively ulcerated; & Mesenteric glands
				enlarged
John Ball	do.	Nothing		Colon extensively ulcerated
James Keough	do.			Abscess in the Liver; Colon ulcerated
Patrick Hand	Pneumonia	Nothing	Left auricle of the Heart	Liver discolored, and spleen pulpy
			contained coagulated	
			blood, Lungs dark co	
			lored	
Joseph Jackson	Hepatitis Ac.	No apparent cause of death		A large quantity of bloody fluid in the ab
		discoverable		dominal cavity
John Shields	Hepatitis Ch.	Nothing	Adhesions with the Pleu	Colon contracted and ulcerated; Cicatrix in
James Hamilton	Apoplexia.	Great vascularity & collection of blood at the base of the brain	ra Costalis	Liver. A quantity of bloody fetid fluid in the Abdominal cavity

Febris Intermittens.—During the last 12 months, 34 cases of this description of Fever have been treated in Regimental Hospital; that is to say, 5 cases of Tertian, and 29 of Febris Int. Quot. The 5 former were unmixed examples of Var. I. Interpositis Apyrexia, Paroxysmis haud ultra duodecim horis extensis. The latter, altho' strictly belonging to Var. I, did not, in every case, observe such periodical regularity in the time of its accession—eâdem horâ matutinâ rediens—as to exactly correspond to the definition left us of it by our great Nosological authority. The fact, however, is that both the ordinary march and durations of the symptoms of Intermittent fever of early type, are materially influenced by the presence or absence of morbid organic lesion, more especially of the liver—and yet, in those of His M.'s Regiments which have served some years in India, how very few of the Soldiers there are, who are altogether free from visceral obstruction! In these unfortunate complications—more especially with Hepatitis—the disease invariably proved highly intractable in resisting the ordinary method of cure.

In the treatment of Febris Intermittens, I have had repeated recourse to venesection during the last year—the effect of which will be accurately observed, as far as it goes, in the following table.

Rank and Names.	Type of Fever.	Date of attack.	Quantity of blood abstracted.	Duration of the hot and sweating stages.					
				Before Venesection.		Of the 1st Remission after Venesection.		Of the 1st Remission after Venesection.	
				H	M	H	M	H	M
Private John Owen	Intermittent	28th July 1832	18 oz.	1	30	1	0	0	0
John Lambert	do.	3d Aug. "	18 "	2	0	elected.			
" Christopher Brennan	do.	9th Sept. "	18 "	2	15	1	45	3	30
" Christopher Brennan	do.	19th Sept. "	18 "	1	30	0	30	None	
" Edward Wheeler	do.	2d Oct. "	13 "	0	10	0	10	0	0
" Edward Wheeler	do.	2d " "	18 "	1	0	0	10	0	0
" James O'Brien	do.	2d " "	18 "	1	30	1	0	0	0
" James O'Brien	do.	3d " "	18 "	1	0	0	45	2	30
" James O'Brien	do.	8th " "	18 "	1	30	1	0	3	30
" Joseph Eagle	do.	29th Nov. "	24 "	0	30	0	15	0	0
								0	17

It is important to remark, that, altho' in some instances, Venesection was repeatedly performed immediately upon the invasion of the rigor, yet, in no case did this mode of treatment produce any other effect, than a mere temporary diminution of the disease; the ordinary remedies being afterwards requisite to effect a cure of the complaint.

It will hence appear, that, at all events in as far as regards the men at present composing H. M.'s 41st Regiment, this vaunted remedy has in reality been followed by no permanent benefit whatever in the treatment of Intermittent fever. In some instances, it is true, the rigor was of a shorter duration immediately after the Venesection, than it had previously been; but, on the other hand, it seldom happened that either the intensity or duration, of the subsequent hot and sweating stages, was in any manner influenced by that practice.

I also regret being unable to give my testimony in favor of the Sulphate of Quinine, as being superior to the Cinchona in the cure of this type of fever. Of its value, there can be no question, in those cases in which irritability of the stomach prevents the free exhibition of the Bark itself in substance.

The treatment which I found most successful in the cure of Intermittent fever, is the old established practice of repeated emetics upon the accession of the cold stage, followed by nauseating doses of Antimonials and other Sudorifics, during the hot and sweating stages; and succeeded by the Cinchona pulv. in considerable doses, to prevent the return of the paroxysm.

Where either the Liver, or spleen was effected, I found marked advantage from superadding to the above mode of treatment a gentle course of Pil. Hydrarg., assisted by large Blisters. Under this mode of practice, every patient, during the last year, has recovered.

The same observations may be applied to the analogous disease, Febris Remittens, all the cases of which, with slight modifications in the method of cure, were successfully treated in a similar manner;—for, altho' not ushered in by a regular cold stage, and altho' classed as a distinct Febrile disease, it is a mere variety of Intermittent fever.

Febris Continua Communis, sive Synochus.—Of this, the usual form of Continued fever met with among British Soldiers, 215

cases have been under hospital treatment during the last year, of which number, 10 have died—one of these patients, having sunk under this description of Fever, altho' marked in the Report as stricture of the Urethra, *that* having been his original disease.

Having before, explained the habits of intoxication with Ardent Spirits, to which the soldiers of His Majesty's 41st Regiment so recklessly abandon themselves, it will, I presume, excite no surprize, that among such subjects, in whom organic structural derangement is so frequent, Continued fever should prove more fatal, than it would otherwise do in men of a different habit of body, and in whom, the disease was the effect of a different exciting cause. For, in the majority of cases during the past year, intoxication was either the exciting, or the predisponent cause of this complaint; because, where it did not actually and directly occasion the disease, it gave rise to so much debility of the Nervous, and, consequently, of the Muscular and Vascular systems—those inseparable structures in the animal economy—that the application of cold to the body, either singly, or accompanied with moisture, was almost inevitably followed by this type of fever. For the same reason, it will be equally manifest, that, in soldiers of this description, pure and unmixed cases of Febris Cont. Com. must be extremely rare.

Accordingly, the mode of practice I adopted, was necessarily modified by the nature of the morbid complication —where any such co-existed with the idiopathic affection. Venesection was rarely beneficial. In some instances, it even appeared to hasten the Adynamic symptoms, and thus protracted and aggravated the disease. The most beneficial mode of treatment, I uniformly found to be, the immediate and repeated exhibition of active Cathartics, and Emetics, assisted by nauseating and relaxing Sudorifics, until the pulse was reduced to its natural standard;—or, on the other hand, until the diminution of vascular action and heat, the disturbed condition of the cerebral functions, and the general sinking of the *Vis Vitæ*, indicated the appearance of the Typhoid or Adynamic condition—Blisters, in conjunction with Opium, Ammonia, Ether, Camphor, Wine and other diffused stimuli, in such moderate and pro-

gressively regulated portions as to fulfil the paramount indications of *rousing* and *supporting*, but, not *exhausting*, the powers of life, until the system resume its healthy functional movements —has been the method of practice, to which I have had recourse, during the last year with the happiest effects, except in those desperate cases, which speedily became hopeless, either from the development of visceral disease, or in consequence of the patient being a debilitated and worn-out drunkard.

To obviate a protracted convalescence, I made a point of prescribing different preparations of Cinchona, and of such Bitters as are here placed within my reach, variously combined with Alkalies, Laxatives, and Iron, in such a manner as appeared, in my judgment, to be best suited to the peculiar nature of each individual case. Diet, and, when this wet climate permitted, exercise in the open air, were objects of primary consideration.

Hepatitis.—Of this frequent, and intractable disease of Soldiers serving in Intertropical countries, 56 cases have been under Hospital treatment during the last year;—that is to say, 49 acute, and 7 Chronic, cases. Five out of this number have died.

Among the symptoms laid down by Cullen as essentially characterizing Hepatitis, are Dyspnœa and dry cough. I would beg however, to remark, that I have seldom met with either the one or the other of these alleged Diagnostic symptoms. It has been confidently pretended by Medical Writers, that Dyspnœa and dry cough invariably attend, and mark the existence of inflammation of the convex surface of the Liver; my own post-mortem observations, nevertheless, do not warrant such an assumption as an unexceptionable rule.

In respect to the remote cause of Hepatitis among soldiers serving in hot climates, it seems to me by no means an easy matter to explain, why the Liver should so frequently become the seat of active inflammation, unless we imagine,—that the abuse of ardent spirits, by destroying the irritability of the vascular system of that important Viscus, induces Hepatic obstruction, and thus lays the foundation for the subsequent development of inflammation in that Organ. At all events, one thing appears sufficiently manifest, that the general circulation in Europeans being more languid in tropical regions, than it is in their own native temperate countries, the local circulation of so peculiarly organized a viscus as the Liver must be proportionably languid, and, consequently, liable to irregular movement and congestion, more particularly from the intimate connection, which subsists between that mysterious organ and the stomach and alimentary canal, and between these again, and the skin, the functions of which, from the constant and, to them, unnatural, state of profuse sweat, are generally in a state which borders upon morbid derangement. But, disturbance in the important function of cuticular exhalation, can scarcely fail of secondarily implicating with it the functions of the stomach, the Bowels and the Liver.

In the cases of Hepatitis Acuta admitted into hospital last year, I have found the utmost benefit from copious and repeated detraction of blood, both general and local, particularly the latter. Two pounds of blood drawn from the arm, followed by the application of 50 Leeches to the right Hypochondrium; hot fomentations every two hours; a drastic and saline Cathartic, combined with Antim. Tartar. g. ij. and nauseating and sedative doses of Pulv. Antimo., Ipecac., Opium, and Submur. Hydr. succeeded, if necessary, by the re-application of the leeches during several successive days—where the system can bear so active a mode of practice—have, for the most part, speedily cut short the disease.

Every practical physician knows what a very difficult matter it commonly proves to be, to remove Chronic Hepatitis. Indeed, in the greater number of cases, the return of the Liver to its healthy condition is so gradual—if, indeed, a complete return really ever do take place—that it may, in the majority of instances, be reasonably doubted, whether it be the effect of medicine, or of the unassisted powers of the constitution, which have palliated, or seemed for a time, to remove, the disease. At all events, it is familiarly known to every medical practitioner in India, that, in the management of Hepatitis Chronicu, blistering the Hypochondrium, and mercurializing the system—in whatever manner we may attempt to explain the Ratio medendi of the latter—are the only remedial agents, in the present state of our knowledge, from any distinct or uniform advantage is to be expected. Hot fomentations usually appear to afford temporary

relief; and I have fancied that a course of a Bitter Infusion combined with varied saline laxatives—so as to excite, and keep up artificial diarrhœa—has seemed to assist the cure—perhaps by increasing the action of the Absorbents.

In one case, the inflammation terminated, on two successive occasions, in Abscess, the dark, grumous, morbid-fluid—appearing as if it were the Liver itself in a state of solution—finding an outlet, in the first attack, by the bowels, and, in the second, by the mouth. Notwithstanding the strictest attention to supporting the patients strength, by the Cinchona and other Tonics, assisted by proper diet, he ultimately sank. No communication with either the intestines, stomach, or liver, could be detected on dissection to explain in what manner the diseased fluid had become successively thrown off by these outlets.

Rheumatism.—21 cases of this disease have been admitted during the last year; and only one was of the chronic species; the disease seemed to be occasioned by exposure to the heavy dews of the night and early morning, during the dry months, and to the heavy rains, during the long wet monsoon of this miserably wet climate.

Venesection was rarely necessary in this disease, as it generally gave way, in a short time, to the persevering use of Sudorifics.

Dysenteria—This fatal and unmanageable disease of every Army serving in Tropical countries, has occurred among the men in the Regiment in 295 cases during the last twelve months. I must not omit to add, that, in the majority of instances, the disease having been the effect of hard drinking, its symptoms and progress were graver and more rapid, and the difficulty of arresting the march of the complaint far greater, than if it had occurred in otherwise healthy subjects, and had been occasioned by any of the ordinary causes of this intractable malady.

In mild cases, accompanied with merely the usual frequency and appearance of the dejections, together with a moderate degree of griping and straining, the Pulv. Doveri in small and frequently repeated doses, assisted by hot fomentations, and abdominal compression, by means of a broad flannel binder, and equally sustained external warmth, usually proved sufficient to remove the disease.

But, there are two other morbid conditions, under which this disease is frequently met with, and in which this mode of practice proved utterly unavailing. These are, 1st—where the Liver had either been formerly affected, or was labouring under an obscure degree of inflammation at the time; and, 2ndly—where besides the characteristic pyrexia,—"*atque Dejectiones frequentes, mucosæ vel sanguineæ*"—the evacuations were almost incessant, and consisted of nothing but slime and blood; and the tormina and tenesmus were intolerably distressing.

If pain in any part of the bowels be occasioned by moderate pressure with the hand, it may with certainty be concluded, that inflammation, if not ulceration itself, has commenced in the large intestines. This, then, is the Diagnostic, the true Pathognomic symptom of Dysentery, whether of the acute, or chronic species. Hence the correct application, in a general sense, of the modern name Colonitis, which it has received.

In such cases from 18 to 24 oz. of blood—according to the age of the patient, and other modifying circumstances—must be immediately taken from the arm; and from 40 to 50 leeches applied to the seat of pain—hot fomentations to the part, repeated every 2 or 3 hours; an anodyne Enema, containing Tinct. Opii ℥ss, with thick congee-water ℥iv. carefully injected three times a day; and the following powder every two hours, viz. R Pulv. Doveri gr. iv., Cretæ ppt. gr.x., Pulv. Extr.Catechu g. vi., Acet. Plumbi gr. ij. M.

Should the intestinal pain be still re-excited by pressure after an interval of 10 or 12 hours, the same number of leeches, may be re-applied twice a day during the two first days, or daily 4 or 5 days in succession. The necessity, however for this extreme depletion, has rarely occurred during the past year: the pain in the alimentary canal, however acute at first, having been very seldom excitable after the first, or, at most, the second application of the leeches.

If not complicated with either Hepatic, or Splenic, disease, Dysenfery, in its worst and most urgent form, has hitherto, in my hands—since the period which will be mentioned—never failed to yield to the above auxiliary treatment, in the course of a few days after the pain in the intestines was remov-

ed by the leeches and other remedial means above stated. The tenesmus and tormina now almost immediately subside, and the dejections become less frequent, and less mixed with blood and mucous, as soon as the stools resume their feculent appearance, although they may still continue to be watery; the Opium, &c. is gradually withdrawn, and tone is restored to the stomach and bowels by Bitters and other Tonics, conjoined with a more nutritious diet.

As a convincing proof of the success which has attended this method of practice, I have the gratification of stating that, out of the 223 cases of Dysentery treated in my hospital between the months of June and December last, inclusive, only 3 have proved fatal—and even in these three fatal cases, dissection distinctly shewed, that they had been complicated with extensive structural disease of the liver.

During the last year, cases have repeatedly occurred in which Dysentery was superadded to chronic hepatitis. Accordingly, well aware of the description of men of which this Regiment is largely made up, I now invariably first enquire of every dysenteric patient, upon his being reported sick, whether he either labours at present under symptoms of hepatic disease, or has formerly done so; and, secondly, I carefully ascertain if pressure occasion pain in any accessible part of the liver. If this viscus, be either affected at the moment, or have been recently so, I immediately put him under the treatment already explained, with the addition of Calomel in ℈i doses, night and morning, until the mouth became affected.

It is needless for me to remark how unmanagable a complaint Chronic Dysentery is in any climate, especially in a Tropical one. A combination of the Anodyne absorbent powder above described, with the Acet. Plumbi and Pil. Hydrarg. have seemed, in my last year's practice, to be attended with more benefit, than any mode of treatment hitherto adopted. Not only have numerous leeches been applied round the anus, gr. iv. of solid opium introduced within the rectum night and morning, and a combination of Sulph. Ferri, Ipecacuan, and Extr. Hyoscyamus, and Extr. Gehlian exhibited, but, occasionally *Sulph. Zinci. in doses of gr. v., Sulph. Cupri gr. ij, and Acet. Plumbi* ℈j

have been successively prescribed. Blisters have been repeatedly applied, and kept open, over the colon, and upon the whole abdominal region.

Cholera.—With this formidable disease, 17 patients have been attacked in this Regiment during the last 12 months; and out of this number, 9 have died.

In the curative management, of cholera spasmodica, I have considered it the safest plan to merely symptomitize, until we arrive at a more correct knowledge of its causes and nature. Accordingly, for the vomiting and purging, the painful cramps, the diminished action of the heart and arteries, and consequent collapse, apparent coldness, and sinking of the living powers, I have prescribed Opium, in large and repeated doses, until it appeared to be no longer required; internal diffusible stimuli; and stimulant frictions and warmth. 9 cases, out of the 17, terminated fatally.

With regard to the great medical question, whether this Disease be of a contagious nature, I can only state, that it did not appear to be so in this regiment at the period alluded to; but, nevertheless, from observing what takes place in Febris Synochus, I see no reason why cholera spasmodica may not, under certain circumstances, likewise become contagious.

Syphilis and Gonorrhœa—Among the 96 cases of this disease, admitted into hospital within the past 12 months, little occurred deserving of particular notice.

In Gonorrhœa, during the irritative stage, I have met with the most satisfactory results, from introducing, and keeping up, in the system an artificial counter-irritation, by means of large doses of Pulvis Capsici (gr. vj. ter die), assisted by a combination of Pulv. Jalap., Terebinth: Venet., and Bals. Cobaibæ ℥i or ℥ss ter indie. By this mode of treatment, the inflammatory irritation of the urethra was, for the most part, removed in a few days; a weak astringent injection afterwards completing the cure without the sequel of swelled testicle, stricture, or gleet.

With regard to Syphilis, considering it to be the safest error of the two—if such it really be—I have uniformly, and with the best possible effects, prescribed a slight course of Mercury in every instance of suspicious looking sore upon the genital organs. After some little experience, in the various forms of this dis-

ease, I can truly say that, under this mode of treatment, I have never, in one single instance—among my own patients—either in the Army, or in private practice, met with the occurrence of secondary symptoms. Yet, even during the last year, three cases of this description—formerly treated by others, upon the non-mercurial system—were admitted into my hospital, and proved extremely troublesome and tedious,

During the last year, 36 men were brought into hospital in consequence of having received *corporal punishment.*

Delirium Tremens—17 cases of this disease have been treated in hospital since last Annual Return, without my having lost a single man. My method of practice has been, to remove the cerebral excitement, which, I presume, exists in a greater or less. er degree in every instance of this formidable disease. In some of these 17 cases, the mania was highly intractable. Local abstraction of blood, active purgation, and large sized-blisters, often repeated, have been the remedies, to which I have most commonly resorted. Sometimes, though very rarely, where the cold clammy skin, collapsing features, and small feeble pulse, denoted the rapid sinking of the vital powers, I have at once commenceed the treatment with Ammonia, Opium, Camphor, Æther, and other diffusible stimuli, having afterwards had recourse to local depletion, if necessary, when vascular re-action took place.

Diseases of the Skin.—Among the six cases of these diseases under hospital treatment within the last year, none deserve notice except one case of Roseola—which readily yielded to cooling lotions, aperients, and subacid drinks;—and 5 relapses of Psoriasis Gyrata, which occurred in two individuals, who ultimately recovered by the persevering application of a strong aqueous solution of Sulph. Zinci.

Morbi Oculorum.—The 17 cases under this head were, with one exception, all of them merely examples of Ophthalmia Membranarum, in some of which, however, granular eyelids occasioned vast delay in the cure of the disease.—Brisk cathartics, leeches, blisters, cold poultices, (prepared with solutio Acet. Plumbi) the Sulph. Cupri, and even the Nitras Argenti, applied in substance to the granulations, together with a strong solution of Nitras Agenti dropped between the palpebræ twice or thrice

a day, have invariably restored the eye to its healthy condition, except in the unmanageable case which was sent before an invaliding committee. One man has had his left eye completely destroyed by a kick from one of his drunken comrades!

Wounds, Fractures &c.—Of the 171 cases of this description it is gratifying to state, that every patient has been discharged, again capable of performing his duty, except one poor fellow, whose left femur, including the condyles, was rendered a comminuted fracture, by the fall of a huge tree upon his knee. Altho' for some time a desparate case, I have, fortunately, been able to save his limb and hope eventually to send him back to his duty, with sufficient flexion and extension of the knee-joint for the purposes of the Service.

Diseases of Women.—In the last place, with regard to the diseases of women during the past year, I have to remark that, like their husbands, only for the most part, in a milder form—as commonly occurs in the laxer fibre, less irritable habit, and healthier constitution of females—they have been confined to a few cases Febris Intermittens and Continua, Dysenteria acuta et chronica, and Hepatitis.

Diseases of Infants and Children—besides the ordinary Febrile and Bowel Complaints, and affections of the skin, eyes, and ears, symptomatic of Dentition—all of which were speedily removed by the ordinary mode of treatment—one instance occurred of that singular disease the Infantile Remittent fever, but, as usual, it yielded at last, to brisk purgatives, alternated with the liberal use of the sulph. quinine.

(Thinking it would be interesting to our readers to compare the admissions in the Regiment in a Tabular form during the Years under Report, we have made an abstract of the Annual Return of Sick and Wounded for each year, preserving the form, and using the nomenclature of Dr. Hamilton in all important diseases. We have classed all Venereal complaints including Syphilis Primitiva, Ulcus Penis, Bubo and Gonorrhœa under one head; under the head of External injuries are included Luxatio, Subluxatio, Vulnus Sclopitorum, Vulnus Incisum, Contusio, Ambustio, Fractura and Punitio, and some few other trivial diseases.

We were compelled to adopt this plan to bring it within the compass of our paper.—EDITORS.*)*

ABSTRACT OF THE ANNUAL RETURN OF SICK AND WOUNDED OF H. M. 41st REGIMENT FROM 1st JANY. TO 31st DECR. 1832.

Stations occupied by Regiment in the year 1832. Sketching from Trichinopoly to Madras; Peramambuco; Tranquebar coast.	Fever Quot. Inter.	" Remittent.	" Continued Com.	" Synochus.	Typhus.	Phlegmon et Abscess.	Erysipelas.	Cynanche Tonsil.	Pneumonia.	Pleurisy.	Gastritis.	Hepatitis Acut.	" Chronic.	Splenitis.	Odynia.	Rheumatism Acute.	" Chronic.	Hæmoptoe.	Catarrhus Acut.	Dysenteria Acut.	" Chronic.	Apoplexia.	Paralysis.	Hydrocele.	Colica.	Cholera.	Enteritis.	Diabetes.	Insania.	Scrotalis.	Syphilis.	Struma Lurtatur.	Lues.	Obstipatio.	Cephalalgia.	Delirium Tremens.	Morbi Cutis.	External injury &c.	Total.
Remained 31st Dec. 1831.	0	1	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7	1	3	0	1	0	0	0	1	39
Admitd. during the above period.	29	4	9	10	5	1	1	1	30	3	9	3	6	48	11	7	4	21	4	3	36	3	1	2	1	6	17	28	1	5	0	144	1	29	3	9	14	6	66	1,108
Total Treated.	29	5	11	11	5	2	1	1	30	3	9	3	6	50	11	7	4	21	4	3	36	3	1	2	1	6	17	28	1	5	7	145	4	29	3	10	14	6	67	1,147
Discharged during the above period.	28	5	9	10	5	2	1	1	30	3	9	3	6	45	11	7	4	21	4	3	36	3	1	2	1	6	17	28	1	5	7	142	4	29	3	10	14	6	64	1,133
Died do. do.	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	4
Remaining 31st Dec. 1832.	1	0	2	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	13
Proportion of Deaths to the Number treated.	0	0	0	1 in 11	0	0	0	0	0	0	0	0	0	1 in 50	0	0	0	0	0	0	0	0	0	0	0	0	1 in 17	0	0	0	0	1 in 145	0	0	0	0	0	0	0	1 in 287
Diseases of Men invalided from the service in the same period, or invalided from foreign stations on acct. of diseases.	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	4

(Signed) ALEX. HAMILTON M. D.
Surgeon H. M. 41st Regiment.

Report 2*nd.*—From the 1st of January to the 31st of December 1833.—By SURGEON HAMILTON, M. D.

STRENGTH 747.

Remained 31st December 1832	44	
Admitted since	649	
Total treated	693	
Discharged	647	
Died	19	
Remaining	27	
Proportion of deaths to diseases	1 in	$36\frac{6}{19}$
Daily average proportion of sick to well	1 in	30

During the past year, 693 cases of disease have received Medical treatment in the hospital of H. M.'s 41st Regiment—44 having remained on the 31st of December 1832—649 having been admitted, and 647 discharged. 19 deaths have taken place within the last twelve months; which is merely, however, about 3 fatal cases in two months; or, a proportion of 1 in $36\frac{6}{19}$ of the total number treated (693). 27 still remain in hospital; little more than one half the number that remained in the sick report at the close of 1832.

Among the 649 admissions during the year 1833, 176 were cases of Fever; 19 were intermittent, 5 remittent, and 145 common continued Fevers.

During the first Quarter, or the dry and comparatively cold months of January, February, and March, the proportion in which these several genera of Fevers were admitted, was, intermittent 6 cases, remittent 2, and common continued 30. In the next Quarter, April, May, and June, during the greatest heat, and the first fall of the Monsoon Rains, we had only 2 fresh cases of intermittent, and 2 of remittent, but 38 of common continued fever. During the height of the Wet Monsoon, or the 3d Quarter, viz. July, August, and September, 3 cases of intermittent, 1 of remittent, and 32 of common continued fevers were admitted. Lastly, within the closing quarter of 1833, the dry, or nearly dry, months of October, November, and De-

cember, 8 intermittent, 2 remittent, and 36 common continued fevers received hospital treatment.

To present this in a clearer light, a tabular form is given.

Diseases.	First Quarter.	Second Quarter.	Thd. Quarter.	4th Quarter.
	Jany. Feby. and March.	April May and June.	July Augst. & September.	Oct. Nov. & December.
	Dry & cold	Great Heat, and first rain.	Height of wet Monsoon.	Dry and cool.
Febris Intermittens	6	2	3	8
„ Remittens..	2	2	1	2
„ Cont. com..	39	38	32	36

It will be thus observed, that the greatest number of Intermittent Fevers were admitted during the quarter immediately preceding the hot and commencement of the rainy monsoon, and in the quarter immediately following the rains; that is to say, in the former case, when the rains first began to act upon the dry and parched earth; and, in the second, when the wet ground was beginning to be dried by the sun.

Ophthalmia, of this morbid affection, only 11 cases were admitted during the year. One case previously remained in hospital; and 11 have been discharged cured. In no instance did the inflammatory action extend deeper than the tunica conjunctiva, which, however, was often extensively injected, and, in some cases, had suffered such infiltration as to raise it, in a tumid ring, high above the transparent cornea. In a few patients, the inflammatory condition was kept up by granular eyelids, which, in general, however, speedily yielded to the application of the Sulph. Cupri in substance. At the same time, where the inflammatory irritation and general state of the system required so active a plan of treatment, I directed venesection from the arm ad ij lbs.; 60 leeches to the temples, a large blister behind one, or both ears, and another at the back of the neck; the head kept constantly wet with the Acet. Plumbi; a brisk saline purgative, combined with tartar emetic to induce artificial diarrhœa, and keep up constant nausea; a strong aqueous solution of the Nitras Argenti being

applied to the eye, and, lastly, as a matter of course, spoon diet. Every case has eventually yielded to this vigorous treatment.

Cynanche Tonsillaris.—2 cases of this disease were admitted during the last year; one of which recovered under the ordinary management; the other died. In this latter case the patient had long and repeatedly laboured under Asthma, which again supervened, while his emaciation and debility rendered him least able to struggle against it. The ulceration of one tonsil had extended to the velum, through which it had eroded a large opening. Neither internal remedy, nor external applications could arrest the disease.

Pneumonia and Pleuritis.—7 cases have been admitted, and the whole number discharged to their duty, by merely adopting the ordinary method of cure.

Hepatitis.—Within the last 12 months, 14 fresh cases of this disease have been under hospital treatment, one having remained previously. 4 of this number died, and the remaining 11 have been discharged to their duty.

How much might doubtlessly be effected in diminishing the frequent occurrence of this, as well as other formidable, intractable, and fatal complaints among soldiers, if Prophylaxis, or the prevention of disease, was considered, as I conceive it ought to be, an object of equal, if not even greater importance, for the preservation of an efficient army, than the removal of disease after it has occurred.

Nephritis.—Two marked cases of this disease, have likewise been treated in hospital; and the disease was removed by general and local blood-letting, hot fomentations, and an open state of the bowels, assisted by sudorifics, composed of Opium, Antimonial powder, and Ipecac—the difficulty being to avoid exhibiting any medicine, which might act as a stimulant upon such sensative organs as the kidnies. Both patients had a perfect recovery.

Otitis.—Five cases of Otitis were treated in hospital during the year. One of them proved unusually intractable, long resisting the ordinary mode of treatment—general and local abstraction of blood, counterirritation by blisters, hot fomentations, poultices &c.—This man was however eventually dis-

charged to his duty, without his sense of hearing having sustained any injury.

Rheumatism.—18 cases of Rheumatism have been under my care within the same period. Both in its acute, and chronic form, it proved a most obstinate and unyielding complaint. In this disease I gave the Acet. Colchici a fair trial; but, as far as regards that preparation in this country, I found it utterly useless in even palliating the symptoms. In the chronic form of this complaint, I did not, of course, find abstraction of blood requisite. Blisters in these latter cases, sometimes appeared to be useful. Percussion, however, where the affected part admits of its energetic application, I found, singularly beneficial. In fact, where it admits of being employed, I might almost venture to say it is infallible. At the same time, it must be admitted that few individuals have the *iron-resolution* to endure the torture, to which the treatment subjects them.

Where the disease was complicated with a morbid condition of the Periosteum—the effect of some former severe, or ill-conducted, course of Mercury—the men were restored to health by putting them under a mild course of Mercury, and the Decoct. Sarzæ Comp. I should have likewise had recourse to the hot salt-water bath, had it been practicable.

Dysentery.—9 cases of Dysentery still remained in hospital on the 31st December 1832, and 76 fresh cases have been admitted during the last year—making a total of 85 cases treated within that period.—Of this number, 75 have been discharged cured, 6 have died, and 4 still remain in hospital.

In my treatment of this most formidable disease, I have not found it requisite to make any further change in the mode of practice, which, in former reports, I have repeatedly and minutely detailed, except that of applying leeches with still greater vigour to the seat of intestinal pain, than I have hitherto done. By this means, it appears to me that we have the best chance of subduing the inflammatory condition of the mucous coat of the colon and rectum, upon which alone the disease seems to depend. Many cases might, if necessary, be adduced in support of the great benefit to be derived from the powerful auxiliary mode of treatment in acute dysentery.

In the chronic form of the disease, abstraction of blood is not often productive of much advantage; and, in these long continued affections, almost every imaginable diversity and combination of Opiates, Absorbents, Astringents and Tonics, both vegetable and metallic, have been employed without appearing to produce the smallest beneficial change in the disease—tormina, tenesmus, frequent and scanty white slimy and frothy stools, usually streaked with blood, being the invariable report day after day, until, at last, one almost despairs of restoring the patient to health. In these obstinate cases, blisters are occasionally of service, if the discharge from the part be kept up, and the surface blistered be considerable. Their effect, however, is far from uniform. Mercury, gradually introduced into the system, so as to steadily and strongly affect the mouth, is, for the most part, a more beneficial method of treatment; altho', as I formerly noticed, this practice is chiefly successful where either the liver or spleen, has been previously affected. But, in no inconsiderable number of these chronic cases, Mercury proves injurious, by apparently, irritating the intestinal canal into increased morbid action. Upon what peculiar condition, either of the diseased parts, or of the general system, this irritating action depends, I am wholly ignorant. But, I shall not fail to direct my future observation to a matter of such curious and important inquiry.

Calomel, in scruple doses, associated with opium, is confidently believed by many practitioners, to possess a specific power of arresting the march of Dysentery, both in its acute, and chronic form. From this sweeping and empirical opinion, however, I must, for the present, dissent, for, extensive as my experience in this fatal disease has been—even in this country alone—I do not conceive myself warranted to adopt such a belief. Let the calomel be tried by itself, not preceded by venesection, nor assisted by solid opium, or any other remedial agent; let it not be continued till the mouth be effected, because that would be at once establishing a distinct action on the system; and, lastly, and above all, let the disease be positively and bonâfide a case of true dysentery—and one, likewise, in which, no previous medicines have been exhibited. If under these vigorous circumstances, calomel in large doses re-

move the disease, even in the majority of cases—all that any medicine can effect, whatever its properties may be—I shall freely acknowledge its specific power. In my hands, when exhibited in these large doses, it seems to be of service only when it begins to affect the mouth; and even then, it is attended with the eminent disadvantage, in the greater number of cases, of inducing sudden and distressing ptyalism, with enormous swelling of the face, ulceration of the gums, and inner surface of the cheeks; and, in the meantime, the soldier is long disabled from returning to his duty.

Out of 85 cases under my charge during the past year, only 6 have died, and, of these 6, only one single subject was found upon dissection to be free from some other visceral disorder. This gratifying success, I would respectfully submit, is an undeniable proof of the value of the practice. For, the loss of one unmixed case of dysentery out of 85, can scarcely be reckoned an exception, especially when it is considered, how readily life might have been extinguished by his having, by stealth, drank a large quantity of cold water—which actually occurred in one case last year. I may here remark, that I begin to question the utility of leeches to the perineum and anus, and accordingly, except in cases of unusually distressing tenesmus, I shall in future, confine their application to the seat of the intestinal pain.

Paralysis.—Three cases of Paralysis have been under hospital treatment within the year. One of these patients recovered; a second died; and the third is still in hospital. In the case that ended in death, the man had fallen from a height. No apparent injury could be discovered upon dissection. The case, in which a perfect recovery was established, was, one of great interest. Hemiplegia had succeeded to an attack of Apoplexy; but the complaint entirely disappeared under the vigorous employment of general and local abstraction of blood; blisters to the head, neck, and shoulders; and active purgation. One case, however, still remains in hospital—with loss of the power of voluntary motion of the wrist and fingers, the consequence of intoxication—which has hitherto resisted all these remedies.

Epilepsy.—3 fresh cases of Epilepsy have been admitted during the year. Of these, 2 have recovered—at least, sufficiently to do their duty; for, we possess no known or certain means of curing that unfortunate disease.—The third patient died. From the late hour in the afternoon at which he died, no dissection, however could be performed.

Nearly the same treatment as I adopted in the above mentioned cases of paralysis, was employed in these two successful or palliated, cases of epilepsy.

Diarrhœa.—Of the 25 cases of this disease—the treatment of which is too obvious to merit notice—one patient died. The cause of his death, however,—a diseased liver and spleen, and extensive ulcerations of the mucous membrane of the colon—had not been indicated by one single marked symptom!

To avoid spreading a dangerous alarm among the soldiers, I have included, under the head of Diarrhœa, 2 cases—admitted at the close of the year—of what would be by most men termed Cholera Indica (spasmodica); in the more marked case of the two the pulse was long imperceptible, the skin cold, profuse stools resembling congee-water, the urine retained, or nearly so; most painful spasms of the muscles of the extremities &c. Both soldiers perfectly and speedily recovered under the internal use of diffusible stimuli, with which opium and capsicum were joined, stimulant frictions and external heat.

Anasarca.—The 3 cases of Anasarca recovered under the active exhibition of Acet. Colchici, Spt. Æther. Nitros., Submur. Hydrarg., and Pulv. Scillæ; active cathartics and the Supertart. Potassæ in a diluted aqueous solution.

Syphilis.—During the past year, I have had 24 cases of Syphilis under hospital treatment, 23 of whom have been discharged to their duty, entirely free—to all appearance—from any trace of the disease. I would wish it to be specially remarked, that not one single instance of secondary Syphilis has occurred since I took charge of this regiment: I mean to say, not one of all those whose cure I myself have conducted from the beginning; for, I regret to add, that this has occurred in several instances, among those who had formerly been treated, by my predecessors, upon the non-mercurial system.

The following is my method of treating this insidious and detestable malady; if there be chancres, I endeavour at once to destroy the local source of the virus, by the application of Nitras Argenti; at the same time, I gently and steadily mercurialize the system—intermitting the medicine when the mouth becomes slightly affected; and again resuming, and keeping it up for a *short* period.

Gonorrhœa.—42 cases of this complaint have been treated in hospital within the year, in these cases I have had additional proof of the advantage resulting from the stimulant method of practice, already explained in my former reports. In one instance, and the only one I have met with, so much irritation and pain in the bladder were brought on by the medicines, that I was compelled for a short time, to intermit their use.

One case of *Gun-shot wound* has been admitted, and is still in hospital. The man's firelock discharged itself, he says, while he was loading it, and lacerated the first finger of the right hand and shattered the bone of the first phalanx, to such a degree, that I was obliged to amputate the finger at the socket of the first joint, and the second finger was also grazed by the bullet, and I fear will be anchylosed.

Twenty-seven men have received *Corporal Punishment* during the year.

12 fresh cases of *Delirium Tremens* have been admitted. Of this number, 2 have died. I have had no reason to change my opinion respecting the general mode of treatment, from which, as appears to me, I have observed, such unequivocally beneficial results. I allude to the depletive system, particularly to unloading the blood vessels of the brain; blistering the head, neck, and shoulders; and, with the same view, exciting artificial diarrhœa, except where the heat and pulse are beginning to sink, and then, of course, the ordinary means, such as Opium, Ammonia, Camphor, the Æthers, and Aromatic Tinctures, and Sinapisms, with flannel and external heat to the epigastrium, were had recourse to.

Only 26 Officers have been in the sick list during the past year, and their complaints have, upon the whole, been so trivial or so slight, as not to merit any particular notice. The whole of them have been discharged to their duty,

except one case, of Chronic Hepatitis, and one of Mercurial Rheumatism, both of which were sent to Madras, for sick leave to Europe.

With regard to the Meteorological phenomena of the past year, the actual difference observed between corresponding seasons in this climate, is so trifling, that, in the present state of science, and of the instruments we employ, little else can be offered, than a mere repetition of former observations.

During the first quarter of the year, we had no rain, except a slight shower in January. The mornings were frequently misty, and a heavy dew fell from the trees, the temperature till about 8 in the morning, during January and February, having appeared much lower than was indicated by the Thermometer. The evenings and nights were likewise cold; while, during the day, there was a bright, glaring sun, and an oppressive degree of heat. The Thermometer, however, never sunk below 65°, or rose higher than 93°. In fact, what may be termed the hot season here includes the latter part of February, the whole of March and April, and about the first half of May. Except a slight and accidental shower, no rain falls during these three months; and Farenheit's Thermometer commonly ranges from 65° to 94°.

During March and April, however a cool and refreshing sea breeze sets in almost daily in the middle of the day, and in the evening. The wind, in the mean while, begins to incline to the S. W. in February; but, becomes steadier when the first rain falls in May. The mornings as well as days, gradually become cooler, and continue so as long as the wet Monsoon continues, which it did last year, more or less, daily till the first or second week in October; accompanied, occasionally with loud thunder and vivid lightning, and sudden, but furious gusts of wind. The Thermometer during the period of the five rainy months, ranged from 75° to 87° the usual maximum temperature, however, being 84°; and, again, during the remaining two dry months and a half, viz. October, November, and December, its minimum was 69°, and its maximum 87°.

ABSTRACT OF ANNUAL RETURN OF SICK AND WOUNDED OF H. M. 41ST REGIMENT FROM 1ST JANY. TO 31ST DECR. 1833.

Stations occupied by Regiment in the year 1833. Treasurerin coast from 1st of January to 31st December 1833.		Fevers Quot. Intert.	" Tertian.	" Remittent.	" Continued Cont.	" Synochus.	Phlegmon et Abscess.	Ophthalmia.	Pneumonia.	Pleuritis.	Nephritis.	Hepatitis Acut.	" Chronic.	Splenitis.	Ostitis.	Rheumatism. Acut.	" Chronic.	Hæmorrhoe.	Catarrhus Acut.	Dysentera Acut.	" Chronic.	Apoplexia.	Paralysis.	Dyspepsia.	Colica.	Cholera.	Diarrhœa.	Diabetes.	Insania.	Scrofula.	Syphilis.	Stat-rum Lesion.	Ficus.	Obstipatio.	Cephalalgia.	Delirium Tremens.	Morbi Cutis.	External Injury &c.	TOTAL.	
Remained 1st Jany. 1833.		1	0	2	4	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	44
Admitd. during the above period.		16	2	5	145	6	32	11	1	3	4	2	12	2	1	4	6	0	0	0	74	2	6	0	3	0	25	0	0	1	0	4	3	0	0	0	12	6	144	649
Total Treated.		17	2	7	149	6	33	12	1	3	4	2	12	2	1	4	6	0	0	0	74	2	6	0	3	0	25	0	0	1	0	4	3	0	0	0	12	6	144	693
Died, during the above period.		16	2	3	146	6	32	11	1	3	4	1	9	2	1	3	6	0	0	0	73	2	6	0	3	0	25	0	0	1	0	4	3	0	0	0	10	6	151	647
Died do.	do.	0	0	1	0	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	10
Remaining 1st Jany. 1834.		1	0	3	3	0	0	1	0	0	0	0	3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37
Proportion of Deaths to the Number treated.		0	0	1 in 2½	1 in 149	0	1 in 32	1 in 11	0	0	0	1 in 4	1 in 1⅓	0	0	1 in 1	0	0	0	0	1 in 73	0	0	0	0	0	1 in 25	0	0	0	0	0	0	0	0	0	1 in 6	0	0	1 in 36½	
Diseases of Men cloathd. from the Store in the field, or Invalds. from foreign stations an acct. of disease.		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

(Signed) ALEX. HAMILTON M. D.
Surgeon H. M. 41st Regiment.

Report 3rd.—From the 1st of January to the 31st of December 1834.—By SURGEON HAMILTON, M. D.

STRENGTH 740

Remained 31st December 1833.....	27
Admitted since.....	1011
Total treated.....	1038
Discharged.....	958
Died.....	43
Remaining.....	37
Proportion of deaths to diseases.....	1 in 24⅝
Daily average Proportion of sick to well..	1 in 24¼

During the last year, our Admissions (1011) have exceeded those of the preceding year (649) by little short of 400 cases! So remarkable an increase of sickness might reasonably occasion surprise, were I not to explain, that the Regiment was divided, early in the year (March 7th), and one Wing removed to Poonamallee, where it continued stationed until the Left Wing—to which I had remained attached—had joined it from Moulmein, in October. This abrupt removal of one half of the Regiment from the moist and peculiar climate of Moulmein—to which the men had become climatized, by being cantoned there two years—to the dry air which characterizes Poonamallee, added to the fact, that this detached Wing arrived, and continued to be quartered at that station during the hot and dry months of April, May, and June, may, in some measure, serve to account for this increase of sickness among the men.

Fevers Remittent and Intermittent.—During the past year, 23 cases of Intermittent, and 5 of Remittent Fever have received Hospital treatment; 2 of Quotidian, and 2 of Tertian, having occurred under my own charge at Moulmein; 2 cases of Tertian at Poonamallee, with the detached Wing; and 14 Quotidians and 3 Tertians, after the arrival of the whole Regiment at Arnee..

While attached to the right Wing, at Moulmein, the first of

these cases of Intermittent Fever, was complicated with such determination to the head, as to require Venesection ad. ℥ xxiv. followed by the repeated application of leeches, (40 twice, and 60 four times.)

The cases of Remittent and Intermittent Fevers, which were afterwards admitted into hospital under my own management, upon the arrival of the Regiment at Arnee, assumed a peculiarly intractable form ; presenting great irregularity in the march of the symptoms ; frequently changing their type ; and obstinately resisting the remedies which, during the two previous years, had appeared so successful in removing the disease. It is also remarkable, that, in not a few instances, intermittent fever supervened to other complaints, while the patients were still in hospital. In one case, for example, Dysenteria Acuta,—the original affection—was speedily removed, but, was succeeded by intermittent fever. In another case, this fever supervened to convalescence from fracture, to which, again, succeeded a severe attack of diarrhœa. In a third patient, this fever made its appearance some days after his admission into hospital with chancre. A fourth case was attacked by an intermittent while labouring under Pleuritis. In a fifth instance, double quotidian succeeded to acute dysentery. In still another case, where dysent. acuta had become complicated with intermittent, this form of fever again re-appeared after the dysentery was removed. Lastly, an attack of intermittent took place during severe erysipelatous inflammation of the foot.

One instance of Remittent fever occurred while the Soldier was labouring under diarrhœa.

Febris Cont. Com.—230 cases of this type of fever have been under hospital treatment during the last year. Of this number, only 60 would appear to have occurred while the detached Wing was stationed at Poonamallee. 79 cases of this fever came under my charge, during the continuance of the Right Wing at Moulmein.

What was the true nature of some, or all of the 60 cases treated at Poonamallee, I know not. Many, however, of the 79 admitted into hospital at Moulmein, were the mere effect of previous intoxication. Most probably, in the majority of cases, it is merely symptomatic of irritation of the stomach. Having, however, received no distinct appellation, this affection has been classed, in the report which I now submit, with the true cases of Febris Cont. Com.

Pleuritis.—In one case of this disease, eventually terminating in death, a more singular development and succession of unconnected diseases took place, than ever before came under my observation : for, the original affection, (Pleuritis), was successively replaced by Dysent. Acuta, severe Cephalalgia, and Intermittent Fever.

Hepatitis.—50 cases of this disease received hospital treatment during the past year ;—20 of these having occurred within a little more than a month after the arrival of the Regiment at Arnee. It would not, I conceive, prove an easy matter to account, in a rational and satisfactory manner, for this sudden and extensive development of hepatic disease. The march from Poonamallee was a short one ; and, altho' on one or two occasions, the men slept upon damp ground, they were not exposed to any other hardship, or to any unusual privation. After their arrival too at this Fort, they did not indulge in excessive drinking. In short, after much consideration of the subject, I feel inclined to consider the exciting cause to have been, the chilling cold winds, which regularly set in from the N. by W. every evening about 6 o'Clock, and continue blowing from the same quarter for several hours. Exposing themselves, as soldiers recklessly do, to the night air ; and more or less predisposed as, perhaps, the majority are to Hepatic disease—the morbific exciting action of a cold damp wind upon the skin, and by consequence, upon the internal organs, the Liver, Alimentary Canal, and various joints, etc.—between which and the skin, a strong sympathy is known to exist—may, possibly, in some measure, serve to explain the fact. The very frequent occurrence of Dysentery and Rheumatism at the same period with Hepatitis, appears to afford some degree of support to this Hypothesis.

Upon the whole, notwithstanding the unusual prevalence of Hepatitis at this period, no case proved fatal.

I had once entertained sanguine expectation of being able to

cure the disease in its acute stage, without the use of Mercury, by the energetic employment of such means, as would be likely to subdue the inflammatory condition of the organ within the shortest possible time; the painful and tedious ulceration of the gums, tongue, and internal surface of the cheeks, often trebling, or quadrupling the period, during which Hepatic patients might, probably, otherwise, be confined to hospital. If Hepatitis could be removed by the assistance of a gradually produced mercurialization, and a slight affection of the gums, as in Syphilis, this serious evil would, of course, be avoided. But, on the other hand, from the rapid introduction of Mercury into the system, by means of mercurial ointment, and pills, superaded, perhaps, to half scruple doses of Calomel every second or third hour, its accumulation in the system, and the sudden development of its peculiar action on the salivary glands and surrounding tissues, is not to be prevented by any method, with which, in the present state of our knowledge, we are acquainted.

Rheumatism.—36 cases of Rheumatism have occurred during last year—16 of which were admitted within the first six weeks after the arrival of the Regiment at Arnee.

Dysentery.—Of the cases of Dysentery, treated during the past year, 16 proved fatal; or one in nine; which, perhaps, after all, may not be considered a disproportionate number, when it is remembered how insidious and fatal a disease the Dysentery of Soldiers commonly proves in every country, more especially in tropical climates. But, even of these 16 fatal cases, only a small number were discovered, on dissection, to have been true cases of colonitis;—almost all of them having been found more or less complicated with organic les on of the liver.

Epilepsy.—5 cases of Epilepsy received hospital treatment within the last year; and, although I do not flatter myself with the belief, that the disease was effectually cured by my method of treatment, as never to recur; I had, certainly, the satisfaction of finding that the complaint was completely removed by the curative means employed. These means I have, on former occasions, indicated to consist of venesection, and the frequent application of 20 or 30 leeches to each temple, followed by active purgation; these remedies being, of course, repeated, increased, or modified, according to, first, their own modus operandi in each individual patient; and, secondly, the urgency of the symptoms.

Diarrhœa.—I may notice one of the cases under this head that have occurred during the year, from the peculiarity of boisterous and obstinate delirium having been excited by ordinary doses of opium, combined with creta Præparata. Blistering the head, and unloading the brain, by repeated leeches to the temples, appeared to be the means by which the delirium was eventually removed.

Syphilis.—Among the cases of Syphilis, none occurred deserving of being mentioned, except those of three patients who, formerly, before I joined the Regiment, had laboured under venereal, and were admitted with Nodes on their Tibiæ.

Again, as in former Reports, I have the gratification of stating that, altho' an old-fashioned practice, the indiscreminate employment of which has, unquestionably, been productive of great and extensive mischief, a gentle course of Mercury has invariably removed the disease so effectually that no case of secondary symptoms has occurred.

Of the 51 cases of *Gonorrhœa*,—44 of whom were treated by myself, and 7 by the Medical Officer in charge of the detached Wing—every individual of my patients returned to his duty perfectly free from the disease, and without the slightest tendency to stricture—hitherto an unvarying effect of the stimulant practice, so frequently detailed in former papers.

During the year, 17 fresh cases of *Ophthalmia* have received hospital treatment—15 under my own care, and 2 under the care of the Medical Officer in charge of the detached Wing. Inflammation of the conjunctiva, attended with various degrees of pain, intolerance of light, effusion of tears, and injection, intumescence, and granulation, constituted the only varieties of the disease which fell under my treatment; and, altho' in some cases, the symptoms were marked by considerable intensity, in no instance was the sight eventually lost, or even materially impaired.

ABSTRACT OF ANNUAL RETURN OF SICK AND WOUNDED OF H. M. 41ST REGIMENT FROM 1ST JANY. TO 31ST DECR., 1834.

Stations occupied by Regiment in the year 1834. From Madras to Poonamallee from Poonamallee to Arcot.	Fevers. Quot. Intrt.	" Tertians.	" Remittent.	" Synochus.	" Continua Com.	Pleurisy et Abscess.	Peripneumony.	Pneumonia.	Bronchitis.	Hæmoptysis.	Tussis.	Hepatitis Acute.	" Chronic.	Dysentery.	Diarrhœa Acuta.	" Chronic.	Cholera.	Hæmaturia.	Dysuria.	Diabetes.	Cystitis.	Nephritis.	Calculus.	Ascites.	Anasarca.	Scrofula.	Struma.	Lepra.	Elephantiasis.	Cephalalgia.	Delirium Tremens.	Mental Affects.	Accid. Injury &c.	Total.
Remained 11th Jany. 1834.	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27
Admitted during the above period.	16	7	5	226	0	39	17	2	13	2	1	46	4	1	5	23	12	10	7	137	3	7	4	3	2	65	1	0	0	116	0	27	4	12	8	10	15	1011
Total Treated.	17	7	5	227	0	39	18	2	13	2	1	46	4	1	5	23	12	10	7	141	3	7	4	3	2	65	1	0	0	116	0	27	4	12	8	10	15	1038
Discharged during the above period.	12	6	5	226	0	39	16	2	12	2	1	38	4	1	5	20	12	9	6	117	3	6	3	3	2	60	1	0	0	116	0	26	4	11	6	17	14	958
Died ditto. ditto.	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	10	0	0	1	0	0	2	0	0	0	0	0	0	0	1	0	0	1	43
Remaining.	5	1	0	0	0	0	0	0	0	0	0	7	0	0	0	2	0	0	1	14	0	1	0	0	0	3	0	0	0	0	0	1	4	0	2	3	0	37
Proportion of Deaths to the Number treated.	0	0	0	1 in 226	0	0	0	0	0	0	0	1 in 46	0	0	0	1 in 23	0	0	1 in 14	1 in 10	0	1 in 7	0	0	0	1 in 21	0	0	0	0	0	1 in 27	0	0	0	0	0	1 in 28
Diseases of Men already from the sick list of the preceding stations on account of disease.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Invalided from Foreign stations on account of disease.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

(Signed) ALEX. HAMILTON M. D.
Surgeon H. M. 41st Regiment.

CAPITULATION FOR 1832-3 AND 4.

Total Sick Treated. No. 2998.	Fevers.	Pulmonic.	Bowel Complaint.	Hepatic.	Rheumatic.	Dysentery.	Cholera.	Diarrhœa.	Total.	Other diseases.	General Total.
Treated.....	63	15	1	23	596	606	26	9	1	135	532	7	19	26	120	697	1260	2578
Discharged.....	59	14	1	21	576	571	23	9	1	4	5	43	109	17	9	135	474	7	12	15	112	620	1200	2738
Died.....	0	0	0	0	0	11	1	1	0	0	1	0	4	0	0	4	37	0	0	1	4	42	51	99
Invalided.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	9	9
Proportion of deaths to No. Treated.....	0	0	0	0	0	1 in 55	1 in 606	1 in 26	0	0	1 in 135	1 in 12	1 in 22	0	0	1 in 135	1 in 14	0	0	1 in 15	1 in 28	1 in 15	1 in 25	1 in 28

We were chiefly induced to select the foregoing Reports for publication, from the circumstance of their containing the Medical History of the Regiment during a residence of nearly 3 years on the Tenasserim Coast; and as they demonstrate most clearly the beneficial effects of that climate on the health of European Soldiers. The admissions being diminished nearly one-half, during the first year of their residence, and the deaths nearly a fourth.

In the third year shows again an increase of admission and deaths, but it must be remembered that the Regiment was removed from Moulmein to Tavoy, a distance of 150 miles, during the last quarter of the year.

The practice of Dr. Hamilton in the treatment of many of the diseases of India is *most peculiar*.

The efficacy of his mode of treating Dysentery is, we conceive, very problematical, and as a plan which will not be found to answer in the various modifications of Dysentery generally met with in the Indian Peninsula—we allude more particularly to the constant use of astringents, and the entire absence of laxative remedies—Of the propriety of the copious depletion which was indiscriminately used in Dysentery, we may be allowed to express a doubt, more especially when we consider the debilitating effects of the climate, and the little benefit we have received on all occasions from the application of the lancet. Dr. H.'s practice in Cholera has been attended with the most decided success; but it should be told that the character of Dysentery on the Tenasserim Coast is generally mild!

The depleting practice in Delirium Tremens is, in our opinion, as a general rule, most objectionable and hazardous; and in Dr. Hamiltons hands was far from successful.

We regret, that Mr. Dartnell's Reports are so short, as they contain much that is worth recording.—*Editors.*

Report 4th.—QUARTERLY REPORTS, OF A WING OF *H.M.* 41*st* STATIONED AT POONAMALLEE.—BY ASSIST. SURGEON DARTNELL.

From the 1*st of April to the* 30*th of June* 1834.

AVERAGE STRENGTH 298.

Remained last Return.....	10
Admitted.....	128
Discharged.....	117

Died	5
Invalided	0
Remaining	16
Proportion of Sick to Well	0
Proportion of Deaths to diseases	$\frac{1}{13}$

Early in the present year, a Wing of H. M.'s 41st Regt. having been ordered to proceed from Moulmein to Madras, the first detachment (under my Medical charge) embarked on the 7th of last March, and arrived on the 27th of the same month at the Presidency, followed shortly afterwards by the remaining Company, (under Medical charge of Assist. Surgeon Griffith of the H. C. S.) which joined Head Quarters at Poonamallee on the 16th of last May.

Since the arrival of the Wing, and during the last Quarter, the number of admissions to hospital has been 128; of which 117 were discharged, five casualties have occurred, 16 cases remain under treatment in hospital.

The greater proportion has been of the class of *Febris Cont. Com.* owing most probably to the intense heat of the weather, during the months of April and May; the sudden transition from the comparatively mild temperature of the Tenasserim Coast; and the too frequent habits of intoxication, indulged in to an unusual degree on the junction of the two detachments at this present station. Of these cases none have proved fatal, though some were of a severe and highly inflammatory character; all having yielded very quickly to depletion, either general or local, as circumstances required, the exhibition of saline purgatives, followed by antimonials, and a short course of Tonics.

Dysentery.—The cases of Dysentery which have been treated, were connected in most instances with some hepatic derangement, as evidenced by the bilious evacuations, the character of the fever, and the site of the pain, extending generally over the abdomen to the region of the liver.

The treatment adopted was in a few cases, bleeding from the arm, but more frequently leeches to the abdomen, followed by repeated fomentations, and the administration of Pulv. Ipecac.

Comp. combined with Pil. Hydrarg. and Antimonial powder, with occasional gentle doses of Ol. Ricini, and Emollient Enemata, when the occurrence of pain, or tenesmus, rendered it necessary.—Under this treatment, all the cases of Dysentery were cured.

Hepatitis.—The few cases of this disease, which have been admitted, presented the usual symptoms. Mercury was resorted to, but rarely pushed so as to produce salivation, the urgent symptoms having readily yielded to general and local bleeding, the use of saline aperients, and subsequently tonics.

The casualties which have occurred during the Quarter, comprize two of pulmonary disease, three of apoplexia, of which two were very sudden.

The first casualty is that of Patrick Foley, who it appeared, previously to embarkation from Moulmein, had sustained a most violent contusion on the chest, while engaged in a drunken squable with his companions, and which, in all probability, induced the disease. On presenting himself the day after embarkation, he had all the appearance of a man labouring under Phthisis.—His countenance was dejected, his figure (previously upright and robust) relaxed and stooping, great prostration of strength, feeble pulse, forbidding the use of the lancet, and an occasional cough, accompanied with noctural perspirations. Notwithstanding every effort to arrest the disease, he continued gradually to sink, the over crowded state of the vessel, greatly accelerating its progress, and in a few days after the arrival of the detachment, he was suddenly carried off (during a severe fit of coughing) by the bursting of a blood vessel in the lungs.

On the *Post Mortem Examination* adhesions were found between the Pulmonary and Costal Pleuræ; a large quantity of dark coloured blood effused; and a cavity formed in the superior lobe of the right lung, the lower lobe being in a state of complete hepatization. The left lung presented a tubercular appearance, and in many places was infiltrated with pus. The liver was preternaturally large, the heart natural, and the intestines, with the other membranous viscera were healthy.

The second fatal case of pulmonary disease, is that of Michael Burke, admitted with Pneumonic symptoms on the 23d May—pain in the chest, some cough, with accompanying fever,—He had experienced an attack of the same kind before. The most active depletion was resorted to, both general and local, together with the use of the Antimonial Solution, repeated blistering, with leeches to the chest. During my absence on sick leave, the patient was suddenly carried off, having vomited an immense quantity of Arterial blood. On examination of the body after death by Surgeon Geddes of the H. C. S. (then in charge) both lungs were found engorged, with blood of a dark, almost blackened hue, which oozed copiously out on pressure, the arch of the Aorta was found dilated, about 2 oz. of sanguineous fluid contained in the Pericardium.—The liver and other abdominal viscera of a natural appearance.

The three remaining casualties were the result of Apoplexia. Independently of the intense degree of heat which prevailed at this period, (the thermometer being frequently up to 104 in the shade) the constant habits of intoxication, together with the sudden change of the climate would alone be sufficient to account for these sudden fatalities. On examination of the bodies after death the appearances were nearly similar in all. The brain in each presenting a highly vascular appearance, the vessels dark and turgid, and a quantity of blood effused, which flowed out copiously on removing the skull, and membranes.

The remainder of the cases treated, during the Quarter, have been of a less serious character, comprizing Venereal and Gonorrhœal affections, which in consequence of the active exertions used to secure the diseased women, that infested the Cantonment, have now become less frequent.

Two cases of simple *Ophthalmia* occurred, which were speedily cured, by the usual means.—The cutaneous affections have been confined to a few cases of Psora.

A severe case of compound fracture of the lower jaw, (sustained in a scuffle with a drunken companion) is now under treatment in hospital, and likely to do well, also a case of deep punctured wound, inflicted by a bayonet, which, is in progress of cure.

The Women and Children have been generally healthy; a case of fracture of the upper third of the thigh, occurred in a girl of about 5 years of age, which, after 4 weeks treatment in hospital, was discharged, perfectly united.

The Weather during the months of April, and May, has been unprecedentedly severe, the mercury at noon frequently standat 104 in the shade, while the land winds which blew with great violence for a fortnight, increased the debility and lassitude, consequent upon it.

The Regiment is now extremely healthy, the few cases in hospital (with the exceptions stated) being of a trifling nature, and rapidly advancing to a cure.

From the 1st of July to the 30th of September.

AVERAGE STRENGTH 291.

Remained last Return	16
Admitted	138
Discharged	129
Died	6
Invalided	0
Remaining	19
Proportion of Sick to Well	0
Proportion of Deaths to diseases	1 in 26

During the past quarter, little has occurred to distinguish it from that preceding, either in the quantity or character of disease, except the increased severity of affections of a dysenteric nature. Thirty-seven of these cases having been received into hospital, many of which were of an inflammatory character, (requiring active depletion, both local and general) accompanied with frequent and severe tenesmus, ineffectual attempts to procure relief by evacuation, the stools (when obtained), being of a dark and sanguineous appearance, mixed with mucous, and occasionally a fleshy-like substance, resembling the washings of raw meat. In addition to these symptoms, there were present in some few cases, pain above the pubes, with dysuria and

in one case which proved fatal, profuse perspiration of a cold clammy description, hanging in drops upon the forehead and body, great prostration of strength and gastric irritation, the stomach rejecting both food and medicine, and a remarkable expression of anxiety in the countenance, urgent thirst, and a small, quick, wiry pulse. The treatment adopted, and which (except in the case alluded to) proved successful was immediate bleeding from the arm on admission, where the subject admitted of such depletion, or local abstraction of blood from the abdomen, where there was much abdominal pain (increased by pressure) and in a few cases, leeches applied round the anus, a measure which afforded much relief. The medicines generally employed were Hydrargyri Submur. and Pulv. Ipecacuanha in doses of gr. iss. each, with Ext. Opii. ss. given three times a day, and at night, where tenesmus was particularly severe, an injection of Ipecacuanha with Ext. Opii griss. which seldom failed to allay it. Ol. Ricini. was found particularly useful, and was generally administered in small doses every third day. The diminished doses of mercury appeared not only to affect the system (when it was thought advisable to do so) as rapidly as when given in larger quantities, but it had also the advantage of not exciting the severe gastric irritation which occasionally attended the use of it in larger quantities. In two cases only, was it found necessary to push the remedy so as to affect the system, and than only in a slight degree.

The other varieties of disease were for the most part undistinguished by any remarkable feature, those of the class of Febris Cont. Comm. being generally consequent upon drinking, and yielding rapidly to the lancet, or local depletion, with the use of purgatives and antimonials.

Six casualties have occurred in the number treated during the quarter. The first was Private Hoole who had originally suffered on the passage from Moulmein from a Coupde Soleil, from the effects of which he never entirely recovered; his memory being impaired, and his language at times irrational and incoherent. He was however discharged to duty for a while, and subsequently admitted to hospital with Cephalalgia, which quickly assumed the form of Apoplexia under which he sunk.

He was an old Soldier, who had served out more than his full time, and had been selected for discharge on the first opportunity.

On the post mortem examination a quantity of blood was found in the base of the brain, and effused through its substance. The other organs were healthy.

One fatal case of Cholera occurred; it was only of six hours duration, the man having been several hours ill before admission to hospital. The stomach on examination, presented throughout its mucous coat a bright sanguineous appearance, and some portions of the small intestines were also injected with the blood. Coagula had formed about the large vessels of the heart, of a peculiarly dark colour.

The third fatal case was admitted with Diarrhœa, but which quickly degenerated into the worst form of Dysentery, and resisted the most steady treatment. It should be stated that the disease was consequent on excessive drinking. On the *post mortem examination*, the cavity of the Abdomen was found to contain about 2 pints of Muco—Sanguineous fluid, and the intestines, (particularly the colon) presented a deeply sanguineous, almost a blackened colour in many places.

Another case, that of Private Cooke, admitted latterly with Dysenteric symptoms, (but who had been for many years almost ineffective from extreme debility and emaciation) proved fatal. He had been several times under treatment for Marasmus, and slow wasting fever, and on his admission for the last time with dysentery, he sunk almost immediately. He was a young man, of a peculiarly scrophulous diathesis, and reduced almost to a perfect skeleton. On opening the body, it presented a mass of disease. The lungs were contracted to a fourth of their natural volume, the texture giving way almost to a breath; the liver was literally eaten through with ulceration, and the left kidney contained a large abscess. The mesenteric glands were enlarged and filled with a cream-like matter.

The two other fatal cases were, one of Pneumonia, the other Febris Cont. Com.

The first occurred in the person of Sergt. Edwards, originally admitted with acute Catarrh, which quickly assumed the form of Pneumonia. The disease was doubtless produced by

the most inveterate habits of intoxication, continued for years. The last casualty was a case of Febris. Cont. Comm. The disease was only of a few days duration. The patient had been suffering from otitis for two or three years, with occasional discharge of matter from the ears. Soon after his admission, it suddenly assumed a most severe form, the pain becoming excessive, and unrelieved by leeching and the most active treatment. The patient became comatose,—the pupils fixed and dilated,—with frequent spasmodic twitchings of the eyelids, and muscular contractions of the lower extremities. A remarkable feature in the case was the occurrence of Priapism, which seemed to indicate the cerebellum as the seat of the disease. On examination, the vessels of the brain were found turgid with blood, and about two ounces of serum effused into the Ventricles. The portion of the cerebellum near the petrous part of the temporal bone was softened, and incipient ulceration was visible. A peculiarly offensive smell was perceptible on removing the membrane from the cerebellum.

The Women and Children have been generally healthy during the quarter.

One fatal case of Dysentery occurred amongst the former, which ran a frightfully rapid course, portions of the lining membranes of the rectum having been discharged by stool. The disease resisted all remedial measures, and proved fatal in a week.

The Officers have been extremely healthy. Some few slight cases of fever occurred, which yielded readily to the usual treatment.

The Quarter opened with refreshing showers, accompanied generally with thunder and lightning, and so continued with occasional intermissions until about the middle of September, the weather being thus rendered cool and agreeable.

NELSON DARTNELL,
Asst. Surgeon in Medical
Charge of Right Wing of H. M.
41st or Welsh Regiment.

POONAMALLEE,
1st October 1834.

THE MADRAS

QUARTERLY MEDICAL JOURNAL.

No. II.] *APRIL* 1, 1839. [VOL. 1.

ART. I.—*Communicated by* DR. MURRAY, *Deputy Inspector General of Her Majesty's Hospitals.*

OBSERVATIONS *continued throughout* 6 *years, relative to the Sick of H. M.* 45*th Regt. of Foot: viz. from the* 1*st January* 1832, *to the* 14*th of November* 1837 *comprising a brief* MEDICAL HISTORY *of the Regiment from the time of its landing at Madras, till its embarkation for England.*

1832.

By DR. BROWN, *Surgeon of the Corps.*

Strength, January 1st, at Moulmein, at Head Qrs.	833	861
at Poonamallee	27	
at Neilgherries	1	
Recruits joined		0
Sick remained last return		65
Admitted since		1869
Total treated		1934
Discharged		1640
Died in Hospital		127
Remaining		167
Invalided		20

Table of Particular diseases.	Total treated	Died.	Remarks.
Cholera	158	101	What an awful mortality in one year from Cholera !
Dysentery	153	14	
Hepatitis	76	2	
Fever	463	2	
Other Complaints	1084	8	2 other deaths in Barracks from excessive intoxication.
Total	1934	127	

During the *first quarter*—in the month of March the Corps was removed from Moulmein across the Bay of Bengal, in Transports, to Madras, and from thence it marched to Poonamallee (12 miles.)

Second quarter—from Poonamallee to Arnee, 7 marches (67 miles.)

Third quarter—on the 20th September, commenced the march for Masulipatam : and

In the *4th quarter* arrived at Masulipatam (on the 12th November.)

First quarter.—The Regiment particularly healthy ; the deaths (3) were from chronic complaints contracted previously : at the conclusion of the quarter 40 remained in Hospital.

Second quarter.—*April*—Poonamallee, marching, and Arnee. During our stay at Poonamallee Sick increased a little. The accommodation scanty—a portion (3 Companies) in Tents.

May—The Barracks at Arnee are arched (Bomb-proof) and retain the heat long—doors few, on the inner side only, and under a narrow tiled verandah—on the outer side, small elevated windows, ventilation consequently very indifferent—Hospital tiled, with pillars in the centre to support the roof, 2 feet square, and 9 feet between each, occupying a great part of the passage between the cots ;—prominent diseases the same as before.

June—Latter part of the month diseases of a milder type. Hepatic affections, considering the temperature of the Station, have not been so numerous as expected, nor so violent ; and principally occuring in those formerly subject to the same complaints. Dysentery

both acute and chronic, has been the most formidable disease to contend with, and less connected with hepatic disease than what I had met with on the Tenasserim Coast, as was proved by dissection. In no instance abscess. At Moulmein, this quarter used generally to be the most unhealthy, and most productive of attacks of acute disease. The increase from the corresponding quarter of previous year, appears to be in Rheumatism, Catarrh, Dysentery, Diarrhœa, and venereal complaints ; of Intermittent and Remittent Fevers there have been scarcely any.

Third quarter.—*July*.—A slight increase in the number of admissions, principally of continued fever, Hepatitis, and Diarrhœa.

August—Continued fevers and dysentery have increased during the month—Hepatic affections diminished.

September—Great increase in the admissions (principally Fever and Diarrhœa) during the early part of this month, previous to the Regiment marching—The cases, however, slight.

The Regiment marched from Arnee on the morning of the 20th September. The Sick moved off the preceding evening—drunkenness prevailed to a great extent during the night, and in the morning previous to the march. On the second day the Regiment marched into *Arcot*, when Cholera made its appearance ; and continued with great virulence to the end of the quarter, principally among the Soldiers. From the 21st to the end of the month, no fewer than 78 cases were admitted, of which 51 proved fatal. The disease shewed itself among the women at *Nagery* on the 25th. The first native I heard of having the disease, died there the evening before the Regiment came in ; he was a *sais* who had come from Madras with an Officer's horse ;—I did not find that it had been prevailing at any of the villages through which we previously passed.

Fourth quarter.—*October*—Marching—Admissions of Cholera not numerous. In the beginning of the month it continued, but in abated severity—at *Vencatachellum's Choultry*, on the 6th, it was greatly abated, for we had only had one admission in four days. It afterwards made its appearance, however, in a moderate and mild degree. After leaving *Nellore*, at *Doodoocour*, in the latter end of the month, we had five severe cases. It commenced among the

Bearers and Native Establishment, at *Ongole*, the total strength of which was, Bearers 285—Sepoys 50—Hospital Servants 19. We lost 3 Bearers, one Toty, and three Sepoys: no fresh cases occurred after leaving Ongole on the 27th of the month.

From the neighbourhood of *Nellore* to *Masulipatam*, it had been prevalent previously, but had abated for a month or six weeks before the Regiment marched through.

November—No admissions of Cholera, and other diseases less numerous.

December—Admissions from fever, dysentery, and diarrhœa have diminished greatly,—Syphilitic cases have been the most numerous.

CHOLERA.

I shall briefly note the mode of treatment I and my assistants pursued, in which there was little variation, altho' some remedies were given by the latter (Tinct: Lyttæ) which I seldom if ever used. The other Medicines were nearly the same, only there might be a little variation in the dose, or frequency of repetition; but nothing material—I think no decided line of treatment can be laid down, as it must vary according to the duration, or stage of the disease, and the nature of the Epidemic.

If I have observed correctly, there was a considerable difference in the manner of attack of this Epidemic, from that which so severely visited the centre division of the Indian Army (in 1817) with Lord Hastings—particularly in the premonitions of Diarrhœa, headache, vertigo, and cholic pains. If these were neglected, and the disease permitted to proceed to its full development, and Lividity, Aphonia, Collapse, sinking of the pulse, Cramps, &c. came on, few recovered by any mode of treatment—such cases were hopeless.

The following draught was in common use in our practice.

℞ Tinct: Opii	℥j.
Æther: Sulphuric:	℥ß to ℥j.
Mist: Camphor:	℥iß to ℥ij.
Spts: Vini: Gallici	℥j.
Aquæ	℥iß to ℥ij ft. haust.

if rejected, it was repeated according to circumstances with any particular article left out, or varied in quantity, or others added. Instead of Æther, Spts: Ammoniæ ℥ß was sometimes given; and when the secretion of urine was suppressed, Tinct: Lyttæ ℥j was given in some instances by my Assistants (Campbell and Watson), but seldom I think with any decided effect on the kidneys; Blisters and Sinapisms were applied to the Scrobiculus cordis, the latter also to the legs and feet; and also frictions, and warm sand or bottles of hot water to the feet, with a view to excite reaction. Latterly I gave Tinctura Opii ℥j, Acid: Nitrosi gtts. xv, in Aquæ ℥iß; and sometimes to the Laudanum and Acid: Nitros: Brandy was added, and repeated according to circumstances.

However I preferred giving the nitrous acid as a drink, thus, Aquæ. Oct: I: Acid: Nitrosi ℥ß: Sacchar: ℥ij if made stronger, the patients complained of its being too acid. This was generally used in quantities of 3 or 4 ounces at a time, and found to remain on the stomach when other stimulating and cordial drinks were rejected; and it was refreshing and agreeable to the patient. The other common drinks, were, Barley water one pint, white wine one measure (3 ounces), or Brandy half a measure (1½ Oz.), warm with spice. While actually marching, the principal drinks were Nitrous Acid drink; weak diluted Brandy, or Wine and Water, in moderate quantities; large draughts of any liquid generally produced vomiting. In the severe forms, when the patient came with a good distinct pulse, altho' there might be lividity of the nails and coldness of the fingers, incipient collapse, burning sensation, or pain at the Epigastrium, sense of oppression and constriction, general bleeding gave relief, and produced a manifest improvement of the symptoms for some time,—altho' the person might not eventually recover, the pulse generally became soft and fuller, and the pain at the Epigastrium and vomiting were allayed; the voice improved, and the patient expressed *feelingly* his sense of relief. This was followed by Anodynes, Calomel, Blister to the stomach, and warm clothing. If debility or further collapse threatened, stimulants were given as already noticed.

Even in cases where the first symptoms were relieved by bloodletting, we had still cerebral congestion to some extent to contend with, as well as glandular and intestinal disease;—for the former

viz. cerebral congestion, Leeches to the temples—blisters and Tartar Emetic ointment to the nape of the neck, and cold applications were used; and for the latter, leeches and blisters to the Epigastrium or right hypochondrium. The internal remedies varied according to symptoms, Calomel or Blue pill, mild purgatives—sometimes drastic, or the mild ones in large or repeated doses were necessary to produce free stools. When the stools became of natural appearance, Tonics with alteratives were given.

In the milder cases denominated Diarrhœa, tending to Cholera, by some writers termed Choleroid Diarrhœa, or Cholerine—the simplest remedies were successful; such as Rhubarb and Magnesia with laudanum in peppermint water, followed by Ipecacuanha.

In cases where Hepatic derangement was more apparent, Calomel in doses from 5 to 10 grains with opium, followed by Castor Oil, and afterwards Ipecacuanha. If again the disease had advanced further, and approached to the brink of severe Cholera, viz. Diarrhœa profuse, stools watery and of a light yellow colour, debility, pulse quickened, severe pain or uneasiness of the Epigastrium, or in the right hypochondrium, nauses, but no vomiting—then a moderate bleeding, or the topical application of Leeches or Blisters was found the quickest and best mode of relief, followed by a scruple dose of Calomel, and Ol: Ricini ʒvj, e Tinct: Opii gtt. xx, in Aqua Menthæ.

Two days previous to the march from Arnee, we were as healthy, and apparently as fit for the march before us, as any Regiment in the Presidency; but, on the evening and morning previous to the march, drinking appears to have prevailed to a great extent, if I may judge from the number for whom Hospital conveyance was demanded, (besides the sick who preceded the Regiment) viz: 60, and from the state of those men, when brought to the Camp.

I think it will be granted by all Military Medical men, that it is a dangerous doctrine to inculcate, or even to permit to enter the mind of a Soldier, that stimulants of a spirituous kind, can prevent, or alone operate as a cure for cholera. For one case where it will be properly applied, ten will be found where it will not only be mis-applied, but defeat its object, and render nugatory the after exhibition of proper medicines, from the excess of the stimulus having exhausted the powers of life.

There are some Military Officers, who are too apt to speak openly of the wonders they have seen effected by a glass of Brandy, or some similar stimulant. That such a quantity only, may in some cases have done eminent service, I doubt not: almost every Medical man knows that in the latter stages of severe or Blue Cholera, stimulants in combination with other remedies are necessary;—but they require to be given as medicine in regulated quantity to produce a beneficial effect, to be observed carefully, and not alone to supply the place of all other remedies: if the Soldiers hear their Officers express such opinions, they will be but too ready to adopt them.

As to diet, the luxury of a cup of warm coffee, or tea, in the morning before starting, with a crust of bread, was not served to the men: altho' the utility of a refreshment of this kind has been highly spoken of by those who have had much experience in marching in India.

We had generally from 80 to 90 sick during the march, principally labouring under Bowel complaints; a considerable proportion very weak and very unwell, and several dangerously ill: these were moved off from the ground from 3 to 4 p. m., or later, according to distance and roads, at which time the heat of the day is past.

The worst cases had some of the subordinate medical establishment close to their doolies, that their wants might be perceived and supplied instantly; and the medical officers who rode occasionally past and among them could observe if any particular change had taken place, and prescribe accordingly.

I think I may draw the following conclusions respecting the cholera that prevailed,—that as the Soldiers were the only and severe sufferers for the first four days, it arose from some partial exciting causes;—That it was like to what Mr. Annesley has termed the severe kind of spontaneous or spasmodic cholera;—and that it was not contagious. Out of 285 dooly bearers who carried the sick, and lifted them into and out of their doolies, none were attacked until we got to Ongole—more than a month after the disease affected the Soldiers; and then only three cases proved fatal. No Sepoys were afflicted until then either, nor any of the Native servants of the Hospital; and their complaints were caused probably by eating wild cucumbers which were growing in the fields.

1833.

By J. Hutchison, Esq. Assistant Surgeon H. M. 62d Regiment, *in Medical charge H. M. 45th Regiment.*

Strength, January 1st, at Head Quarters	674		
at Poonamallee	30	707	716
at Neilgherries	3		
Recruits joined		9	
Sick remained last return			167
Admitted since. Regimental Hospital	1893		
Poonamallee do	39		
Garrison do	83		
Detachment do	47		2,069
Neilgherry do	6		
Lunatic Asylum	1		
Total Treated			2,236
Discharged			2,062
Died in Hospital			51
Remaining in Hospital			123
Invalided			8

Table of Particular diseases.	Total treated	Died.	Remarks.
Cholera	42	3	Two other deaths happened out of Hospital; viz: one from Hepatitis, and one from Apoplexy.
Dysentery	250	17	
Hepatitis	119	6	
Fever	537	6	
Other Complaints	1288	19	
Total	2236	51	

The left Wing of the 45th Regiment, 318 strong, marched from Masulipatam on the 29th January, for Secundrabad; and reached its destination on the 22d of February, without losing a man. The men had always a bowl of coffee and a crust of bread in the morning before they began their march; and the sick were sent forward on the previous afternoon, and arrived at their ground between 7 and 8 o'clock, p. m., by which means they had a good night's rest, and were not disturbed in the morning by the noise and move of the Detachment.

On the 16th of April, the Right Wing or Head Quarters, 307 strong, began the march (leaving 46 sick in Hospital).

During the march acute diseases increased. The accumulation was greatest in the end of April and beginning of May, and was attributed to the exposure of the men, under canvas, when the weather was very hot and oppressive. The majority of cases occurred among those who had been lately in Hospital and were much debilitated. The prevailing diseases were Fever, Dysentery, Cholera, and Diarrhœa.

The Head Quarter Division reached its destination on the 12th of May, having lost 5 men on the march, viz: 2 from Apoplexy, and 3 from Cholera.

We had also a great increase of sick in the Regiment about the end of June: The season was more sickly than for several years previously. The greatest number of acute cases, however, occurred in July, August, and beginning of September. In September there was an increase of Dysenteric and Hepatic complaints, from the men not having sufficiently warm clothing for the season. The increase of these two diseases was double in that month, and they were very frequently combined.

In the beginning of October, Dysentery and Hepatitis still prevailed—and towards the end of the month we had continued and remittent fevers of an Epidemic character. In November there was a great accumulation of febris remittens, and some very serious cases. The symptoms were continued at the onset, but became afterwards remittent—sometimes intermittent. In December, the fever cases continued at the beginning; but afterwards the chief admissions were of Dysentery and Hepatitis, which towards the termination put on the form of Hepatic Dysentery. There were some cases from the effect of direct solar influence; but most of the diseases were caused by the sudden changes of the temperature, the want of rain, and malaria. The heavy rains in September caused a rapid and rank growth of vegetation around the cantonment, and the subsequent drought caused exposure of the foul sur-

face of the tanks and marshes in a decomposing state; which, with the cold damp wind, proved very pernicious to health. The smell arising from the surface so exposed to the hot sun, was intolerable; and the serious cases of sickness, were decidedly more attributable to this, than to hard drinking.

One cause the Natives assigned for the Epidemic fever was eating great quantities of the custard apples, which are ripe about the termination of October; but at this season fever always prevails, varying from continued, remittent, and intermittent, and is of a very acute type—also Dysentery. Some cases, however, could be fairly traced to eating too many of this fruit.

The severe remittent cases resembled the worst type of jungle fever; yet the mortality was notwithstanding not great. Out of twenty-three cases admitted in the latter part of October, only two casualties occurred, and out of thirty-nine, in November, four. The continued fever was also of a very severe type; but upon the whole, the Corps was not so unhealthy as others which had been a longer time at this station.

I shall now speak of some of the diseases particularly.

FEVERS.

This class has been very interesting and severe: the greatest number were of the continued and remittent type, and occasionally intermittent. In all these three species of disease, the head was more or less engaged, and generally required an active treatment: The remittent did not prove fatal to such an extent as might have been expected. It shewed itself in an Epidemic form about the middle of October, and kept increasing till within a few days of the termination of November. On its commencement in October, it generally assumed a continued form, and in a few days after became remittent, resembling the jungle-fever type in all its grades. The stout and healthy were among the first attacked, and those suffered severely. Convalescence was tardy and protracted—many relapses happened, and in several cases during convalescence, with Diarrhœal and Dysenteric symptoms. Towards the termination of November, the disease became more mild and manageable.

The patients when admitted generally complained of rigors, with violent pain of head, across the supercilia, temples, anterior part of head, and in a few cases in the posterior part—tightness of eyeballs, eyes slightly suffused, accompanied with intolerance of light—face flushed and in some cases swollen—pains in back, joints and extremities, with langour and lassitude—pulse 100 to 130, full and frequent, in some cases bounding, but in these, if much blood was taken, or sometimes even only a little, great prostration of strength ensued, and it was sometimes with difficulty that re-action could be brought about. The thirst was urgent—tongue foul, parched or fiery red; heat of skin increased—in some cases giving the sensation of a burning coal, when the hand was applied,—urine diminished in quantity and high coloured, in some cases causing scalding. These symptoms kept up for a longer or shorter period, and were succeeded by a remission of all or only part of them, with a gentle perspiration over the body; but after an interval of a few hours they returned with double vigour. Towards the fourth or fifth day, in the majority of the cases, strangury made its appearance and was very severe:—in the cases of those who died, coma or partial insensibility came on about the 3d or 4th day after admission into Hospital, and continued for 12 to 24 hours.

Treatment.—The first thing usually done on the admission of a patient was to abstract blood from the arm according to his state and the circumstances of the case; and in several cases this was repeated; but in general one good bleeding was sufficient: a purgative was also given—as Calomel in combination with Extract of Colocynth, followed by a black dose containing a small quantity of solution of Emetic Tartar. The front of the head was shaved and cold cloths applied; and if not relieved by this, leeches were applied to the temples, or across the nape of the neck from one ear to the other: the following medicines were also given every 2d or 3d hour.

℞ Hydr: Submur: gr. iij.
Pulv: Jacobi: gr. v. M.

℞ Liqr. Ammoniæ Acetat: Mist: Camphor: $\overline{aa}$ ℥ß M.

The body was sponged, and in several cases the patient was soused all over with chatties of cold water, which *in every case tried*, produced most decided good effects in checking the fever. If vo-

miting was present, effervescent draughts were administered, composed of Carbonate of Soda and lime juice. For severe pain and uneasiness at the scrobicubus cordis, fomentations, leeches, and blisters were used. If the pain of the head was not relieved soon, a blister to the nape of the neck was applied:—the bowels were kept open every 2d or 3d day with Salts and Senna infusion combined with small doses of Emetic Tartar: For drink lemonade. When febrile excitement and pain of head subsided, the quinine was exhibited every 3d, 4th or 5th hour in this form;—

℞ Sulph: quin: gr. iij ad v.
Liqr. Ammon: Acet. ℥ ß
Mist: Camphoræ ℥ ß M.

or in some cases as follows

℞ Decoct: Cinchonæ ℥ iij
Acid: Sulph: dil: gtts. v. m. 2dâ. Vel. 3tiâ. horâ sumend.

As convalescence advanced, a nourishing diet, such as chicken soup, fowl, and a few glasses of port wine or sherry were allowed; but in general convalescence was tardy, as it is in every disease at this station; and especially so among the remittent cases.

I attribute the saving of so many severe cases to getting the system *early* under the specific influence of mercury, for when the mouth became touched, convalescence soon followed; when, however, the mercury took a long time to affect the system, the cases were serious, tedious in recovery, and attended with more relapses and deaths;—the quinine could not then be used, or if employed, it caused great febrile excitement. In a few cases the mouth got affected after the 2d or 3d dose of mercury, accompanied with swelling of the gums and ulceration of the cheeks and tongue, when a strong lotion of Sulphas Cupri and a gargle of alum was found useful.

Three cases, besides having the usual symptoms had Urticaria febrilis over the body—particularly on the chest and abdomen, two of which were very severe, and one proved fatal; and the majority of them required repeated venesection.

When insensibility appeared the following was given every two or three hours.

℞ Carbon: Ammon: gr. iij
Camphor gr. 1 ad ij M.

Sinapisms were applied to the feet, inside of thighs and along the spine; or the spine was blistered with Nitric Acid—purging enemas were exhibited with ol: Terebinth. In one or two cases a large blister (Devils night cap) was put all over the head.

On dissection great injury was found in the Cerebrum and spleen; and in two cases in the lungs. In some there was great effusion of serious fluid between the scull cap and membranes, and in the base of the cranium and in the spinal canal. The vessels of pia mater were much distended, and there was deposition of milky effusion between the convolutions of the Cerebrum—Cineritious substance very dark colored in the case of Donnan. On cutting into the cerebrum it was full of red points in the case of Conway. Lateral sinuses very full of dark blood in the cases of Conway and Walton. Lungs gorged and distended with blood in the cases of Conway and Walton.—Spleen enlarged, and distended with congested blood, and easily torn with the fingers in the cases of those who died from this fever.

CASES.

Private Jeremiah Shine, aged 27, formerly a labourer; of spare habit—came to India in June 1826.

Admitted 2d November with fever, which became of a remittent type on the 5th, pain of temples extending over the head—P. 120 firm and frequent; vomiting; bowels free—increased heat of skin—thirst. Cause attributed to solar influence. Delirium commenced on the 7th, on the evening of which he got quite insensible—pupils dilated, and continued till the morning of the 8th, he then became less insensible and answered questions; at 3 p. m. became restless and insensible with delirium, and expired about ½ past 8 p. m.

Treatment.—On his admission he was bled, leeches were repeatedly applied to the temples and neck. He got Purgatives, Mist: Diaphoretic: every 2d or 3d hour—Effervescent draughts—the anterior part of head shaved, and cold water applied, blister to the nape of the neck. and the following

℞ Soda Carbonas ʒi
Spts. Ætheris Nitrici ʒi ß
Aquæ menthæ pip. ℥ vj M. ℥i 3tiâ. horâ.

Purgative enemas—the whole of the spine was blistered with

Nitric Acid when in a state of insensibility, and he did not feel the application. Calomel was only given towards the end.

Dissection, body inspected 19 hours after death—*Head.* Effusion between the skull cap and dura mater; also between dura mater and cerebrum—in the ventricles, base of the skull and spinal canal—vessels of the pia mater turgid. *Thorax.* Slight adhesions of lungs—healthy anteriorly, but posteriorly hepatized. *Pericardium* and heart healthy—*Abdomen.* Intestines throughout slightly blushed, spleen enlarged, soft and easily torn—other viscera healthy.

Private William Walton, aged 19, born in India, has generally enjoyed good health with the exception of a severe attack of Rubeola in June last, when repeated leeching was used, a blister applied to the Chest, Purgatives, Camphor mixture and Tonics exhibited.

Admitted 21st November, complaining of pain of head, extending from one temple to the other, accompanied with febrile excitement, slight nausea—B: confined—P: small and firm—T: foul, increased heat of skin—6 hours ill—attributed to walking about in the sun.

V.S. ad ℥viij

℞ Hydr: Subm: gr. v.
Extract: Colocynth: C: gr. x. m. ft. pil. iij S: S:
Postea Mist: Purgans ℥iv

22d. Still pain of head, extending from one temple to the other—no nausea—slight febrile excitement.

5 Leeches to each temple.
Habeat Hydr: Submur: gr. ij
Pulv: Jacobi: gr. iv 3tiâ. quâque horâ.

℞ Liqr. Ammon: Acet:
Mist: Camphor: ãã ℥ß M. 4tâ. quâque horâ.
Spoon diet.

23d. Had febrile excitement all night, and at present P: small and frequent—increased heat of skin—eyes slightly suffused—thirst.

The head to be shaved and cold cloths applied.
Repeat leeches,—Continue other medicines.

Vespere feels easier, is free from pain of head, B: free, slight increased heat of skin, still febrile excitement.

Cont: Med:—let his body be sponged with cold water.

24th. P: small and frequent. B: free.

Cont: Pil: Hydr: Submur: ter die, et mist: diaphoret: 4tâ. quâque horâ.

Meridies return of fever with increased heat of skin—P: small and frequent—B: free.

Let the body be sponged with cold water.

Vespere. Complains of much pain of head—slight nausea and vomiting. B: free.

Applic: Hirudin: x. nuchæ et sumat statim Haust: Efferves:

25th. No pains of head—P: small and frequent. B: free.

A purging draught with Tartar Emetic Solution.

11 *a. m.* Complains of pain of head extending from one temple to the other, with slight delirium—febrile excitement—slight increased heat of skin. B: free—great thirst.

Applic: Empl. lyttæ nuchæ.
Continue cold to the head, and sponging of the body.

Vespere. More delirium—P: small and frequent. B: free.

Contin: Medicam:

26th Slept all night, quite sensible—no delirium—P: small and frequent—heat of skin natural—gums tender.

Omittr. Medic: et Habeat Sulph: quinæ gr. ij.
Liqr. Ammon: Acet: ℥ß
Mist: Camph: ℥ij ter in die

Vespere. Slight febrile excitement all day—P: small and frequent—B: not free—slight insensibility.

Statim Mist: Purgans ℥iij cum solut: ant: Tart: ℥ß.
Continr: Aliâ.

½ *past* 8 *p. m.* Increased febrile excitement, with heat of skin—slight insensibility—B: not free—P: small and frequent.

Statim Enema purgans.

27th. Febrile excitement all night, with heat of skin, thirst: free from insensibility—P: small and frequent—B: not free.

Repr: Mist: Purgans; et Mist: quinæ.
2 pints Lemonade.

Vespere. Febrile excitement with insensibility—P: small and weak. B: free—extremities cold—has strangury.

Statim Tinct: Opii gtts. x x x
Spts: Æther Nitrici ℥i
Mist: Camphor ℥ij.

Sinapisms to the feet and inside of thighs.

28th. Is at present slightly insensible—Pupils dilated—P: small and firm—B: not free—made a little urine—extremities warmer.

Rep: Mist: Purgans ℥iv

Solut: ant: Tart ℥ß et cont: mist: quinæ.

One measure of sherry.

Vespere. Insensible nearly all day—P: 137 small and frequent—pupils natural. B: free.

℞ Tinct: digitalis gtts. x.

Tinct Opii gtts. v.

Mist: Camphoræ ℥iß 4tâ. quâque horâ cont:

Mist: quininæ Repet. Sinapism.

½ *past* 8 *p. m.*—Insensible—B: free—P: firm and frequent.

29*th.* Continues still insensible—P: 130 small and weak. Pupils natural—B: loose—difficulty of swallowing.

½ *to* 11 *a. m.*—Expired.

Body inspected 3 hours afterwards.

Head—effusion between the dura mater and cerebrum—vessels of pia mater turgid, and milky effusion between the convolutions—cineritious substance not so dark as usual—slight effusion in the ventricles—lateral sinuses distended with very dark blood, and when cut into about 6 ounces issued out—when the spinal cord was divided, and the head depressed a very great quantity of blood and serous fluid flowed out. *Thorax.* Lungs hepatized and quite gorged with blood, when slightly squeezed blood oozed out in great quantities—a large clot of coagulated blood weighing about four ounces was found attached to the pleura costalis; eight ounces of blood in the left side; in right, a small clot weighing about one ounce and half, and two ounces of liquid blood—*Pericardium* contained about four ounces of serous fluid—heart healthy.—*Abdomen.* Spleen enlarged in size and soft, and when cut into found gorged with blood of a very dark appearance, viscus easily torn—other viscera healthy.

HEPATITIS.

Has been very much on the increase since the arrival of the Corps at this station, and has been very severe and fatal. It

seems to be chiefly of that species of disease termed Hepatic-dysentery; and the variable climate seems very much to favour its developement: after convalescence the patients are liable to repeated relapses, which prove rapidly fatal in a majority of cases.

The disease generally begins with pain of the head and great determination to that organ, accompanied with pain in right hypochondriac region, in the situation of the liver, increased on pressure or taking a full inspiration—pain extending to the epigastrium and cæcum, with diffused pain in the shoulder, and over the chest and abdomen—pulse frequent and varying—generally full and firm—bowels loose. In the commencement the dejections are bilious or slimy; and afterwards thin, like dirty water, or mixed with purulent matter and tinged with blood; tormina and tenesmus attend, and occasionally strangury; and before the formation of pus in the liver, there is generally an uneasy sensation felt all over the hepatic region, accompanied with rigors and cold perspirations; bux in some cases, there is no particular indication of suppuration.

The treatment resorted to was repeated general and topical bleeding—purgatives—calomel in combination with James' or antimonial powder, carried to affect the system: (when it did not do this, the disease was tedious and often fatal) tepid bath—fomentations to the side and abdomen—diaphoretics—ipecacuana—Dover's powder—emollient enemas—enemas with ipecacuan and tinct opii—leeches around the anus—semicupium; and at the end—tonics and chicken diet, with port or sherry.

On dissection great injury of the cerebrum with serous effusion between the coats and cerebrum—in the ventricles, and spinal canal,—Liver enlarged in size, motley in appearance, with abscess in different stages of suppuration—in many cases the sac on the eve of bursting.

Case.—Private Alexander Cruickshanks, aged 35, of the 2d company, formerly a rope-maker—stout sanguineous habit—came to India in June 1827. Twice in hospital since August last, with smart attacks of inflammation of the liver. Was admitted about noon of the 17*th December*—complaining of violent pain of head, extending to epigastrium, right hypochondriac region and shoulders, increased on pressure, or taking a full inspiration—also pains

over the body accompanied with febrile excitement and slight nausea—B: confined—P: small and firm—T: foul—increased heat of skin—21*st*. Says the pain is quite gone—but has febrile excitement, and slight delirium.—23*d*. Return of pain in right side, and across the abdomen, accompanied with rigors and cold clammy sweats—stools thin and bilious, great debility, cold sweats and rigors. —26*th*. Much worse, free from, or perhaps insensible to all pain—stools passed involuntarily—P: hardly felt until the forenoon of the 27th, then 120, small yet firm—skin warm—expired in the afternoon.

Treatment—repeated large general and topical bleeding—purgatives—calomel in combination with James' powder—tepid bath—shaving the head and applying cold water—fomentations—small doses of pulv: ipecac, blister to the side, decoction of bark, tinct: of digitalis, and camphor mixture; lastly small doses of calomel, carbonate of ammonia and camphor every 4 hours.

Body inspected 24 hours after death.

Externally—healthy. *Head.* Strong adhesions between the skull cap and dura mater—great quantity of serous fluid between the coats and cerebrum—vessels of pia mater distended, particularly about the centre and upper part, a quantity of milky fluid between the convolutions of the cerebrum—the cerebrum when cut into studded with points of blood—ventricles contained about two ounces of serous fluid, and a great quantity in the spinal canal. *Thorax.* Lungs healthy anteriorly—slight adhesions between the pleura pulmonalis and costalis of right lobes—posteriorly, slightly hepatized. *Pericardium* contained about 6 ounces of serous fluid—heart healthy. *Abdomen.* Liver enlarged, ash-colour—soft and easily torn with the fingers, and gorged with bile; gall duct half full—spleen enlarged, about 7 inches in length, broad, and weighing two pounds—easily torn, and congested with blood. Intestines throughout blushed.—Cæcum in a state of gangrene, which extended to a part of ascending colon—descending colon contracted in size, coats hardened and ulcerated.

DYSENTERIA.

This disease greatly increased after June, and the cases were severe and very fatal; being combined with hepatitis. It seems

to be endemic to the locality of the station, and to increase towards the termination of the monsoons. In August, particularly, it was combined with hepatic symptoms, which required to be promptly treated; and towards the termination of the year, it again shewed itself in the same form.

The treatment resorted to, immediately on the admission of a patient, was, to bleed from the arm proportionally to the state of the symptoms, and in many of the cases this was repeated—then to use purgatives, of pulv: jalap: ℈ss, or olei ricini, to apply leeches to the abdomen, repeated fomentations, and invariably to affect the system early with mercury: the best preparation of which was calomel, in combination with James' or antimonial powder. We found that no confidence could be placed in Twining's plan, as laid down in the transactions of the Medical and Physical Society of Calcutta, vol. 10, page 170. In ordinary mild *cases*, it is a valuable plan; but at this station, on account of the great determination to the intestines, and other viscera of the abdomen, a more active treatment requires to be resorted to. After the mouth is affected, and even when taking the calomel, Dover's powder in doses of gr. x ad. xv ter. vel. quater in die, has been found of essential service; or small doses of ipecac gr. iij ad. iv, 2dâ. vel. 3tiâ. quâque horâ, and occasional purgatives of pulv: jalap ℈ss, or ol: ricini. In some cases a blister was applied to the abdomen, but very rarely. In cases putting on a chronic form, I have derived great benefit from the following

℞ Hydr: Submur: gr. i
Pulv: Antimonalis gr. ij
Pulv: Ipecac. gr. iij M.

ter vel quater in die; or small doses of ipecacuan or ipecacuan and rhubarb. In urgent cases of tenesmus, great benefit has been derived from the following

Hydrarg: Submur: ℈j followed by
Ol: Ricini: ℥i

which generally relieved that distressing symptom—if not, the ipecac enema with tincture of opium; and the use of semicupium. If distressing pain occurred around the anus, with scalding on passing the stools, leeches were applied around the anus, with semicupium, or emollient enemas.

CASES.

Private Thomas McLean—aged 33, formerly a weaver—spare habit, came to India in June 1827. He had a slight attack of dysentery in October last. *Admitted* 13*th November*, complaining of severe pain of abdomen in the situation of umbilical region, increased on pressure, is frequently purged—dejections scanty and yellow, tormina and tenesmus severe—P: small and frequent—T: white, skin hot—blood extracted very much buffed and cupped. Vespere—bleeding repeated. 15*th*, pain of abdomen relieved, but complains of pain in the left hypochondriac region, extending to the top and back of left shoulder—increased on inspiration or pressure—no tormina or tenesmus, dejections thin, brown, and watery—*in the evening* the pain extended to right side, increased on taking a full inspiration—pain in left side much easier, dejections thin and bilious, with slight tenesmus—P: full and firm, increased difficulty of breathing—blood extracted buffed and cupped. 17*th*, rested well all night—dejections thin, brown and watery—complains of pain in the situation of the cæcum increased on pressure, breathing free. 18*th*, rested well in the night—pain at cæcum much easier—dejections thin and bilious—slight tenesmus—complains of pain on pressure at the scrobiculus cordis, accompanied with nausea and vomiting. 19*th*, restless night—dejections thin and watery, more pain in left hypochondriac region, but no rigors—great debility. 22*d*, good night's rest—dejections thin and of nearly natural colour—slight pain in left, and more pain in right side, with uneasiness all over the abdomen—pain relieved by tartar emetic ointment. 25*th*, restless, increased debility—stools passed involuntarily—skin covered with a cold damp perspiration. 29*th*, he expired half-past 9 P. M.

Treatment.—Repeated venesection from the arm, oleaginous purgatives—Dover's powder—repeated leeches to the abdomen, calomel in combination with James' powder, blister to the side—ipecac enemata with tinct: opii to relieve tenesmus—hydr: submur:, ol: ricini, fomentations to abdomen—semicupium, tartar emetic ointment rubbed over abdomen, ipecac: combined with extract of gentian—spoon diet, and two glasses of sherry a-day.

Body inspected fourteen hours after death. *Head.* great effusion of serous fluid between the scull cap and dura mater, and between dura mater and cerebrum, and in the ventricles, and spinal canal. *Thorax*—adhesions from former disease, between the pleura pulmonalis and costalis—healthy anteriorly, but posterior hepatized—effusion of serous fluid into the chest—heart healthy. *Abdomen*—Liver enlarged in size, and extended over the left hypochondriac region—left lobe enlarged and one mass of abscess, adhering to the diaphragm and stomach. The abscess had almost penetrated through the coats of the latter—spleen enlarged, intestines throughout blushed and very much contracted especially the colon and rectum, shewing when cut into extensive ulceration. Other viscera healthy.

Drummer James McGee, aged 39, formerly a labourer, of debilitated habit, came to India in September 1815, has been very seldom in hospital for the last five years. *Admitted* 2*d December* 1833—complaining of being frequently purged, with tormina and tenesmus—dejections yellow, scanty, and mixed with slime and blood, tenderness of abdomen, increased on pressure; slight pain at anus, pulse quick and hard; ill three days. On the evening of the 3d, increased pain of abdomen, tormina and tenesmus—pain at anus and strangury—stools fæculent. 5*th*, P. 110, small and weak, little or no pain except about the ascending colon and cæcum—ptyalism. 6*th*, much exhausted—singultus—cold tongue and cold breath, with a small tremulous and almost indistinct pulse—dozes and starts by turns—stools thin, watery, greenish and brownish color. 7*th*, expired at 3 p. m.

Treatment.—General, and repeated topical bleeding—oleaginous purgatives, semicupium and tepid bath,—small doses of calomel in combination with James' powder—ipecac enema c: tinct: opii—ung: hydr: fort: rubbed in each thigh—repeated leeches to anus—emollient enemata, fomentations. Opium in combination with calomel—pulv: ipecac comp:, blister to abdomen—spoon diet—latterly two glasses of port with arrow-root.

Body inspected 19 hours after death. *Externally.*—Emphysematous distention of cellular membrane—Abdomen tense. *Thorax.* A large ulcer in the upper part of right lung—pleura pulmonalis and costalis adherent throughout on both sides—lower portion of each much distended with dark blood. *Abdomen.*

Bowels distended with air, some slight effusion into peritoneal sac, liver pale and flabby in appearance, stomach towards cardiac extremity marked with extensive patches of dark red—coats of large intestines thickened—cæcum, ascending colon, arch, and descending portion, and rectum a mass of ulceration, in many parts ulcers the size of half a crown had penetrated the mucous and muscular coats—spleen somewhat larger than natural and emphysematous. The day previous to his death, he got much worse from drinking a quantity of port wine clandestinely brought by his wife; and all the time in hospital she had furnished him with wine, which was only discovered afterwards.

CHOLERA.

The casualties have been very few in comparison to the number admitted. Our increase occurred principally on the line of march in the Head Quarter division of the corps from Masulipatam. There were a few cases admitted at this Station, which were very severe.

It is remarkable that the European women are generally the first attacked with the disease, if present when troops are marching in this country. H. M. 39th on route from Poonamallee to Bangalore the past year was attacked at Laiterry Fort. The first case happened immediately on arriving at the encamping ground: a stout healthy woman was admitted in a state of collapse, and died in a few hours. The same happened in H. M. 62d Regiment on route from Bangalore, via Chittoor and Callastry, to Masulipatam the same year, at Kulgherry; and, lastly in the present corps at Gowraverum on the march. In all these cases the women were first attacked who were the stoutest and healthiest.

In this Regiment (Head Quarters and Right Wing) 21 men were admitted, and out of those, three died. In the hospital establishment, which consisted of three Assistant Surgeons, three Apothecaries, and four Native Apprentices, there were two admissions and one casualty, (in a Second Apothecary); the other a Medical Apprentice had a very narrow escape. He was a stout healthy young lad, and was attacked with most violent spasms in the inferior extremities, extending to the abdomen. He derived immediate good effects from applying externally the nitric acid.

Immediately on being called I generally took away about eight, nine, never more than fourteen ounces of blood from the arm, according to the circumstances of the case, invariably when used early: even a small quantity of blood produced a decided good effect, and caused re-action; but when the case was far advanced, it invariably did harm. This was followed by hydrag: submur: ℈i, opii gr. ij or this was more frequently given first. If there was much vomiting or weight at epigastrium, a blister and sometimes leeches were applied, but I preferred a blister to the scrobiculus cordis, afterwards a dose of the following was given every quarter of an hour. ℞ spt: vini gallici ℥ß olei cajaputi gtts. xxx mist: camphor: ℥iß M. I used some drops of the essential oil of cinnamon, if I could get it, for the first hour or two, and generally the patient was relieved after the 2d or 3d dose. I also sometimes used the spirit: ammoniæ aromat: in combination with spirit: æther: sulph: in drachm doses; and I have used tinct lyttæ in the same doses, but never found any good effect from it, except when there was strangury and retention of urine. Croton oil in doses of gtts. v to x acted in cleaning out the bowels, and in many cases appeared to cause re-action. Salt and water has relieved the symptoms for a short time, and in some cases caused re-action and brought out a gentle heat and moisture over the body; but upon the whole the good effects I derived from it were not decided. In natives it seems a valuable remedy, and after they are relieved by it, a little brandy is of service.

When spasms are severe in the extremities, the nitric acid applied gently with a feather acts like a charm, and very seldom requires two applications. It should be applied with a very gentle and steady hand, from back to front of the leg. The only objection I have to it is, that when not gently or properly applied, it is liable to cause sloughing and deep ulceration, which take a long time to heal; but after all it is a pleasant thing to know a remedy for the excruciating spasmodic sensation.

After the use of the essential oil, I use the following, ℞ sulph: quinæ gr. v ad. x, acid: sulph: dilut: gtts. xv, mist: camphor: ℥ij M. haut: omni semi horâ vel omni horâ sumend. In several cases port wine was used in doses of an ounce or two every hour, one drachm and a half, or tinct: lyttæ, with hot fomentations to the

with good effects. When there is retention of urine, which is a very common symptom, I use the spirit: æther nitrici in doses of pubes, or hip bath. As a cooling drink the diluted nitric acid in doses of a drachm, to a pint and half of water, forms a delightful drink, and assuages the urgent thirst; but it must be taken in very small quantities at a time.

In the state of collapse, if the patient be able to swallow, I give the essential oil, or port wine in combination with quinine, in doses of ten grains of the latter to one *ounce* of the former every half hour, and I think with good effects; also the ol: terebinth: in the form of enema, in the proportion of one ounce to eight ounces of congee water; and I employ firing the spine with nitric acid.

When the violent symptoms have abated, and to obviate great debility, which is a general attendant, I use arrow-root, sago, &c. with port wine or madeira, chicken soup, or weak beef tea: these must be given in small quantities and frequently.

In this disease when tending to favorable termination, the patients are often attacked with violent diarrhœa or dysenteria. Therefore, immediately after the violent symptoms have subsided, I give a blue pill at night followed in the morning with a weak infusion of rhubarb.

With respect to the causes of disease at Secunderabad, I consider them to be the sudden changes of temperature with Malaria, to which the men are much exposed in the present site and construction of the barracks.

The Honorable Company's European Foot Artillery has been highly praised by their Commanding Officer on account of their keeping healthy, and their comparative exemption from sickness has been attributed to their being allowed to walk about in the heat of the sun more than our men; but, the truth is, they have a much better barrack, and in a more healthy situation.

In June we had a change of weather, and I think the men got disease from not wearing their flannel shirts and bands regularly. In October and November, there is a very cold wind blows over the marshy ground, called the *sickly winds:* when these blow, we ordered the *shutters* of the barracks to be shut at night, and the men not to sleep in the verandahs; but it was difficult to enforce

this, as the air in the barrack becomes vitiated and oppressive if the shutters are closed, from these being the chief means of ventilation. Drunkenness is another source of disease here, from the men having full batta, and more money than they otherwise know how to spend.

1834.

By Dr. Watson, *Surgeon of the Regiment.*

Strength, January 1st, at Head Quarters	622		
at Poonamallee	9	636	725
at Masulipatam	5		
Recruits joined during 1834	89		
Sick remained last return			123
Admitted since			2152
Total treated			2275
Discharged			2115
Died			127
Remaining			85
Invalided			5

Table of Particular diseases.	Total treated	Died.	Remarks
Cholera Spasmodica	4	3	Two died out of Hospital. One by gun shot wound: the cause of the other unknown.
Dysentery	318	30	
Hepatitis	273	23	
Fever. Quotid. 774			
Tertian. 124			
Quartan. 4	902		
Remittens. 64			
Cont. Comm. 159	1125	10	
Other Complaints	555	9	
Total	2275	75	

1st quarter. Sickness did not much increase, but the diseases were more severe during this quarter; quotidian and tertian fevers were rather more common—remittents and continued fevers less so than they had been; hepatic and dysenteric cases were rather more frequent.

2d quarter. In this period of the year, the admissions from fever, hepatitis, and dysentery, were not so frequent.

3d quarter. In this quarter the sickness of the Regiment became seriously aggravated, particularly in fever cases, compared to the preceding quarter, they bore a proportion of 11 to 1; and this increase of fever was not sudden, but progressive.

From the following abstract of the monthly returns it will be seen that the total number of fevers continued doubling itself each month, so that the admissions of fever in September, bore a proportion to those in July of about 4 to 1.

Months.	Fevers of all kinds.	Hepatic affections	Bowel Complaints.
July	69	20	18
August	125	24	35
September	254	13	32

4th quarter. The following statement will shew the progressive decrease of disease, in the several months of this quarter.

Months.	Fevers of all kinds.	Hepatic affections	Bowel Complaints.
October	208	10	18
November	142	12	26
December	105	12	19

These statements shew that the greatest sickness from fever occurred in September and October, the season when the rains fell fast and heavy, when the adjacent country became thoroughly saturated, and the pools and the rivulets filled with water;—the season when vegetation acquired its greatest vigour, and the processes of decay and decomposition of dead organic matter kept a

corresponding pace;—the season in short, best adapted for the formation and concentration of Malaria, which, borne along by the current of westerly and south westerly winds prevailing at that time, must of necessity have passed over the low and ill-chosen spot, on which the barrack is built. To this cause then, *the agency of Malaria of a powerful concentrated kind*, I ascribe the sickness which crowded the hospital of the 45th Regiment in the months of September and October.

Nature of the prevailing Disease. The disease which was then prevalent, and which may be said to have formed the prominent malady of the year, was fever, manifesting itself most commonly under the form of quotidian intermittent, sometimes of tertian, occasionally of a remittent, and not unfrequently of a continued type.

Quotidian and Tertian Fever. Of the quotidians and tertians, a large proportion were mild and easily cured. In the more serious cases it commonly attacked suddenly; in some instances, however, its approach was denoted by some promonitory feelings or symptoms, as a degree of langour, listlessness, sense of chilliness down the back and in the limbs, head-ache, coldness of the hands and feet, and blueness of the nails—sometimes a simple feeling of *malaise* experienced for a day or two, terminated in a fit of ague. The fever was generally pretty regular as regards the appearance and duration of its several stages. The cold stage commonly came on betwixt 9 A. M. and noon; it rarely continued longer than an hour, or an hour and a half; and the hot one not more than three, or four hours. I believe 4 hours may be taken as the average period of duration of each paroxysm. In number, these seldom exceeded 6 or 8; and it occasionally happened that the paroxysm, with which a man was admitted, was the only one he had. The disease was generally of a simple or unmixed character; sometimes, however, it was complicated with hepatitis or dysentery. The re-action of the system was in some instances ushered in by vomiting, which seemed to weaken and distress the patient very much: head-ache, of the most acute and painful kind, attended the hot stage, but subsided the moment the perspiration broke out.

Relapses were not frequent during the period of real convalescence; but it seemed to me that those once affected with the dis-

ease, rather acquired thereby a morbid susceptibility to the impression of the febrific cause; or that the disease itself possessed the power of lying dormant, while the system was under the influence of remedial agents, for it often happened that no sooner were these left off, even after a long and steady use of them, than the disease, either spontaneously, or on the slightest exertion, burst out anew. It was no uncommon thing to find some, who were perfectly cured of the disease, and whose health would probably have suffered from a longer stay in hospital, return after a short residence in the barracks with a fresh attack.

Treatment. On the setting in of the cold stage, especially if any precursory symptoms marked its approach, an opiate with a few drops of sulphuric æther was administered, with a view either of checking it altogether, or of shortening the cold stage: occasionally it produced the former effect, more frequently the latter. In the hot stage where the head-ache was severe, it was sometimes necessary to apply leeches to the temples, but it was rarely requisite to have recourse to general bleeding. Purgatives were almost always used in the first instance, to clear the alimentary canal, and to pave the way for the bark. Where there was much heat of skin, a combination of diaphoretics and purgatives, as the liqr: acetat: ammoniæ and sulphat: magnesiæ, or calomel and James' powder, were attended with benefit;—But in putting a stop to a return of the paroxysms, our chief dependence was placed in the quinine or bark, which rarely if ever deceived us. In the milder cases, where the stomach would admit of it, the bark was used in the form of decoction or powder;—But in more serious or complicated cases, or where nausea and gastric irritability were present, the quinine was used, in doses of from 2 to 5 grains, three or four times a day, and with perfect success. A curious effect was observed to attend its use in many instances, viz. deafness: this peculiar symptom, like ptyalism by mercury, seemed to mark its decided action on the system, and was the surest index of the cessation of the paroxysm.

As a prophylactic measure, against the return of the disease, I at one time, had a room set aside in the barrack, where the men, when discharged from the hospital, were sent for a few days, as a sort of intermediate step to their return to duty. They were on barrack diet, were exempted from duty, took regular exercise, morning and evening, under the superintendence of a Serjeant, and appeared daily at hospital for medical inspection. It did not however meet my expectations, as the disease still continued to recur without any irregularity on the part of the patients, or any other evident cause.

The convalescents were afterwards placed in tents in a dry airy spot at a little distance from the hospital, from which they were dieted, and furnished daily with about two glasses of wine each. By this measure the convalescents improved, and the sick in hospital reaped the advantage of a less crowded state of the wards. This seemed to shew the influence of *site*: and the subsequent removal of the Regiment into Camp, was the means by which the most decided check was given to the progressive increase of the fever, and a great improvement effected in the general health of the men. This will be clearly seen by taking a comparative view of the state of health of the Regiment on going to and returning from Camp, as shewn in the accompanying table.

Sick in Hospital 14th Oct. 1834.		Sick in Hospital 14th Nov. 1834.	
Febris Quotidian Int:	132	Febris Quot: Int:	44
Febris Tertian.....	17	Febris Tertian.....	6
Febris Remittent.....	5	Febris Remittent.....	1
Febris Comm: Cont:	5	Febris Comm: Cont:	5
Hepatitis.....	12	Hepatitis.....	4
Dysentery.....	19	Dysentery.....	13
Other diseases.....	22	Other diseases.....	19
Total....	212	Total....	92

Remittent and continued Fevers. The remittent and continued fevers differed from the prevailing quotidian and tertian only in their having no apyrexial period, and their phenomena presenting generally a more serious aspect. These differences probably proceeded from natural peculiarities of constitution, and not from any specific difference in the cause; and under this view I rather regarded them as modifications of the same prevailing disorder. In the generality of these cases the biliary and gastric secretions were much out of order—either scanty, redundant, or vitiated: when-

ever this state was removed by suitable remedies, the disease assumed a milder and more tractable appearance, and was readily removed by an attention to diet, with the use of Quinine and other tonics.

Hepatitis. This is one of the most common and formidable diseases in this part of India. It occurred both, under an acute, and chronic form. It is to be observed, however, that many of the acute cases were in men who had been previously affected with disease of the liver; and in whom, previous to admission, its renewal from some accidental cause assumed a more active character. Derangement of function, if not organic disease, had before existed; and cases of this sort, under the head of acute hepatitis proved occasionally fatal, which would probably have yielded to antiphlogistic treatment, had they been purely primary attacks. In itself the disease presented nothing very unusually remarkable:—it often followed fever, and was frequently complicated with dysentery. *The treatment* consisted of general or local bleeding—friction on the side with tartarized antimony—blisters —calomel, and purgatives—enemata—fomentations; and when the force of the disease was subdued, calomel or other mercurial alteratives, followed by light tonics. Under these remedies the cases often recovered in about 8 or 10 days; but sometimes a sense of weight or pain in the side continued for a considerable time. The subacute or chronic forms of the disease differed little from the acute, except in the less urgency of the symptoms. A due attention to the primæ viæ, with blisters, and a gentle mercurial course, generally restored them to their usual state of health.

Dysentery, like liver complaint, is a frequent, and fatal disease at Secundrabad. It is often the attendant, and when it occurs separately, but too often the sequel of fever: indeed so frequently is this the case, that it is calculated to lead us to the opinion, that it is but a modification of fever, or to speak more correctly, fever manifested under a different form. That an intimate connection does subsist betwixt these diseases, can scarcely fail to be observed by every one who has had much experience of these affections in tropical climates. They are doubtless nearly allied, and, probably, owe their birth to the same parent.

This disease in its attack and progress exhibited the common

phenomena which we are in the habit of seeing in tropical dysentery—severe griping pains—dejections of frequent watery, slimy, and bloody stools—with straining and tenesmus. In duration, there was great variety—in some the disease was readily put a stop to; in others it was obstinate, and intractable, requiring a tedious and varied course of treatment. The plan which I have generally found most successful, and consequently pursued, was bringing the patient as soon as possible under the influence of mercury. This generally had the desired effect of relieving all symptoms, and restoring the natural secretions, as soon as the mercury took effect. When this failed I found ipecacuan with opium, especially Dover's powder, anodyne enemata, and the use of a flannel roller, the best remedies in bringing the case to a favorable issue.

Having now remarked upon the 3 principal diseases of the period:—diseases which of all others are the most prevalent in India; it would be only swelling the report with unnecessary details, even cursorily to notice the others.

It is incumbent on me however to give my opinion a little more fully relative to the sources of so much sickness.

Barracks and Locality. The barrack is situated in a low hollow spot at the eastern extremity of the cantonment, the ground from which, gradually declines until it merges in paddy field, with water courses, tanks, and topes of trees intervening. Behind the barrack the ground rises abruptly in a huge mass of granite rock. On the south of the barrack are the Hospital and Patchery.

There is scarce a position in which the barrack can be seen but it does not appear situated in a hollow; and although the immediate vicinity exhibits no conspicuously marshy or swampy country to a cursory observer, yet there is, to those conversant with the origin of pestilential gases, sufficient in the pools and water courses around, to satisfy them, that these form a fertile nursery of morbific exhalations, constituting one of the very worst sites for a barrack that could be found in this neighbourhood.

The construction is not less unfavorable than the site. It is built of a quadrangular form, divided into two squares, with only one verandah, and that on the inner side, and much too narrow to screen the rooms from the sun. The roof is without ceiling so that the heat rapidly penetrates; the ventilation is extremely de-

fective, and the drain or sewer from the S. E. angle discharges its offensive contents into a *cesspool* at 50 yards distance, the very existence of which so near the *men's quarters* is at once *noxious* and *disgusting*.

Exposure to the sun and night air; intoxication; and irregularities in diet, are often causes of sickness, but not of that of the epidemic or endemic sort for which this place is notorious.

1835.

By Dr. Watson, *Surgeon of the Regiment.*

Strength, January 1st, in the Command	645	774
Recruits joined, during the year	129	
Sick remaining last return		85
Admitted since		1729
Total treated		1814
Discharged		1701
Died		44
Remaining		69
Invalided		11

Table of Particular diseases.	Total treated	Died.	Remarks.
Cholera. (Non Spasmodica)	16	1	
Dysentery	207	26	
Hepatitis	161	7	
Fever	759	5	
Other Complaints	671	5	
Total	1814	44	

1st Quarter. A decided improvement has taken place in the health of the Regiment, compared with the quarter immediately preceding, which I ascribe partly to the benefit the men derived from being moved to Camp in October and November last, and partly to the favorable state of the weather.

In January there was an increase in the admissions of continued fever, but a decrease of other types of fever. The cases of hepatitis and dysentery were also fewer.

In February. Intermittents were not frequent. Continued fevers were equally numerous as in January. Hepatic affections rather common. Bowel complaints were less severe and less numerous, assuming more the form of diarrhœa than of dysentery.

March. Intermittents increased this month in the ratio of 5 to 2 to those of February, and the continued fevers were also more numerous, although not in such high proportion. Affections of the bowels and liver also increased, though still few compared with the number of fever cases.

It was observed that the state of the weather had a manifest influence in producing fluctuation in the most prevalent disorders. The smallest quantum of disease existed in February when the atmosphere was steadily clear and dry; and when it became more dense from moisture, and highly charged with electricity, diseases of the intermittent form particularly increased. Many of the cases of continued fever appeared to proceed entirely from derangement of the digestive organs.

During this quarter two deaths from fever are noted. The one from remittent fever was in a volunteer from the 48th Regiment, who was attacked on the march to join us from Masulipatam. When first seized, the symptoms are reported, not indicative of danger, and he was supposed to have recovered; but as he had a sore foot he was still kept in the sick list, and carried on the line of march. On the 22d January (when two marches from Secunderabad) he was seen at the morning visit, when he appeared well, and made no complaint; but two hours afterwards he was reported to be very ill, and in fits. His countenance was pale and ghastly, eyes turned up and squinting, lips livid and contracted, surface covered with a cold clammy sweat, he answered questions only by moaning. Blisters, sinapisms, cathartics, enemas, and arteriotomy were resorted to, but he died next day. *Dissection.* The membranes of the brain gorged with blood; effusion of milky serum under the arachnoid membrane; considerable effusion in the ventricles. The other death was from continued fever in a recruit. He was bled in the first instance, and seemed to be doing well for the first ten days, when (25th February) the fever assumed a low

character, and he died on the 7th March. There was great vascularity of the pia mater and effusion into the ventricles.

Two died of liver complaints. One was a recruit, only a short time in the country. The other a volunteer from the 48th Regiment: both had been ill with dysentery on the march to join us from Masulipatam, and in both suppuration had taken place.

Of the two fatal dysenteric cases, one was of long standing, the other supervened on delerium tremens.

April, May and June. The average daily sick has been greater than during the preceding quarter, from a greater number of chronic hepatic and dysenteric cases being in hospital; but the total number of admissions is less. Intermittents occurred very often in those who had previously suffered from the same disease. They were most frequent in the first month; and the continued fevers in the hot sultry month of May. The greater number of hepatic cases occurred in April and June, and of dysentery in May. The fatal cases among the men were all from dysentery.

Among the officers three deaths occurred. Two from fever which, in both, terminated suddenly in serous apoplexy. The other died on his way to Madras, whither he was proceeding for change of air, labouring under hepatitis.

July, August and September. Both fever and hepatic disease were much less common in this, than in the quarter immediately preceding; but dysentery was much more prevalent—evincing great determination to the mucous membrane of the bowels, apparently owing to the state of the weather; for whilst the former classes of disease decreased, the latter increased in proportion to the quantity of rain that fell.

In general the attacks of dysentery were of an acute nature, with violent tormina, and distressing tenesmus. The evacuations were of various appearances—sometimes slimy and bloody—or dark green, and glutinous—sometimes flaky and watery—at others pultaceous, or of a light clayey or chalky appearance—at other times composed of a reddish muddy fluid—or of a dark offensive liquid, like the washings of raw meat. This last was, I think, the most inauspicious form of the evacuations, and was generally present in the later stages of the worst cases. In the early stage, where inflammatory action ran high, general or local bleeding was used, and in

the more advanced stages, mercurials, opiates, anodyne enemata, Dovers powder, and swathing the abdomen with a flannel bandage. *Where the mercury took a speedy effect, it was generally attended with great benefit, but where it did not, it produced irritation of the general system, and seemed rather to aggravate the affection of the bowels.* Opium too, in some cases, afforded only temporary relief—lulling the pain, but not permanently arresting the complaint. Nitric acid in some instances appeared useful—in others it failed. The sulphates of zinc and of iron, the acetate of lead, and injections of the sulphate of alumine were all tried, but without any decidedly beneficial effect. The fatal cases of the quarter were almost all from this disease. On post mortem examinations the inner coat of the large intestines was in an ulcerated or sphacelated state; and in some the liver contained one or more abscesses.

The fatal case of fever was one where the patient was admitted with the usual symptoms of continued fever; he had leeches to the temples, his bowels having been previously opened by purging mixture; and in the evening some calomel and Dovers powder. Next morning he was much worse; skin rather cold—pulse not to be felt, but had no cramps; was very restless, throwing off the bed clothes, and complained of headach—eyes suffused and bloodshot—passed stools frequently in bed—could not get up without assistance: stools reported white coloured, without offensive smell. had vomited once or twice: called much for drink and complained of pain at epigastrium. Countenance anxious—some degree of dyspnœa and lividity of surface: was perfectly sensible and answered questions. He had calomel and opium: blister to the head, Sinapisms to the legs, Teribenthinate enema, Camphor mixture, and aromatic spirit of ammonia, and frictions of the surface with ol: teribenth. At ½ past 12 he became delirious; his pulse was still imperceptible, and at one o'clock he expired.

On post mortem examination the liver and spleen were found much enlarged—the former harder and paler than natural—the latter hard and scirrhous. The stomach was perfectly healthy. inner coat sound. The lungs bore marks of former inflammation, and were congested with blood. The sinuses of the brain were gorged with blood, and the brain when cut into exhibited more

bleeding points than natural, about half an ounce of reddish serum was found in the cavity occupied by the cerebellum.

October. The admissions from Fever, Hepatitis, and Dysentery were more numerous than in September.

Admissions of prevalent disease fewer, particularly of fever.

November and December. During this month there were fewer admissions of the endemic diseases, fever, hepatitis and dysentery, than in either of the 2 preceding months. Our greatest number of admissions occurred in October, when the atmosphere was charged with moisture, and the noon-day heat high: as the influence of these declined, the principal diseases of the climate declined also, and the general health of the corps sensibly improved. In October, of the fevers, the continued type was rather the most prevalent, but all the cases were in general easy of cure.

Among the hepatic cases, the chronic form was by far the most frequent, and was rarely attended with much constitutional excitement, but with a deranged state of the biliary secretion, with pain and sense of weight or dragging in the region of that organ.

The dysenteric cases during the quarter were severe, distressing, and obstinate. They were not often attended with a great deal of pyrexia, but the fever rather shewed a tendency to assume a low malignant character, with much the same appearance in the evacuations as mentioned in last quarter: the tongue now was usually dry and furred, or covered with a dark crust, in some cases it was as black as ink; in several instances a most fætid odour was exhaled from the patient for some days before death.

16 cases were entered under the head of cholera, but they were mere modifications of the other bowel complaints, exhibiting the same symptoms, with vomiting superadded, at the time of admission, on which account they received the different designation.

Most of the fatal cases during the quarter were from dysentery.

1836.

By Francis Sievwright, Esq. *Surgeon of the Corps.*

Strength in this country, January 1836.....
Recruits joined during the year..... 65
Sick remained in Hospital 31st December 1835..... 69

Admitted during the year.....1167
Total treated.....1236
Discharged to duty.....1140
Died in Hospital..... 37
Sick remaining in Hospital 31st December 1836..... 59
Invalided during the year..... 15
Volunteered from the Regiment during the year..... 299

Table of Particular diseases.	Total treated	Died.	Remarks.
Cholera Morbus—Indiana(?)	3	0	5 others died out of Hospital viz: 2 of Apoplexy, 1 of Dysentery, 1 of Ulcus grave, 1 cause unknown.
Dysenteria.....	190	25	
Hepatitis.....	94	5	
Febris.....	192	0	
Other diseases.....	757	7	
Total....	1236	37	

From 1st January to 20th November the Regiment was stationed at Secunderabad: and from the 21st November to 31st December, it was on the march to Madras.

PREVAILING DISEASES.

Febris. It is remarkable that not a death occurred throughout the year under the head of fever: the total number of cases of this sort treated, were 192. *In the first quarter*, intermittents prevailed, but proved slight. *In the second*, the admissions were principally of the continued form, a few intermittents, and two remittent cases. *During the third*, and which, with reference to the others, may be called the sickly or south west monsoon season, there was an increase of fever, chiefly of the quotidian type; but none proved obstinate. *In the last quarter*, at the termination of the rains, there were 44 admissions, chiefly of the same character, several of which proved obstinate. 3 cases of remittent fever were severe. There was nothing remarkable in those of the simple continued form, all of which readily gave way to the means adopted:—these were topical, and in some instances, general blood letting; emetics; purgatives; and Diaphoretics. Occasional determination of blood to the head, or to any particular part was treated according to indication. Some of the

cases were exceedingly slight; rest, abstinence, and a purgative being all that were required. Many of the intermittents gave way at once to the use of quinine preceded by a purgative; others required more active treatment. The remittents gave way to the lancet, with an emetic at the beginning; followed up by leeches to the temples, cold lotion to the head, active purgation, blisters to the epigastrium and region of the liver, mercurials, diaphoretics, and finally the sulphate of quinine.

Hepatitis. Of this disease 94 cases have been treated during the year; viz: 53 of the acute, and 41 of the chronic form. In the early part of the year the greater proportion were chronic, and the recovery, of nearly all, was tedious and protracted. In the two last quarters, there were 35 acute cases treated, and 8 chronic, for the most part severe and threatening, requiring prompt and decided measures. The free and repeated use of the lancet, leeches, epispastics, purgatives, and mercurials to induce ptyalism were the remedies used. *Four died.* One of the last men admitted, (Private John Reardon,) lost *eighty* ounces of blood from the arm within 21 hours of his admission, exclusive of that by leeches to the seat of pain, to which an ample blister was afterwards applied: the inflammation subsided, the mouth became tender with salivary flow, the evacuations immediately improved, and he recovered

In the case of Corporal Thomas Haywood, (admitted 29th July —died 29th August,) a slender made man, of delicate appearance, eight years in India, the termination was in abscess, formed chiefly in the left lobe, which on dissection was found to be a mere shell and larger than the great lobe in a healthy state, and contained nearly ten pints of pus; two smaller abscesses were found in the right lobe, and numerous preternatural adhesions connected it to the stomach, large intestines, and spleen, also to the mysentery.

Private William Morris sunk under the formation of an extensive abscess, extending downwards, and completely destroying the right kidney; in the left lobe there were several large hard white tubercular masses.

Serjeant Robert Platts, ætat 25, entered hospital on the 25th November with severe pain in the region of the liver, affecting his breathing, and extending to the right shoulder. He had felt unwell for 15 days, and had been foolishly using some native astringent remedies for bowel complaint, dependent no doubt on the state of the liver. The other symptoms were, quick contracted pulse, great thirst, loaded tongue, urine scanty and high coloured. *Treatment.* V S ad ℥ 48 succeeded by syncope with great relief; *(blood buffed)* 40 leeches were afterwards applied to the side, and mercurial alteratives ordered: oleaginous purgatives were prescribed, and the case promised to do well—copious green motions, slight salivary discharge came on. On *6th December* the salivary flow had ceased; side and shoulder again became uneasy, and the stools were of a watery and brown appearance. *12th.* Easier generally, skin cool, and mouth again tender. *13th.* Evident enlargement of the liver towards epigastrium, and he winces under pressure, slight discharge from the gums. *14th.* No sleep, great prostration, and tendency to syncope. Abscess indicated beyond a doubt. *15th.* Bad symptoms daily increasing, with considerable dyspnœa. *19th.* Expired.

Post Mortem appearances. Liver an enormous mass of disease, strongly adhering to the diaphragm, and filling the left hypochondrium—one abscess in the centre of the right lobe contained a pint of pus, there were three other abscesses protruding into the thoracic cavity and adhering to the ribs—large intestines throughout were partially ulcerated.

Private Lewis Page, ætat 30, of a robust habit, was the 4th case: by trade a Tailor, and a hard drinker. Admitted on the line of march on *12th December* after a fit of intemperance, complaining of pain in the right hypochondrium; said he had been suffering from fever and nausea for three days previous. He was bled generally and locally—had a blister to the side, and was freely purged. The pain at times was very acute, and it was augmented by the daily jolting of the dooly in which he was carried. On the *16th*, the mouth was slightly affected by mercury; but the pain continued, attended by symptoms of dysentery which gradually increased. On the *19th*, suffered violent pain in the posterior region of the liver, aggravated by the diurnal journeys he had to undergo. *21st*, gums sore, side considerably easier. From this date until the *26th*, the dysentery continued. *Well marked ptyalism* came on, but the patient is low and emaciated. *28th*, purging continues, with great prostration of strength. *29th December* expired.

Dissection. Liver twice its natural size and rising high into the thorax: one abscess therein the size of an orange, and several others dispersed throughout its substance. The great intestines ulcerated, and the mucous membrane in several places in a state of gangrene.

Remarks on the last two cases. In that of Platt's the symptoms for a time seemed to give way to the acute treatment employed: the mouth became tender, the gums swollen, with mercurial odour of breath, and there was slight salivary discharge, it was never however free, nor well marked. In Page's case, it was different, the peculiarity was striking; the gums were swollen and sore with well *marked salivary discharge:* and this example serves to point out the erroneous idea that some Medical men have formed, that where abscess exists ptyalism can never be induced; here we have an example in refutation of this opinion and I may take the present opportunity of remarking, that I have seen other cases illustrating the fallacy of this notion, at the stations of Dinapore, Cawnpore, and Meerut, on the Bengal establishment, I have likewise met with similar examples though comparatively rare on the Bombay side of India.

DYSENTERIA.

This is the most fatal disease in this country, the number of acute cases treated in 1836, was 183, of chronic 7, total 190, of which 25 died constituting about ⅛ of the mortality in the corps. *In the first quarter*, the number admitted was not numerous, nor were they severe. *In the second* very severe, and mostly of an acute character. *Third*, a great increase, and the greater number very severe. *The fourth* shewed a still greater increase.

This formidable disease continued to predominate in the 45th Regiment at Secunderabad, and on the line of march, attacking during the latter period, two descriptions of men—the young recruits who had been but a short time in the country, and the elderly Soldiers. In the former it was very severe, and from the aversion of the men to report themselves sick, much important time was lost, rendering the lancet less available, and less valuable than it would have been at the commencement. The delay arose from the common hatred men have to come into hospital; and the disease often goes on till they are compelled to place themselves under

treatment either by distressing symptoms, or on being detected with bowel complaint, to do so. A man of the name of Carr was one of this sort; the disease was contracted at Secundrabad; he was admitted 24th November, died 15th December. He confessed he had been ill for a considerable time, and said, he was afraid had he reported himself sick, he would have been left behind. Many of the cases were complicated with abscess in the liver, and were so severe and intractable, as to render them almost hopeless at an early period. The ravages on the large intestines, the more immediate seat of the disease, have to be seen, as well as described, to give any thing like an accurate idea of the destructive nature of the malady.

1*st.* *In the Post Mortem examination* of Private William Ballentyne who died 2d July, the whole tract of the large intestines was found much diseased, particularly the cæcum and rectum; on these were large patches of inflammation and ulceration; and, in one part, the cæcum was perforated.

2*d.* In Private Felix McKennon who died 24th August, portions of the small intestines were of a dark red colour; and in the under part of the umbilical region a portion of the ileum had a completely gangrenous appearance; colon thickened, with ulcerated patches in every part of its course, more so at the sigmoid flexure; ulceration continued to the rectum. Cæcum florid with great thickening, numerous morbid adhesions and several gangrenous spots, and a quantity of pus burst forth on attempting to handle it.

3*d.* In Private Robert Brown's *dissection*, who died 9th September, the liver was enlarged and indurated, presenting the pale ashy colour peculiar to drunkards, with very irregular surfaces. Large intestines from cæcum to rectum, a continued pile of ulceration, the former dark and gangrenous, and a mass of purulency: there was a similar appearance about midway in the descending portion of the colon, which was distended, with great thickening: detached inflammatory patches in the smaller intestines, contraction and thickening of the coats of the ileum; and serous fluid effused into the abdominal cavity.

The last example I intend to notice, shall be preceded by an abstract of the case.

4th. Private Joseph McEwan, aged 21 years, admitted *3d December* at Camp Jeddachirlah with acute dysentery. Ill two days, no evident cause, he lost ℥ 26 of blood from the arm, 24 leeches were applied to the abdomen, and ten to the anus, and under the use of calomel combined with ipecacuan, oleaginous purgatives, and enemata, he improved; on the *6th*, his gums were tender. *7th*, had several pretty natural evacuations. *8th*, became distressed with dysuria: ordered an anodyne enema every second hour, and warm fomentations to the epigastrium, which partly relieved him, and a catheter was passed with some difficulty from a spasm in the urethra. *9th*. These distressing symptoms increased; leeches and fomentations first to the epigastrium, afterwards to the perinæum were employed; passed some urine with a good deal of straining, after taking six doses of the muriate of iron. At 3 p. m. quite unable to micturate, swelling, pain and tenderness over the pubes increased under the slightest pressure, pulse full, quick and throbbing, and skin warm. After several ineffectual attempts to pass a catheter and bougie, he was placed in a warm bath, and ℥ 48 of blood taken from the arm, when the system became relaxed, and with the aid of the finger introduced into the rectum, about three pounds of urine were drawn off by a flexible bougie, with immediate relief to the patient. Dysenteric symptoms continued. *10th*, passed his urine easily. *11th*, ditto. *12th*, motions of a brown and fætid description like grumous blood: is free from pain, but pulse low, and very feeble, *died 13th December.*

Dissection. Liver enlarged throughout, of a pale nutmeg colour, and softer in its consistence than natural, gall-bladder distended with dark ropy bile. Stomach healthy—Cæcum, the mucous membrane considerably thickened and spongy, but pale with minute ulcerated spots, 2 or 3 lines in diameter, having a blue appearance externally. In the arch of the colon mucous membrane also altered as above, with similar ulcerated spots: great disease at sigmoid flexure, which was one mass of ulceration, its mucous membrane shewing deep fissures, thickened and spongy: one part of this intestine was adhering to the bladder posteriorly by recently effused lymph, in large quantity, but easily broken down: the outer side of the bladder had partaken of the inflammatory action, which accounts for the very severe ischuria; but the inner side did not

shew the least increase of vascularity, the urethra and neck of the bladder appeared healthy.

Our treatment of dysentery has varied according to the nature and description of the subject, symptoms, and length of time that elapsed after the patient was first taken ill. The lancet and strict antiphlogistic system is invariably had recourse to in recent attacks, when the patient is young, or lately arrived in the country, and of a plethoric habit; and in many, repeated venesection has been required, and leeches generally applied to the abdomen, with frequent fomentations; and when there is distressing pain at the anus, leeches around it. Along with the depletion we use oleaginous purgatives, or pulv: jalapæ comp:, and occasionally those of a saline nature: we invariably affect the system with mercury as speedily as possible, by means of calomel combined with ipecacuan in large doses (℈j to 4 grains), or with Dover's powders, or opium in small doses; and we also use mercurial frictions; in addition to these remedies emollient and anodyne enemas; tepid bath or semicupium—and a blister to the abdomen, this last however is seldom had recourse to. The late Mr. Twining's plan of small and frequently repeated doses of ipecacuan and acacia has been tried, but cannot be depended on at Secunderabad, on account of the great determination to the abdominal viscera, which requires more active remedies. It is decidedly useful, however, in cases of some standing, where the symptoms are, and have been comparatively slight, with elderly men subject to bowel complaints, and whose constitutions are shattered: along with the ipec: and acacia, the remedies used are topical blood letting, gentle purgatives, alteratives, and mild astringent remedies, with an after treatment of tonics.

Cholera Morbus.—Fortunately for the corps, but 3 cases of this unaccountable disease presented themselves in the course of this year. The first was mild; the second modified, and recovered under the exhibition of calomel in combination with opium, along with frictions, sinapisms and blister to epigastrium. The third was threatening, but gave way to the same mode of treatment, and a warm bath.

Venereal Diseases were overwhelming at Secundrabad; but are disappearing rapidly on the march. (In 1836) the number of cases

treated amounted to 245. The evil, arising from the abolition of Lock Hospitals, (by order of Lord William Bentinck) is a very serious and growing one. The diseases of this class abound in the contaminated bazars and suburbs of every Military Station; where, without Lock Hospitals, they will continue to increase and multiply, and undermine the efficiency of the European Soldiery. The treatment adopted for primary syphilis was attention to diet, with purgatives, rest, the liquor calcis with calomel to the sores, and an alterative course of mercury, so as to effect the system. In consecutive disease, calomel combined with opium, compound decoction of sarsaparilla &c. For bubo—fomentations, cataplasms, blisters, leeches, purgatives, mercurial frictions, and when suppuration ensued, opening with the lancet, or kali parum (which last is a preferable mode). For gonorrhœa, antiphlogistic regimen, purgatives, balsam capaiva, and cubebs in large repeated doses.

I have the following observations to make relative to the locality of the *Barracks at Secundrabad*. They are built in a hollow, and the crowded church yard, (within a stones throw,) is in front, conspicuously elevated above them. In summer the air is insupportably close; and in winter the ground around is a complete swamp. Numbers of the diseases among the men are of *malarious* origin, shewing they are not simply the effect of climate or intemperance. Alterations have been proposed with the idea of rendering the Barrack more comfortable, which no doubt would have some good effect, as their construction is exceedingly defective in regard to ventilation, and accommodation; but it would be a waste of money, for it is the *site* that is *malarous* not the building.

So far as the sudden changes of the weather are productive of disease, which they decidedly are, a better barrack and great attention to cloths (the wearing of flannel next the skin) would be preventive of *disease* to a certain extent; and these two points deserve great attention at this place which is a high table land, with much rain in June; and cold in October.

1837.

By Francis Sievwright, Esq. *Surgeon of the Corps.*

Strength remained 1st January 1837..... 427

Sick remained in Hospital last return..... 59
Since admitted..... 706
Total treated..... 765
Discharged to duty..... 742
Died..... 16
Left in sick in Hospital at Madras..... 11
Sick embarked with Regiment..... 8
Invalided..... 39
Volunteered during the year..... 170
Discharged from the Regiment..... 4
Strength of the Regiment embarked for England by Ships "*Minerva*," and "*John*," 1st November 1837..... 189

Table of Particular diseases.	Total treated	Died.	Remarks.
Dysenteria.....	123	9	
Hepatitis.....	67	3	
Fever.....	115	1	
Other Complaints.....	460	3	
Total....	765	16	

At the conclusion of last Report, the corps was on route from Secundrabad to Poonamallee; it left the former place finally on the 20th November 1836, halted every fourth day, the long marches being divided when practicable, so as to form two easy stages; and in this manner passed through His Highness the Nizam's dominions, crossed the Kistna River and entered the Bellary district 14th December; and proceeding through the Mysore country from 3d to 15th January, to the Northern Division of Arcot, it finally arrived at Poonamallee on the 31st January 1837—the distance marched being computed at five hundred and twenty-eight miles.

Prevailing diseases, Weather, &c. Dysenteria and hepatitis continued to be the prevailing diseases during the march, the former occurring in two descriptions of men, the young who had been but a short time in India, and the elderly soldiers. In addi-

tion to the causes assigned for dysentery (on the line of march) in my report of last year, I have to mention another, the use of country new made arrack, or "puttah" as the natives term it, a pernicious description of spirit and easily procured at the different villages, notwithstanding every endeavour to prevent the soldier drinking so deleterious a beverage.

The corps was free from cholera on the march, altho' there were several alarms about it, partly from the circumstance of several camp followers having been reported to have died of this dreadful malady; and partly from a recollection of the ravages committed by it on a former march from Arnee to Masulipatam in the latter end of 1832; on which account, from the slightest attack of vomiting or purging, the men became very anxious. A few suspicious symptoms appeared occasionally, but the term "cholera" was not permitted to be used: ("tis the mind that makes the body rich"), and, thank Heaven, the Regiment performed its long and arduous march without a case occurring.

The following incidents occurred on the evening of 25th January at "Alleekolum," while we were encamped there on an elevated site. Five men of the corps in a tent the door of which happened to be open to windward, were suddenly seized with nausea, vomiting and purging. A Serjeant observing this, very judiciously ordered the tent to be closed, when they very speedily recovered, so that it was found unnecessary to admit any one of them into hospital.

First Quarter. The prevailing diseases were fever, and hepatic affections, and dysenteria. Every case of the two latter, on the march, as has already been observed, was of a severe nature. After our arrival at Poonamallee, however, dysentery gradually diminished, and the cases that occasionally presented themselves were less threatening in their symptoms, and much more tractable; giving way readily to the remedies employed. On the other hand hepatitis assumed, if possible, a more severe form, and required the most active treatment.—Nine deaths occurred in 269 treated.

The Hospital at Poonamallee is excessively hot and close, being situated inside the small Fort, the walls of which are higher than the Hospital, and prevent free ventilation; and this seemed

to be very injurious to the hepatic cases, rapidly inducing the termination in suppuration.

The case of Private Murphy was particularly interesting. He was a large made man, 32 years of age, admitted in Camp on the 8th December, after some unusual exertion to pitch a tent, with symptoms of pneumonia, for which blood-letting, purgatives, blisters, diaphoretics, and expectorants were employed, and the disease gave way. He was afterwards attacked with dysentery, and latterly with symptoms of hepatitis, the bowel complaint apparently depended thereupon, but the signs of the undermining inroads of the latter so treacherously crept upon him, that it was only by watching, cross questioning, the aid of repeated examination and under pressure with the hand over the suspected parts that it was confirmed. Repeated blisters, the application of leeches, introduction of a seton, alteratives, purgatives, mercurials, and mercurial frictions, with due attention to diet, appeared to arrest the destructive progress, but ptyalism could not be induced, slight swelling of the gums and very slight taint of the breath being all that could be detected: exceedingly irregular bowels, sometimes torpid, at others greatly relaxed. He was apparently improving on the 31st January, but the following day purging came on, which continued in a greater or less degree, until his death on the 14th February.

Post Mortem Examination, 9 hours after death. The body not much emaciated, of a yellowish tinge. In concave surface of the liver, about its centre, anteriorly, was a circumscribed cavity, about the size of a billiard ball, containing a reddish brown, and very fœtid fluid, (similar to what he had for some days passed by stool), the walls of this cavity were of a dark livid colour, and gangrenous odour, gangrene had attacked the liver to a considerable depth, the gall bladder was no where to be seen, and appeared to have been completely disorganized; the abscess had become attached to the arch of the colon, on opening which, a large and distinct perforation, easily admitting the little finger, was seen; the lips of the aperture red and inflamed; through this passage, the contents of the abscess had been discharged into the colon, which was distended with dark gangrenous fluid, even up to the caput cæcum; the coats were somewhat thickened, but there was no ulceration.

Second Quarter. Compared with the preceding, ending 31st March, the present was a mild one as regards the nature of the diseases, and the result was only one fatal case in 234 treated.

Of the bowel complaints, I would say, the symptoms were generally of a milder nature, than the destructive examples of this unmanageable disease that were encountered at Secundrabad, and on the line of march: in verity, many of the latter were examples of disease engendered at the former station, which germinated on the slightest exposure, or burst forth after any irregularity or excess. On few indeed had the destructive climate of Secundrabad, coupled with the badly chosen site of the Barrack there, failed to cast its baneful influence.

Third Quarter. In this, nearly the same proportion of diseases were treated and discharged as in the preceding.

Fourth Quarter. Embracing only the portion of it from 1st October to 14th November the numbers of cases treated were 99. No deaths. The admissions were—of Febris C. C. 9 of a mild description, readily giving way to gentle treatment—of Hepatitis acuta 8 examples occurred, which required to be treated in the most active manner, and 3 of the chronic form.

Of the 19 sick remaining (14th November 1837), 10 men were transferred to the Depôt Hospital Poonamallee, who, with a maniacal patient previously sent to the Lunatic Asylum, were considered not in a fit state to embark with the Regiment.

MISCELLANEOUS REMARKS.

Cholera. With the exception of a solitary case in the modified form, admitted on the 12th and discharged 20th February, no example of Cholera occurred in the regiment during the year, altho' this mysterious disease was raging in the immediate neighbourhood of Poonamallee, and at Madras; and people of every description European and Native, were daily falling victims to it. Numbers of H. M. 63d Regt. quartered in Fort St. George suffered: it also appeared among the Troops at the Depôt and carried off a young recruit immediately after his arrival. The disease hovered about the Presidency from May up to the date of our embarkation with greater or less virulence.

The following Regimental Orders were issued by the Commanding Officer, with a view to its prevention.

Poonamallee 15th June, 1837.

"1. It having been officially notified to the Commanding "Officer, that Cholera has made its appearance at Madras, the "men of the 45th Regiment are particularly cautioned against "sleeping in the open air, or in a draught, or upon the ground;— "also against drinking immoderate quantities of cold water; and "in no instance should any other be used except that supplied by "by the Regimental Puckallies, or water carriers.

"2. Lieut. Colonel Boys most particularly prohibits any man "from straying in his morning or evening walks to a distance be- "yond one mile from Barracks, and no passes will be authorized "during the continuance of the Epidemic at Madras."

Venereal diseases. A large proportion treated considering the strength of the Corps, but since Lock Hospitals have been done away with in India, there is no preventive remedy; and this crying evil most probably will increase among H. M. Troops. Women who were taken up, examined, and found to be diseased, have been at different times ordered away from cantonment, but they returned stealthily during the nights, and neither the magistrate nor the commandant had the power to confine them, or to punish them for so doing.

I have spoken of the causes of disease at Secunderabad; and at Poonamallee I would say the Barracks very inadequately shelter the men from the burning hot winds that prevail at certain seasons of the year, being low, narrow, and uncomfortable, and without glazed windows. The surrounding country is irrigated nearly up to the Barrack gates, yet *Malaria* does not appear to be generated, probably as the water is clean and often changed; but there is this evil here, that, in no part of the country are spirits, and intoxicating drink more easily procurable, and our Hepatic cases I think are attributable to this cause.

The Regiment embarked from the Beach of Madras for England on the 14th November, in the Freight Ship "John" consisting of 9 officers, and 176 non-commissioned officers and privates, (13 officers and 13 men having previously left in the "Minerva");

total 22 officers and 189 men, after being 19 years on foreign service.

Table of Invalids and Deaths in H. M.'s 45th Regiment during its service in the Madras Presidency in 1832, 3, 4, 5, 6, and 7.

	Men.			Died.			
Years.	Died in Hospital.	Invalided.	Total Ineffective.	Officers.	Women.	Children.	
1832	125	20	145	2	17	29	
1833	51	0	51	0	3	10	
1834	75	5	80	2	8	4	
1835	44	11	55	2	4	2	
1836	37	15	52	0	5	12	
1837	16	39	55	0	2	2	
Total...	348	90	438	6	39	59	

ARTICLE II.—*From the* RECORDS OF THE MEDICAL BOARD *by permission.*

REMARKS *on the nature and treatment of* NAGPORE FEVER, *with cases and dissections, being* EXTRACTS *from the half yearly Medical Reports of the* MADRAS EUROPEAN REGIMENT *for the years* 1834 *and* 1835, *by Surgeon's* W. A. HUGHES, *and* R. ANDERSON.

The prevailing diseases during the half year have been Fevers, the number of which have more than doubled those of the corresponding period of last year, and amounted to two thirds of the

total admitted; and altho' the frequent return of some has tended to swell the admissions to about 40 per cent. above the strength of the Regiment,* this does not shew the extent to which the complaint actually prevailed, for I have reason to know, that many to whom its recurrence had become in some measure habitual have managed by the seasonable use of medicine to moderate, or wholly arrest the paroxysm, and so improve the interval, as to be enabled to continue in the performance of their duty. And, so far as my opportunities of observation allowed me to judge, I have found that the occupation, and exercise, necessarily attendant on this measure, have materially assisted in its accomplishment, although the individuals must have been possessed of a considerable degree of mental vigour at least, to have enabled them to undertake it.

* We insert the following observations relative to the Cantonment of Kamptee, as they have reference to the great prevalence of Fever at this Station.—*Editor.*

MILITARY DEPARTMENT, *dated 5th September* 1834.

"It appearing from a statement before the Government of India, shewing the comparative healthiness of the different stations occupied by European Troops, that Kamptee, like Secunderabad, presents a more unfavorable average of deaths to strength than the generality of other stations; I am directed to express the request of the Right Honourable The Governor General of India in Council, that the Madras Government will direct the formation of a Committee, to report upon the causes of these results, and to propose any measures calculated in their opinion to remove them."

Extract from the Proceedings of a Committee assembled at Kamptee, on the Tenth of November, One thousand Eight hundred and Thirty-four.

"The Committee having examined, and maturely considered the situation of the Cantonment of Kamptee, and the sites and structures of the public buildings occupied by the European Troops; cannot discover that any cause exists in their vicinity to which any considerable sickness can be attributed; with the exception hereafter specified. The Cantonment of Kamptee being situated in the Nagpoor Valley, having dense jungles on the North, East, and South, may in some degree account for the fever which is the prevalent disease; the jungles, however, are at the distance of about thirty miles.

"From an Abstract of the average, marked in the Appendix D. it will appear, that Kamptee in point of deaths to sick per annum, gives 4 3-10th, being next to Trichinopoly in point of mortality; though from the same paper, a general average of sick to strength gives 254 per Cent per annum—shewing that although the number of admissions has been considerable, the actual loss has not been

Although reiterated attacks appear to confer a certain degree of exemption from the greater violence of the paroxysms, and a more distinct apyrexial period, the first invasion of Fever has always been most severe, having a tendency to the continued type at its onset, and frequently been complicated with inflammatory action in the head, chest or abdomen, endangering life, or laying the foundation of organic disease, and protracted convalescence, but without shewing any of the Typhoid character which I noticed at this station in 1819-20.—The country however since that period has been brought to a much higher state of cultivation; and it would appear that in proportion to the power bestowed on the soil of abstracting moisture from the atmosphere, and combining with the deleterious products of decomposition held by it in solution, the more healthy does a district become, however luxuriant the vegetation or abundant the quantity of matter supplied for decomposition.

Premonitory symptoms have almost constantly been observed, and in general been well marked. The incursion of the paroxysm has in consequence often been anticipated and averted. There has

proportionably great, arguing for a less malignant form of disease; there being *four* stations of the Madras Presidency occupied by European Troops, which shew a *greater* number of deaths, and four stations *less* as indicated in the paper in the Appendix, E.*

"There is a swamp extending from the front of the parade of the Madras European Regiment, to the Barracks of the Horse Artillery, which the Committee recommend being remedied by taking measures to carry off the water which lodges there in certain seasons, and which may cause Fever.

"The Committee beg further to observe, that the Barracks of the Madras European Regiment consist of six ranges instead of one for each Company, which occasions a good deal of crowding, and obliges men to occupy the Verandahs, which were intended merely as a protection against the weather.

"In conclusion the Committee beg to observe, that owing to the excessive drought of the two preceding years, and the unusually heavy fall of rain during this, so considerable a difference may have taken place in the state of the atmosphere, as to have produced more sickness than in any former years, the prevailing Fever is, however, by no means of a malignant form."

(Signed) J. Woulfe, Colonel,
President.

* It is not considered necessary to give the appended Tables here.
S. R.

been a feeling of depression for some days, uneasiness at the stomach, chills, and often catarrhal symptoms; but a less equivocal precursor has been, the peculiar sense of weariness and aching of the limbs amounting to actual pain, with loss of power, as the headache, sickness, thirst, utter prostration, and confusion of mind have developed the febrile paroxysm, and continuing in some instances long after every other affection has subsided—unless the patient has been subject to fever, or it has been anticipated by free evacuations, no distinct cold fit has been experienced, and the tendency to remission been slight, the irritability of stomach and cerebral disturbance considerable, and the period of recurrence irregular, until after a second or third paroxysm: the fever has been a distinct Tertian, in about one fourth of the number of cases; a double Tertian, with one severe, and another slight paroxysm on alternate days, in about two thirds; and in the remainder it did not appear referable to any particular type, but the exacerbations were influenced by the state of the digestive organs, or complication with particular local congestions, which, although obscure or latent, were of considerable importance as laying the foundation of visceral disease, or of the habitual recurrence of Fever, or ultimately pains, Diarrhœa or Dropsy.

As the period of return to duty appears the best general criterion not only of recovery, and of the efficiency of the Regiment, so far as depends upon the healthiness of the station—but at the same time of the character and severity of the disorder, (and few of the more serious cases have occurred which were not combined with so much cerebral, pulmonary, or abdominal congestion as not only to require particular measures for their relief, but to protract recovery), I have endeavoured to arrange, according to the predominant causes for detention, each description of all those who remained in hospital above 10 days, and subjoin the average period of recovery.

Of 984 cases of Fever admitted during the half year.

794 returned to duty on an average in 5 days.
26 .....(more intractible) in 16 days.
12 .....detained with pains 27 days.
12 .....detained with local complaint.
30 .....complicated with cerebral affection 15 days.
18 ..... pulmonary 24 days.

21 returned to duty complicated with Gastric 15 days.
10 ..... Gastro enteritis 17 days.
12 ..... Hepatic 28 days.
6 ..... Spleen 28 days.
10 were sent to the coast.
6 died.

and 22 remain, all doing well, with greater part about to be discharged. Of 36 cases complicated with high action in the brain, 27 occurred during the 2 months of September and October; in these, great *temporary* relief was obtained from shaving the head and applying cold lotions, Leeches to the temples, or a blister to the nape of the neck; but *permanent* benefit was only procured by free action upon the bowels, and restoring the natural secretions.—Two died, one on the accession of the cold stage of the second, and the other in the hot stage of the first paroxysm after admission, both having had free evacuations and perfect intermissions—4 still remain in hospital having suffered from general pains and relapse, but now doing well.

Few of the severe cases have been admitted without some degree of pain and constriction of the chest, cough, and difficulty of breathing, in some instances followed by expectoration, but with trifling exceptions have been quickly relieved by local bleeding, counter irritants, Diaphoretics, laxatives &c.; and only one recently admitted remains.

Abdominal complications have been insidious in their approach, and at times so obscure in their progress as to be completely masked by the more prominent cerebral, or general disturbance. The violence or duration of the paroxysm has never been a criterion of their extent or importance; and the apyrexial period has principally been looked to for indications of their existence and character; at this time, although the skin may have become cool and moist, the pulse moderate, thirst abated and even sleep procured, there may yet be collected from the subdued expression of suffering in the countenance, extreme and continual restlessness, appearance of excoriation at the edges, or glassy tongue, or hiccup, watery stools with light coloured sediment, alternating with constipation, that organic disease is smouldering, although neither tenderness on

pressure, nor uneasiness of any kind can be detected which indicates the particular organ in danger.

Of sixty of the worst cases, four have died, four have been sent to the coast, and two remain. One of them recently admitted and the other doing well; and the remaining fifty have recovered.

Where local action has been indicated by pain, local depletion has always been resorted to, but where no tenderness was experienced on pressure, a combination of general palliative and alterative measures, with counter-irritation, have been found preferable; the inflammation appearing of a certain form, (not as regards its duration but its intensity) and apparently owing its birth and character, rather to the enfeebled state of the subject, than simply to the general disturbance, and subsiding with the return of strength. In most cases the vascular system has been sufficiently relieved by determination to the surface or intestines, without the necessity of abstracting the circulating fluid. When the mind has been unclouded, pulse compressible, skin moist, and Tongue little changed, the greatest benefit has been derived from a full dose of opium which has appeared to allay restlessness and relieve the respiration and anxiety—sinapisms or blisters to the epigastrium have proved highly beneficial. The mixture recommended by Sir A. Cooper of Liquor Ammon : Acet Tinct. Opii : and Magnes Sulphas was frequently of service in allaying thirst and excitment, and at the same time relieving the bowels—but the influence of mercury on the system has been principally depended upon, 5 grains of calomel, with one of Antimon : Tartar, occasionally conjoined with opium, and exhibited every third or fourth hour, has been found to produce a most perfect intermission; the general disturbance and restlessness have subsided, refreshing sleep been procured, and a feeling of muscular strength restored, when advantage has been derived from a moderately stimulant and tonic plan of treatment, and antispasmodic remedies have been administered with the best effect.

Dissections of the Men of the Madras European Regiment who have died of Fever from the 1st of July to 31st October 1834.

Names.	Rank.	Age.	Period of Service in India. Years.	Months.	Country	Disease.	Date of Admission.	Date of Decease.	Duration of disease. Months.	days.	Appearance on Dissection.
Michael Driscoll.	Private.	24	3	11	Ireland.	Feb: Remitt:	25 Mar. 1834.	25 Aug. 1834.	5	0	Vessels of the head engorged, arachnoid membrane milky, the brain on section was studded with numerous red points, ventricles full—two ounces of fluid on the base of the skull.
James Bryson...	Private.	28	7	2	Ireland.	Feb: Int: quot.	28 Sept. 1834.	4 Oct. 1834.	0	6	Membranes of head vascular. Brain when cut into studded with red points, all the blood vessels distended. One ounce of serum in the ventricles. Pericardium containing about one ounce and half of fluid. Liver soft and spongy—upper surface adhering slightly to parieties dark coloured and almost disorganized.
Richard Kirkham	Private.	23	3	8	England	Feb: Int: quot.	19 Oct. 1834.	21 Oct. 1834.	0	2	All the vessels in the head gorged with blood—the ventricles contained each about a drachm and half of serum, much blood in the depending portions of the lungs, the Heart very large and the right side full—two ounces of fluid in the Pericardium.

Thomas Mc Kion.	Private.	14	7	6	Ireland.	Feb: Tertian.	21st October.	23d October.	0	3	Vessels of the head much gorged with blood, one drachm of serum in each ventricle and about half an ounce in the base of the skull. Four ounces of serum in the thorax; lungs filled with frothy serum. Spleen weighing twenty-two ounces, soft and disorganized, resembling black jelly.
Henry Atkins...	Private.	27	7	6	Ireland.	Feb: Int: quot.	20th October.	24th October.	0	4	Vessels of the head engorged, substance of brain on incision dotted with blood, serous effusion between the membranes; liver enlarged. Several vascular patches on the lining of the colon and rectum—spleen weighing two pounds of the appearance and consistence of black currant jelly, both sides of the heart full.
James Gibbs....	Private.	29	6	5	Ireland.	Feb: Int: quot.	27th October.	6th Nov.	0	10	About 16 ounces of seropurulent fluid in the cavity of the abdomen. The whole of the peritoneum thickened and highly vascular. The intestines glued together and in parts to the parietes. On the cæcum several small spots appearing gangrenous and the intestine beneath perforated. Membranes of the brain very vascular ventricles full and a considerable quantity of serum effused.

W. A. Hughes,
Surgeon.

Nagpore,
December 1834.

The diseases that have chiefly prevailed during the last six months, have been of the same form as in the half year which preceded; and if there is any one circumstance, which I have to regret more than another with respect to treatment, it is having used the lancet with too much precaution. In making this acknowledgement, I am well aware that the propriety of blood-letting in Nagpore fever is still a disputed point, for while one person lauds the lancet to the skies, another cries it down *in toto*, and far be it from me to advocate its indiscriminate use, as nothing can be more erroneous than to suppose, that, the same assemblage and train of symptoms, in different individuals, should require similar remedies. But it is a curious fact, that, of the four cases which proved fatal, three were not bled, and the other was only bled to 20 ounces, and in every case which was examined after death, (and all who died in Hospital were examined), the vessels of the brain were congested, and the stomach in every instance more or less inflamed; and although repeated leeching, fomenting, and blistering the epigastric region, appeared to diminish the congestion and inflammatory action of the vessels, yet they were evidently insufficient to subdue the disease.

Looking upon fever then, as an inflammatory affection of some one or more of the Viscera, (but in its severest form most frequently of the stomach,) I should say that in every case where the symptoms of cerebral plethora, or epigastric pain are at all well marked, and where the patient is in the vigour of youth, or even if he should be advanced in years, and not have suffered from previous attacks, or been much in Hospital on account of other disorders, the combined use of the lancet, leeches, fomentations, blisters, active purgatives, and large doses of calomel and opium, will more speedily and effectually remove the disease, and prevent visceral disorganization, than any other remedies with which I am acquainted. Our practice however, particularly during the heavy rains in August and September, when we were annoyed with a low kind of fever, which in two or three instances required the free use of Wine and Spirits from the very commencement, consisted chiefly in allaying the gastric irritability by leeches—blisters—large doses of calomel and opium—followed by active purgatives—and Quinine when a complete remission was procured. And I do not deny that there were cases, where, from the constitution having been so much impaired by former attacks, the lancet could not have been used; but in the instances of Armour and Flynn, I am convinced it would have gone a great way to have saved both, and there are at this moment several cases in my recollection, which were in a more dangerous and precarious state than either on admission, and which, in my opinion, were saved solely by the timely abstraction of blood.

FEBRIS REMITTENS 3 CASES.

Owen Flynn, Private Ætat 32, *Resident in India* 9 *years.*

2*d August* 1835. Admitted at noon during the hot stage of Fever, complaining of headache, and sickness; Pulse frequent and full; Tongue brown and furred; bowels not moved for 3 days.

℞ Pulv: Emetic: Statim.

Vesp. Headache and sickness a little relieved by the emetic; one stool; skin bathed in moisture.

℞ Ext: Colocynth: Calomel: $\overline{aa}$ grs. viij ft. pil. ij st. s.

3*d.* Headache continues; 3 stools; Tongue very much loaded; Pulse quick and small.

℞ Olei Ricini, Aq: Minth: $\overline{aa}$ ℥i M.

Vespere. Fever increased at 10, and still continues very high, with severe headache and præcordial oppression, no stool from the medicine.

Appl: Hirudines 36 Epigast: ℞ Ol: Croton gtts: ij stat: et post horas tres Calomel: gr. x.

4*th.* Was freely vomited and purged in the night; no sleep; this morning Pulse 100, and soft; headache and præcordial oppression greatly relieved by the leeches: Tongue still white and furred.

℞ Calomel, pulv: Antim: $\overline{aa}$ gr. iij ft: pil: 3tiâ quâq: horâ.

5*th.* A restless night, with distressing retching: no stool; this morning thirst very urgent; P. 94, soft: skin moist: tongue very much loaded.

℞ Pulv: Jalap: C. ℥i. Calomel: gr. x M. Acid drink.

Vesp. Bowels have been freely moved: stools watery and of a dark brownish colour: Pulse 112, rather full, with slight pain of head and oppression at præcordia: skin warm, with some moisture on it.

Applic: Hirud: 35 Epigast. Postea Fotus. ℞ Calomel: gr. viij Opii gr. iß M. ft. pil: h. s. s.

6*th.* Leeches bled profusely; headache and oppression relieved;

slept well in the night; no stool; Tongue white in the centre with red edges; Pulse 112; skin warm and dry.

℞ Olei Ricini ℥iß Aq: Menth: ℥j M.

Vesp. Five stools fluid, but of natural appearance; some pain in the epigastric region, but no retching; Tongue extremely loaded; Pulse 120, of good strength; skin cool and moist; is extremely restless; moans loudly and says "his inside is going away from him."

Applic: Emp: Vesicat: Epigast: ℞ Calomel: gr. xx. Conf: Arom: ℈ij. Opii gr. i. Saponis q. s. ft. Elect. st. s.

7th. Restlessness continued throughout the night, and he was constantly quitting his cot; tore off the blister, but not before it had partially risen; this morning answers questions distinctly, but looks, and seems quite silly; Pulse 104, soft; skin almost cold; Tongue brown, furred and parched; Teeth dry and covered with sordes; stools watery, and of light yellowish colour.

℞ Calomel: Conf: Aromat: āā gr. x. Stat, et in die Sulph: Quinæ gr. iij 2dâ. q. q. horâ.

1 P. M. No stool; in other respect the same; quinine taken 3 times.

Habeat quam primum Enema purg. Repet: Calomel: et Conf: Aromat: Stat., et Cont. Sulph. Quininæ, ut supra.

Vesp. Nine grains of quinine taken, and skin in the same cool state; but he complains of intense internal heat, without pain of any kind; Pulse 120 and sharp: T. as in the morning; gums seem slightly inflamed, but discharge from blister has ceased; no stool from the enema.

Repet: Enema Purgans stat, et 3tiâ. q. q. horâ per nortem Si opus sit—Habeat quam primum Baln: Calid: et postea Calomel: et Conf: Aromat: ut supra.

Expired suddenly and unexpectedly about 3 a. m.

Appearances on dissection.—Head. The Dura Mater more vascular than natural; Arachnoid membrane thickened and opaque; Pia mater and Choroid Plexus loaded with blood; in the lateral ventricles there was a large quantity of serum—the brain itself firm, but thickly dotted with bloody points. *Thorax.*—The lungs themselves were healthy, but some adhesions, apparently of old standing, were found between the pleura pumonalis and

costalis of the left side. In the pericardium were about ℥viii of serum: the heart was apparently healthy. Abdomen.—Peritoneum inflamed: very little serum in the cavity of the abdomen—Omentum loaded with fat. The right lobe of the liver was slightly enlarged, inferiorly; but no other marks of disease could be discovered in this viscus. In the stomach the cardiac orifice, and lesser curvature were highly inflamed; several small abrasions of the mucus membrane had taken place, which in some parts almost approached to ulceration: the lower part of the æsophagus was likewise in a high state of vascularity; the pyloric orifice was not more vascular than it is usually found. The small and large intestines were carefully examined, but no distinct marks of inflammation could be discovered. The spleen was enlarged softened and gorged with blood. The body not much emaciated.

John Armour, Private Ætat 36, Resident in India 20 years.

11th September 1835. Admitted at 9 a. m., and states that he was attacked with fever the day before yesterday at 9 a. m., which has continued with more or less violence ever since; complains now of severe headache, sickness, and urgent thirst; pulse frequent and small; skin warm with some moisture on it; Tongue brown and furred; belly bound; urine scanty and high coloured.

℞ Pulv: Emetic: stat: et post horas tres Ext: Colocynth: grs. xij. Calomel: gr. x. ft. pil. ij.

Vesp. Emetic operated freely without affording any relief; no stool; seems drowsy and is with difficulty roused; Tongue brown and parched; skin warm; Pulse 112 sharp.

Repet: Pil. Colocynth: et Calomel: Statim, Abradat: Capil: et imponat: Empl: Visicat: toto Capiti. Applic: Hirud: 24 temporibus.

12th. Bowels freely opened in the night, stools copious and of a dark brownish colour; little effect from the blister, but headache greatly relieved by the leeches; Pulse 80 and soft; skin bathed in moisture; Tongue cleaning very fast.

℞ Mist. Purgan: ℥iv Statim.

Vesp. Three small liquid brownish coloured stools since morning; vomited the mixture; Pulse 120, sharp; Tongue cleaner.

℞ Calomel: grs. viij Opii grs. ij Antimon: tartar: gr. ß ft. pil.

13*th*. No sleep; frequent vomiting of bilious matter, and some increase of headache; Pulse 100, soft; skin moist; 2 stools of the appearance above described.

Barley water 2 pints. ℞ Calomel: gr. viij Opii gr. i ft. pil. ter in die sumend:

Vesp. High fever; Pulse 136, throbbing; no stool since morning; has again fallen into a Comatose state from which he is with difficulty roused.

℞ Ext: Colocynth: gr. xij Calomel: gr. x. ft. pil. ij. s. s. et repet: post horas tres; Enema purgans statim, et iterum in noctem si opus sit. Appl: Empl: Visicator: Nuchæ.

14*th*. Better; looks more cheerful, and answers questions promptly and distinctly; had the 2 enemas and also the pills, and bowels have been very freely opened in the night, stools liquid and greenish coloured; Pulse 100, soft; skin cool and extremely moist; Tongue still very foul; blister rose well, and discharges freely.

℞ Quiniæ Sulph: gr. iij.
Mist Camph: ℥iß M. 2dâ. q̄q̄ horâ.

Vesp. Has taken the Quinine six times; Pulse 100, sharp; skin cool and moist, bowels moved 3 times, stools very scanty and of a dark brownish colour.

℞ Calomel: gr. viij Opii gr. iiß ft. pil.

15*th*. Was quite sensible in the first part of the night, but relapsed this morning into a state of stupor from which he cannot be roused to speak; eyes jaundiced; Pulse 120, of tolerable strength, skin warm, but moist; Tongue coated, of a leaden colour; gums ulcerated, and mercurial odour strong on the breath; one stool, scanty, oily, and of a greenish yellow colour; little or no discharge from the blister.

℞ Mist Purgan: ℥iv. Tinct: Rhæi ʒj M. Stat: et post horas tres Quiniæ Sulph: gr. iij. Decoct Cinchonæ ℥ij. Mist Camph: ℥j M. 3tiâ q̄q̄ horâ; et injiciat; enema Purgans. Si opus sit. Blisters to be kept open, and sinapisms to the feet.

Vesp. Stupor has gradually increased, and he has taken neither nourishment nor medicine; respiration quick and somewhat stertorous; Pulse small and frequent; skin of a pungent heat, but moist; eyes glassy and insensible to the stimulus of light, dejections scanty, liquid, and of a dark brownish colour.

Injiciatur Enema Purgans Stat.

From this time he sunk rapidly and expired a little before eight.

Appearances on Dissection.—Head.—Dura mater inflamed; Tunica Arachnoidea was slightly opaque at the superior part of the brain, but remarkably so, and considerably thickened, at the base. Pia mater less vascular than usual, and the choroid plexus almost blanched. The softening of the brain was very remarkable, especially at the base and in the cerebellum, which were in the state of *ramollissment* as described by French Authors. The quantity of serum found in the ventricles, and at the base was not remarkable. *Thorax*. Presented no marks of disease. *Abdomen*. Liver was enlarged but not more so than is very generally found; in its structure it was apparently healthy, but gorged with blood. The gall bladder was filled with bile of much the same colour and consistence as tar, it could not be accurately ascertained whether the ducts were pervious or not, as too much force was used in the examination of them. The spleen was very much enlarged, filled with blood, and easily broken down. The stomach had many inflammatory patches at the great curvature and cardiac orifice, some of them almost approaching to ulceration; the pyloric orifice and lesser curvature were free from disease, as likewise was the duodendum. In the small intestines, were several small dark coloured spots, about the size of a shilling, which appeared to be the cicatrices of old ulcers. The large intestines had no marks of disease, either recent or old. The omentum large was not much loaded with fat; in the lesser omentum were found several enlarged glands filled with a dark grumous substance.

John Atkinson Private Ætat 34, 8 *years Resident in India*.

8*th May* 1835. Admitted at 6 p. m. with fever, which attacked him at 10 a. m. with shivering, followed by heat and sweating. Complains now of severe headache, pain of eye-balls, back and loins; Pulse 100 and soft; skin warm and bathed in moisture; Tongue pretty clean.

℞ Pulv: Ipecac: grs. xx. Ant: Tart: gr. i. M. s. s. et post horas tres. Calomel: gr. vj.

9th. Medicine operated freely with little or no relief; Pulse 100, small and hard; skin warm but moist; Tongue white.

App: Hirud: 24 temp. R Mist: Purg: ℥iv.

Vespere. Leeches bled well, and bowels have been freely opened, but the urgent symptoms continue unabated; Pulse 88, and hard; skin warm and moist.

V. S. *usque ad deliquium.* R Calomel: grs. vj. Ant: Tart: gr. ½ ft. pil. h. s. s.

10th. Sixteen Oz. only could be procured, but all the urgent symptoms ceased immediately. This morning complains of a sense of soreness in the region of the navel; Pulse 72, full and soft; Tongue white; one scanty stool in the night.

R Ol: Ricini ℥ifß.

Vespere. Bowels freely opened; pain in the region of the navel removed.

R Calomel.

Pulv: Antim. $\overline{a\ a}$ grs. iij. ft. pil. h. s. s.

11th. Complains now of severe pain in back part of head; Tongue white; no stool; Pulse rather full; skin dry.

Rept: pil. Calomel: et antimon: nocte maneque Absent: feb: habeat. Pulv: cinchon: ℥ij. $\overline{c}$ Pulv: Rhei gr. v. 2dâ. $\overline{qq}$ horâ. Appl: Hirudin: 18 Occip:

Vespere. Slight operation from the leeches; pain of head relieved; three stools, copious, fætid, and of a greenish yellow colour.

Cont: pil. Calomel, et Antim.

12th. A good night, but still some headache; in other respects free from complaint.

R Ol: Ricini ℥i.

13th. Three stools from the oil yesterday; slept well; Tongue clean and moist; Pulse and skin natural.

Nihil Half Diet.

17th. Feels quite well; appetite keen; Tongue clean; belly regular.

Discharged.

NAGPORE; *Dec.* 1835. R. ANDERSON, *Surgeon.*

ARTICLE III.—*On the treatment of* ACUTE INFLAMMATORY DISEASES, *particularly on* HEPATITIS—*in a Letter to the Editor; from Assistant Surgeon* JOHN MURRAY M. D. *Bengal Establishment.*

My dear Sir,—I feel flattered by your having given a place in your dawning Medical Periodical to my brief observations on acute hepatitis. I can only say that in the accounts of the treatment of any disease I may send you, I shall conceal no cases wherein unfavourable results have ultimately been induced by the particular plan pursued. When a Physician writes for public information, he ought not to write as a Lawyer pleads—all on one side.

In my former, "Brief Observations" I mentioned *violent exercise*, and *heat of Barracks*, as connected in no small degree with the frequency of hepatitis: these, however, are not exciting, but merely predisposing causes, being productive of profuse perspiration with exhaustion, which render the body peculiarly susceptible of morbid impressions on subsequent exposure to comparative cold; such as currents of air, remaining in damp clothes, &c. The product is not always hepatitis, but more generally fever,—sometimes pneumonia or pleuritis, sometimes bronchitis or catarrh, sometimes peritonitis or enteritis, sometimes rheumatism, often dysentery, and occasionally a complication of these, according to accessory circumstances; and the mode of action of these causes is well explained by Dr. Johnson, in his work on tropical climates, viz: by sympathy or connexion between the skin and internal organs. At stations where the days are very hot, and the nights cold; or where transitions of temperature are great, sudden, and frequent; there will be more hepatitis in a Corps, than where the temperature is uniformly high; although, at the latter, the liver is more constantly stimulated to inordinate *secretion*.

Since I adopted the active depletory practice in the invasive stage of hepatitis, as described in my former paper, I have not lost a single European from the disease, who has come under my care

from the commencement; and I have mentioned the extent to which bleeding has been carried in some patients, and which I have found to prove so successful.

The advantages obtained from *early* and *free* depletion, (of course followed up by other strict antiphlogistic measures,) are, a less absolute loss of blood—a more rapid and perfect convalescence—less tendency to relapse—and, altogether, much less of what is called injury to the constitution.

The period of disease at which this treatment can be employed, varies with the constitution of the individual, the season of the year, and the nature of the locality—for, like dysentery, cholera, and fever, the practice requires to be considerably modified according as the weather is cold, hot, dry, or rainy; and according as the site of the Cantonment is low and damp, or high and dry. In plethoric and robust persons—in low, swampy, badly ventilated situations—and towards the end of the rains, this period passes more rapidly than in weakly and emaciated subjects, and in cold, dry places.

My chief guide is the *pulse*. When a vital part is the seat of active inflammation, accompanied with acute pain, or any other indication peculiar to the organ affected—such as contracted iris, râle crepitant, sympathetic uneasiness in the right shoulder, blood in the stools,—I bleed to syncope or faintness, *every* 12 *hours*, till the pain is subdued, or the pulse *rise* to nearly 120: should, after this, the symptoms indicate the continuance of the inflammation, I employ topical bleeding by leeches or cupping, and induce mercurial action (which latter has generally been in progress for some time previously) like a reserve, which is only to be brought forward in case of need.

This specified frequency of the pulse, (120), I consider to be often a better criterion in directing the expediency or otherwise of persevering in general depletion, than any appearance in the blood, or any local symptom; and it is one I have derived from much attentive observation in my own practice. In many cases the pulse at first becomes reduced under the Lancet, and afterwards rises to the number indicated: in general, however, *(in the early stage)* active inflammation is subdued before the pulse rises to such frequency; although I have seen many cases (at least 50) where it did not.

I have said that I bleed, when necessary, *every* 12 *hours*, in the invasive stage: if the operation be repeated at a shorter interval (say 5 or 6 hours), only a small quality of blood will generally be obtained, and the pulse will rise comparatively higher, while a less salutary impression is made on the local morbid action; and if general bleeding be persisted in, it rapidly gets above my scale for the lancet. My practical rule, which I have deduced from a good deal of experience and observation, is, to bleed with decision under the circumstances above mentioned, and not repeat the operation within the interval of 12 hours, by which time the circulation has become equalized—the real state of the heart's power will be indicated—and the bent of the morbid actions more clearly ascertained.

I do not generally make use of topical bleeding during the first day, (and often not during the second) *in severe cases*, for I have found that neither relays of leeches, nor cupping, are sufficient to arrest severe acute inflammation; and the quantity of blood lost by leeches and small bleedings, carried so as to have any good effect, is greater and more debilitating (deleterious) to the constitution, and at same time much less remedial *quoad* the disease, than by a full bleeding from a large orifice to syncope at once—particularly in cases where there is no very direct communication between the organ affected, and the place to which the leeches are applied.

I consider topical bleeding, however, to be very useful after disease has got a turn from the lancet, to remove the sequelæ of the local morbid actions, to keep up the effect obtained by the lancet, and to prevent relapse; and, in chronic cases, leeching, cupping, fomenting, poulticing, and blistering are chiefly to be relied upon, in conjunction with attention to diet, and to the proper ventilation of the wards (without draughts) in which the patients are placed.

It is incalculable the mischief that is done by medical officers who indulge the sick and convalescents in extra food, wine, and beer. I am very careful in my dieting, and place nearly as much confidence in that as in medicine, particularly after acute disease has been removed by the lancet. I put all patients with acute disease on spoon diet on admission, and keep them on that while depletory means are in progress. In very severe cases, merely a

little tea or lemonade, or thin sago, or arrow root, is allowed for the first two or three days: when acute inflammatory symptoms have been completely subdued, milk diet is then allowed, and generally continued till the cure is radically effected, when low or chicken diet is given, along with a measure of wine. In chronic cases I consider that the cure almost entirely depends on keeping the patients for a long time on milk diet; and have often witnessed the bad effects of any deviation from it—such as, protracted convalescence, chronic persistence of the morbid actions, and relapse. My dietetic regimen met with many attacks, and was much disliked by the men at my former station when I first joined, but they expressed themselves very sorry when I left.

If the patients have confidence in their medical officer, they will have reliance on his explanations, attend to his instructions, and admire his firmness; and I am certain they rather despise the man (as a practitioner) who indulges them in thoughtless demands for extra food and wine, being well aware of the permanent danger to their health, or even life, from such improper temporary gratification. Great firmness in this respect is necessary both in Hospital and private practice, for no great deviation can be made without an immediate unfavorable change in the symptoms; and, if irregularity be attempted to be carried on by stealth, it may be detected in the breath and in the stools, and its repetition guarded against, should the patient not have the courage to resist temptation himself.

I shall explain the mode and utility of *percussion*, in discriminating between inflammation of the surface and substance of the liver; but will previously make a few remarks on the diseases which are apt to be mistaken for hepatitis; as the proper treatment in some of these is almost diametrically opposite, and the due discrimination of them, therefore, most important.

One most frequently mistaken for it, sometimes by practitioners whose experience has been great, and their opinion highly esteemed, and even by medical men in their own person, is an affection of the ileo-cæcal valve and commencement of the colon; which is more common than generally supposed, and I am not aware of its being described in any books on Indian diseases. I saw five cases of it at Neemuch when I was there, two of which had been treated as hepatitis, one as enteritis, and two as bilious attacks. The

symptoms are rather proteiform: the following are the most marked. A sense of fulness or pain in the right iliac region, with distension of the bowels, and vomiting, which generally aggravates the other symptoms and induces headach. The pain extends sometimes to the right shoulder, and at other times it is diffused over the right hypochondrium. This is increased on pressure, and a peculiar doughy fulness, with crepitation, may be felt in the region of the cæcum—in advanced cases, there is distinct induration. Instead of vomiting, flatulence and eructations sometimes are found, and there is generally more or less fever.

As a primary disease it usually appears in sedentary people, arising from retention of fæculent matter in the large intestines till it becomes the source of irritation; it is one of the sequelæ of dysentery; and I have reason to consider it an occasional effect of the abuse of strong mercurial purges. It is a very troublesome complaint and difficult of permanent cure in this country; but it is not dangerous when properly discriminated and treated.

The disease seems to consist in a state of irritation with inflammation of the ileo-cæcal valve, and contiguous parts of the digestive canal. It is seldom necessary to use the lancet; I have found leeches and cupping more beneficial, for besides the abstraction of blood, the counter-irritation of the bites of the leeches and wounds of the scarificator has a good effect.

The evacuation of the large intestines by enemata is clearly indicated: when the state of the stomach will admit, a dose of castor oil with a few drops of Tincture of Opium is a valuable remedy; but often times no medicine given by the mouth will be retained, till the local irritation be removed from the valve. Counter-irritation is of the greatest service, and for this purpose Blisters may be applied early and kept open; and in chronic obstinate cases I have inserted a seton over the indurated portion of the intestine with much advantage, and kept it acting till the hardness was removed. Great attention to the bowels and diet is is of paramount consequence.

When a treatment by strong mercurial purgatives is adopted in this disease, it produces decided aggravation of the symptoms—great quantities of dark matter are brought away by them, usually considered "vitiated bile"; but the local inflammation is increas-

ed by them; ulceration forms; irritative fever insidiously creeps on; and the patient's strength becomes prostrated. The dark coloured matter which is brought away by mercurial or other drastic purgatives, I believe to be a muco-sanguineous secretion or discharge from the irritated and ulcerated cæcum; but those who consider it vitiated bile, are not easily to be dissuaded from persevering in the use of drastic remedies, as they are impressed with the idea that the Liver is in a *congested state*, and that by such purgatives they make it *disgorge*. I suspect this fashionable term "Congestion" is often used in the present day as a cloak for ignorance.

Another disease which requires to be discriminated from Hepatitis, is, inflammation of the Gall Bladder and parts immediately surrounding it, with obstruction of the Ductus Communis; and the Diagnosis here, in the early stage, is the more important, as it is liable to run into Hepatitis; which unfavorable termination is promoted by the common mode of commencing the cure by Calomel in small doses. The symptoms are, pain in the right hypochondrium, and frequently in the right shoulder, with light clay coloured stools, sometimes alternating with bilious ones. The pain in the side is at first circumscribed in the region of the Gall-bladder, extending between that and the spine; but afterwards it becomes more diffused. On examination, the Liver is found not to be altered in size, but the Gall-bladder to be enlarged, sometimes to the size of an orange; visibly projecting, and to be felt by the hand.

The advantage of examining by *percussion* in ascertaining the size of the Liver is very great, when tension of the abdomen prevents examination by feeling with the hand. When the abdominal muscles are lax, both modes of examination should be employed, as they tend to confirm each other. I use percussion by placing the back of the fore-finger of the left hand on the side, and snapping it with the mid-finger of the other hand. The only circumstance which may render this mode of examination deceptive, is the distension of the stomach or colon with solid matter; but this is easily removed by a purgative. The *dull sound*, marking the extent of space occupied by the liver, is very distinct, and I have often confirmed this test by dissection. The organ may sometimes extend by its thin edge nearly an inch beyond *the dull sound*; but in many instances I have calculated the size of enlarged Livers very

correctly without making this allowance, as, in such cases, the thin edge nearly disappears. With a correct ear, and some practical experience, the size of the Liver will be readily distinguished by this mode of examination; and it is a most valuable guide to the treatment: I pointed it out to the late Mr. Twining in the General Hospital at Calcutta, and he has mentioned it in the second edition of his Book (vol. 1. Page 241.)

By this test, together with the previous history of the case, the existence of abscess may generally be determined. I was only once deceived in judging from it, in the case of a Native, where abscess succeeded to a blow which produced laceration of the Liver: dissection discovered a small collection of pus about the size of a pigeon's egg, situated immediately above the Gall-bladder. I suspected suppuration from the history of the case; but mistook the abscess for distended gall-bladder—such cases, however, are not common.

Attention must be paid to the attitude of the patients while making this examination. I lay them straight and flat upon their back, with a small pillow under the head. In the healthy state, the dulness of sound does not extend, laterally, to the edge of the ribs: it sometimes extends an inch into the Epigastrium beyond this, but not always. I have found it extend to within an inch of the umbilicus; and still have succeeded by treatment to reduce it to its natural size.

Percussion assists in the diagnosis between inflammation of the substance, and surface of the Liver: in the former there is enlargment as early as the first two or three days—the usual period of admission; but, in the latter, it is not present unless the inflammation extend to the substance of the organ, or in the case (of which I have seen four examples) of the inflammation occurring around the Ligamentum latum, with early and copious effusion of Lymph. These four cases were characterized besides by cough, and very quick pulse; and the dull sound extended considerably beyond the edge of the ribs. I had only opportunity of witnessing the post mortem examination of two of these: in the one the disease was complicated with Hypertrophy of the heart; and in the other, with enlargement of the spleen. I am inclined to think this situation of abscess not uncommon.

(The above mode of Diagnosis by percussion is equally applicable to enlargement of the spleen.)

But to return to the inflammation of the Gall-bladder and biliary ducts—if it be not soon checked, Hepatitis is apt to supervene. The treatment I have employed has been antiphlogistic, omitting Calomel till the ducts become clear; and I further modify the antiphlogistic plan by the combination, in the very earliest stages, of counter irritants and nauseating doses of Tartarite of Antimony along with local depletion by Leeches, from my belief that counter-irritation assists greatly in relieving spasmodic contraction of the ducts.

This affection is frequently found in drunkards along with Hepatic derangement; and sometimes in delicate females; and it is liable to recur on exposure to cold. When bile appears in the dejections, I then give mild alterative Mercurials, but not to the extent of salivation.

Inflammation of the peritonæal covering of the Liver is distinguished by the acutness of the pain, which is much increased by change of position or the passage of flatus along the colon, quickness of the pulse, the appearance of the alvine excretions being natural, and the liver in general not being altered in size. The Diagnosis, however, is not of great consequence here, as far as regards treatment; for, from the great liability of the inflammation to extend to the substance of the organ, and the other bad consequences of the continuance of the disease, the same energetic practice is required in both; but the degree of danger from the inflammation with adhesive tendency in this case, is not so great as that proceeding from the suppurative inflammation of the other. In both cases, however, the most powerful antiphlogistic means, in the early stage, are required to prevent a dangerous termination.

I must not omit to mention another disease sometimes erroneously returned under the head of Chronic Hepatitis, which I believe to be an affection of the colon, consisting in villosity, or superficial ulceration of its mucous membrane, with abnormal irritability and sensibility of its nerves. There is pain in the region of the Liver, generally not fixed, and sometimes accompanied with uneasiness in the right shoulder; and the stools contain *much glairy mucus*.

I have treated such cases as disease of the colon, and sometimes with more success than others who mercurialized them, under the idea of their being chronic Hepatic disease, and under the names of *congestion*, *torpor*, and *functional derangement* of that organ. Some get well by going a voyage to Sea, and thus escaping our physic and the climate at the same time. The Liver in such cases does not become enlarged, which is the great mark of distinction.

There is still another complaint which in the minds of many is closely connected with disorder of the Liver, and demands notice; though I cannot say that I have observed much alliance between them. I allude to Dysentery, which many say is intimately connected with, if not generally dependent on Hepatic inflammation, congestion, or functional derangement. Dysentery, however, has not been by any means a common symptom in the cases of acute Hepatitis that have come under my observation: neither have I found the Liver generally enlarged on examination in acute Dysentery, particularly in young subjects—nor have I commonly noticed any particularly vitiated bile in the evacuations of dysenteric patients (—to account for which it may be necessary to mention that I rarely use calomel in the treatment of dysentery:) nor have I read any book, or conversed with any practitioner that clearly shewed their connexion *as cause and effect*.* In advanced stages of Hepatic abscess, liquid stools with Tenesmus, sometimes containing blood, frequently attend; Diarrhœa is common in chronic enlargement of the Liver; and chronic dysentery is often met with in combination with indurated Liver in drunkards;—but these people from exposure to the sun, to wet, and to checked perspiration are often the subjects of dysentery, caused independently of the hepatic affection, which only renders the cure more difficult and tedious. Again dysentery is very common in Natives, and few even of the strongest advocates for its Hepatic origin, will maintain that they are very subject to diseases of the Liver.

This idea of the intimate dependence of dysentery on Liver disease, which is entertained by many in India, I therefore consider to be an error in the Pathology of the former complaint, tending to

* The two diseases are sometimes combined, and the separate existence of each distinguished. J. M.

a dangerous mode of treatment, by leading the believers in it to trust too much to mercury as a specific remedy.

In acute inflammation of the substance of the Liver, there is pain in the right hypochondrium, increased by pressure, or on full inspiration, attended with sympathetic pain in the right shoulder, and increased size of the organ. For sometime after the commencement of its attack, (from one to four days) the disease is often insidious in its progress;—there may be no change in the state of the circulation, skin, or stools; but anorexia, quick pulse, and hot skin soon come on, the urine is scanty and high coloured, and irregularity in the colour and number of the alvine motions ensues; the countenance, as the disease advances, assumes a leaden or yellow hue, which I have not noticed when the inflammation is confined to the peritonæal covering: but I consider the increase of size in the organ as one of the most characteristic symptoms of parenchymatous inflammation, and the best diagnostic one; and the pain in the side and shoulder will often disappear before it becomes reduced to its natural dimensions.

This latter affection of the Liver tends very rapidly to the formation of abscess. In one case that died on the 8th or 9th day from the commencement of attack, (in consequence of the supervention of Pleuritis with Empyema, from exposure on the march,) after the pain and size of the Liver had subsided very satisfactorily, and the stools had become natural, there was found a recent abscess in the parenchyma, the size of a hen's egg, containing healthy pus, which I believe would have been absorbed.

Since then, in acute inflammation of the substance of the Liver, I am exceedingly cautious in remitting the strictest antiphlogistic treatment whilst any enlargement or pain remain, and even for some time after they have completely disappeared.

I have little more to add to what I before mentioned relative to treatment. I rarely use blisters, unless the reduction of the size of the Liver becomes a slow process, or chronic pain continues; then I keep up a discharge for several days from the blistered surface, and frequently dress it with mercurial ointment; but I seldom employ mercurial frictions. I have always succeeded in producing ptyalism (except when abscess has formed) by the mercurial purgative preparations; and in this way the double advantage is obtained, of the specific and purgative actions: I consider depletion by purging peculiarly beneficial in Hepatic disease.

The diluted nitro-muriatic acid, either used internally, or as a pediluvium, I have found sometimes to be a good auxiliary; and change of air to a colder climate, with travelling by easy stages, is of singular utility in perfecting the cure.

When acute inflammation of the substance of the Liver terminates in suppuration, (*Hepatic Abscess,*) the commencement of this process is not always marked by any particular symptom that I have been able to perceive, neither am I aware of any symptoms clearly diagnostic of its presence. The progress of the disease, and the effects of treatment are my chief guides.

If I find the pain remain dull in the side, with uneasiness and sense of dragging in the shoulder, and difficulty of lying on the left side, after active treatment; and if the Liver begin slowly to increase in size, the pulse keep high (about 100), ptyalism not to be induced, a tendency to Diarrhœa, and the countenance sallow and leaden, I strongly suspect the termination in suppuration to have taken place.

If to these symptoms become superadded dry cough, with increase of pain in the side; the presence of abscess, and that it is pointing towards the Lungs, is pretty certain. When these symptoms are followed by a copious expectoration, then examination with the Stethescope will discover subcrepitating and cavernous respiration, with pectriloquy, along the course of the sinus in the Lungs.

Should, to the first mentioned suspicious symptoms, pain in the stomach, with frequent vomiting on eating, supervene; or acute lancinating pain on the passage of flatus or fæces across the arch of the colon: then the presence of abscess pointing in these directions may be inferred; and its size, shape, and position may generally be detected by percussion and feeling.

I am convinced that abscesses in the Liver may, and do remain stationary, in many cases, for years; and gradually augment in size from occasional inflammatory attacks. A man died in Hospital at Meerut, who had been subject for three years to attacks of Hepatitis. The first had been severe, but latterly he used to be 10 or 14

days in Hospital at different times, with a pain in the side and shoulder, which would then leave him. In the last attack, he had similar symptoms, and an abscess burst into the Peritonæum on the third day after admission.

I think abscess may be absorbed when small, in healthy individuals; but I am not aware of any instance of this happening after the abscess pointed; which directs me to an important distinction in the treatment.* When I have reason to suspect a tendency to suppuration, or that a slight deposition of pus exists, the strictest antiphlogistic measures are rigorously enforced, and a drain established from the Hepatic region by blisters or a seton; and mercurial purgatives are continued, though a former attempt to induce ptyalism may have failed. I then use a composition of blue pill with extracts of colocynth and gentian.

Should the patient's strength decline much before the tendency to suppuration is overcome, I give bitter tonics in preference to wine or animal food; but when an abscess has burst, the diet is increased and wine allowed, in moderation.

Chronic enlargement of the liver depends on different organic lesions, and these on different causes; but nearly all I have seen have been the immediate effect of preceding *increased vascular action*.

The most common form is "*the Drunkards Liver*," or hypertrophy of the grey structure. Enlargement is also sometimes a consequence of inflammation of the gall bladder and biliary ducts; as found on minute *post mortem* examinations; which would indicate retention of the biliary secretion as a probable cause of the organic change.

Persons having chronic enlargement of the liver, are subject to frequent attacks of uneasiness or pain in the right side and shoulder, with irregularity of bowels; but great enlargement often exists

* From an interesting report of 13 cases of Hepatitis lately published by Dr. Monatt, Surgeon of H. M. 13th Light Dragoons, it would appear that pus is probably not unfrequently passed by urine, stool, and expectoration, as a mode of termination of Hepatic abscess, without direct ulcerative communication, being absorbed and subsequently eliminated in the excretions of the Bladder, Intestines, and Lungs. This may lead to important therapeutic indications.

J. M.

without these symptoms. The countenance, however, has always a bloated appearance in such cases, and often there is a slight tendency to œdema.

These Livers are very difficult to reduce, and always tedious of cure; though much may be done for them when the patient has a good natural constitution.

There is not generally sufficient indication for general bleeding, or, at any rate, not more than once; but always for the application of leeches. At first they should be applied morning and evening, according to the effect on the strength; then every second day; and afterwards alternated with blisters. The bowels should be kept very freely open; and for this purpose I have found small doses of scammony and gamboge, mixed with compound powder of jalap, given every morning, to answer best: at the same time I gave mercury at noon and night till the mouth is made tender, which effect I generally keep up for a fortnight at first. The next fortnight is employed in restoring the tone of the system by acids and bitter tonics—local discharge from the side being still kept up. The nitro-muriatic acid is here very useful. The diet must be carefully regulated, without animal food.

After this second fortnight, I resume the mercurials, and again apply a few leeches occasionally for 10 or 12 days; and afterwards return to the acid and tonic treatment; allowing a little wine (good claret if it can be got) when another fortnight has elapsed.

I have used the sulphate of iron in this latter period with advantage in some cases; but it is a dangerous remedy if there be any chronic abscess lying indolent, or any tendency to the formation of one. In cases of open abscess, however, where the sanatory process, from debility of constitution, has become indolent, and a thin watery discharge is exhausting the remaining strength, its cautious employment will very generally be found advantageous.

I had an interesting case of chronic enlargement of the liver in 1836, of three years standing, caused originally, and kept up by, local injury and irritation. The patient's horse fell on him, and the cantle of his Hussar Saddle pressed on his loins, and either fractured or dislocated the last rib on the right side, which was not dis-

covered at the time. When he came under my care, the Liver extended nearly to the umbilicus. I inserted a seton deeply in the course of the injured rib, applied a tight bandage to prevent motion, which caused irritation, gave him daily a laxative containing blue pill, and put him on a milk and farinacious diet. His mouth never became touched, but the liver progressively and steadily decreased in size; and the patient now enjoys nearly as good health as before the accident.

Such are the chief observations I have made on liver diseases during my practice in India: they refer to many points on which I much wanted information myself when I first arrived in this country, and from close *bedside study* have taught myself, and they now guide my practice. There are other circumstances, besides those I have mentioned, bearing on Diagnosis and modification of treatment, which can only be acquired by practice: in all professions there is a *tact* thereby attainable, which it is impossible to impart to others by words.

Wishing you success in your praiseworthy undertaking;

I remain, my dear Sir,

Yours very truly,

JOHN MURRAY M. D.

ARTICLE IV.—OBSERVATIONS *and* STATISTICAL TABLES, *&c. &c. &c. taken from the Annual Report of Her Majesty's* 13*th Dragoons, for* 1838 *and* 1839.—*By* DR. MOUATT, *Surgeon* 13*th Light Dragoons.—Communicated through* DR. MURRAY.

The benefit or otherwise of every remedial measure should be based on statistical numbers or that rigorous exactness, which mathematical calculation alone is susceptible. This important science has been reserved for our own age and promises hereafter to place our profession on a scale with the more exact sciences, and so far to remove one of its greatest approbia, by giving its problems a certainty not hitherto possessed, and as it has been justly observed* elucidating "much that is now obscure, and reducing to preci- " sion much that is now doubtful in medical science."—Like all

* Vide No. II, of British and Foreign Medicine Review.

other questions it is liable to be abused, since individuals are too prone to reason from their own limited observations, and which must be influenced by a thousand causes to vitiate their accuracy. In fact in the statistics of medicine, it is only in large numbers that we can place confidence, where the observations and experience of one must come in to correct those of another, and hence the importance of each individual adding his mite to the general stock.

Indeed the objections to individual or limited experience struck us long ago and hence in our last years report we observed, the numerical statistics of disease are to say the least very curious and interesting. Its importance has probably been over-rated, since there must always be much assumption in calculating future events from preceding facts, founded as these facts are on the ever varying phenomena of disease.—Each of its problems is based on specific cases, and therefore without a very extended experience or calculations made from large numbers, and during considerable periods it can scarcely be based as in geometry on the universal law of large numbers and which alone can form grounds to judge truly of the action of remedies.

The following Analysis and Tables may appear unnecessarily detailed, and their importance exaggerated, after the observations of M. Double on numerical statistics of disease, and the fallacy of deductions as to future results from past occurrences, since disease is not a simple phenomena to be represented by unity, but ever varying and changing, as well as those of M. Comtè in his course of positive philosophy. The latter urges that the phenomena of living bodies, forbid all idea of fixed numbers as out of the question, so that any application of Analysis to physiology must lead to errors. This may be true, without materially vitiating the deductions or lessening the importance of the inquiry. Ours is merely a portion—a small atom—in the general mass of information which must hereafter be added to the general collection, the labours of numerous persons probably for long periods, when even the very perturbations of the subject may act as correctives to the general mass of conclusions. It has for its object the fundamental axiom of all sciences;—Prediction. M. Comtè admits that in proportion as phenomena become more complex, they are susceptible of being explained by more extended and varied methods, by

the augmentation of resources which this very complexity creates. Why should medicine form an exception?—Thus we have *Observation* that is the examination of the phenomena presented by disease;—*Experiment* or the contemplation of artificial circumstances; and *Comparison* of a series of analogous cases or events. Hence to use his own words "The science of organized bodies " which studies phenomena of the most difficult access, is also " the only one which really permits us to employ all these three " methods of research."—Much positive knowledge therefore must be acquired by adding together its disjointed materials, by separating the positive from the probable, and hence leading to the deduction of future results with a precission—sufficiently exact without seeking dynamical conclusions which can never be acquired. It holds out at any rate the hope of obtaining a certain approximation, which in spite of its apparent imperfection must possess the deepest interest, and lead to a mathematical verification, which we can now scarcely hope to anticipate. Tending as it may, to predict as exactly as possible all the phenomena which disease will present when occurring in any given circumstance. Insensibly leading to a mathematical analysis of the results of external and internal relations on the frame in health as well as disease, under every variety of different treatment with the effect of prophylactic and remedial agency.—Medical theories thus based will have at any rate the benefit of induction and deduction and thence lead us to explain—to predict—and even if we be not too sanguine tend to discovery.—Thus even the unpromising speculations of medicine, may by being put to the ordeal of mathematical calculation, discover error or elicit truth.

However it has been justly observed " what we all wish to ac- " quire, are precise ideas regarding the influence of remedies on " suffering and mortality"—and though this must be limited by our ignorance of the natural course of acute disease, and the operations of the vis medicatrix naturæ, or whatever in our wisdom or our ignorance we may style this sanatory process, still as being the best which the very nature of the inquiry admits, we shall offer no apology for detailing the following Tables.

It may also serve to correct our estimate of remedies in a tropical climate. It will show the baneful influence, which that bugbear

debility has had on professional reasoning and practice. It may serve to moderate the crusade which has gone forth against bleeding and calomel, and in some degree show, that it is the abuse, and not the prophylactic agency of the remedies, which has drawn down such vituperations. For the correctness of our reasoning we must refer to the results, and here again we see the value and importance of statistical Numbers.

Statistical Tables, shewing the treatment adopted in the Hospital of H. M. 13th Dragoons from 1836 *to* 1838, *inclusive of* 1236 *Acute Cases.*

No. 1.

Of 1236 Acute cases treated.....	Averaging	20	days	in	Hospital.—	43	died.
184 were only bled.....	Averaging	9	days	in	Hospital with	1	death.
211 only had Leeches applied.....	do.	23	do.	do	do.	5	do.
802 both bled and leeches applied	do.	21	do.	do.	do.	31	do.
39 neither bled nor leeches applied	do.	17	do.	do.	do.	6 a	do.
1236 Total.						43	

a One was a case of Cholera admitted in a state of Collapse—the 2d was a case of Apoplexy dropped in the riding school and expired immediately—two were cases of Phthisis of long standing—and the other two cases were admitted, one with Dyspepsia and the other with Dysentery—the former died from Hepatic abscess and the latter Delirium Tremens.

No. 2.

Of 1236 Acute cases treated...	Averaging	20	days	in	Hospital.—	43	died.		
986 were bled from the arm .....Averaging		19	days	in	Hospital with	32	deaths.		
83 were bled between the 1st and 6th hour of attack.—Averaging		23	days	in	Hospital with	6	deaths.		
58	do.	do.	6th and 12th	do.	do.	do.	20	do.	do.	1	do.
50	do.	do.	12th and 18th	do.	do.	do.	19	do.	do.	3	do.
18	do.	do.	18th and 24th	do.	do.	do.	19	do.	do.	0	do.
65	do.	on the	1st	day	do.	do.	45	do.	do.	3	do.
266	do.	do.	2d	do.	do.	do.	20	do.	do.	6	do.
186	do.	do.	3d	do.	do.	do.	17	do.	do.	3	do.
104	do.	do.	4th	do.	do.	do.	17	do.	do.	3	do.
50	do.	do.	5th	do.	do.	do.	24	do.	do.	1	do.
19	do.	do.	6th	do.	do.	do.	21	do.	do.	0	do.
40	do.	do.	7th	do.	do.	do.	21	do.	do.	3	do.
9	do.	do.	8th	do.	do.	do.	20	do.	do.	1	do.
5	do.	do.	9th	do.	do.	do.	20	do.	do.	0	do.
4	do.	do.	10th	do.	do.	do.	15	do.	do.	1	do.
3	do.	do.	11th	do.	do.	do.	57	do.	do.	1	do.
2	do.	do.	12th	do.	do.	do.	13	do.	do.	0	do.
2	do.	do.	13th	do.	do.	do.	22	do.	do.	0	do.
7	do.	do.	14th	do.	do.	do.	38	do.	do.	0	do.

1	do.	do.	17th	do.	do.	do.	11	do.	do. 0 do.
1	do.	do.	20th	do.	do.	do.	54	do.	do. 0 do.
2	do.	do.	21st	do.	do.	do.	17	do.	do. 0 do.
1	do.	do.	24th	do.	do.	do.	11	do.	do. 0 do.
4	do.	do.	30th	do.	do.	do.	29	do.	do. 0 do.
1 *a*	do.	do.	31st	do.	do.	do.	285	do.	do. 0 do.
1	do.	do.	38th	do.	do.	do.	48	do.	do. 0 do.
1	do.	do.	60th	do.	do.	do.	12	do.	do. 0 do.
1 *b*	do.	do.	67th	do.	do.	do.	83	do.	do. 0 do.
1 *c*	do.	do.	74th	do.	do.	do.	140	do.	do. 0 do.
1	do.	do.	89th	do.	do.	do.	20	do.	do. 0 do.
986 Total.									32

a Was a protracted case of chronic rheumatism—*b* a case of Pulmonic affection and Hypertrophy of Heart—*c* a case of Dysentery with much organic disease all three ultimately Invalided.

No. 3.

Of 986 bled from the arm... Averaging 19 days in hospital with 32 deaths.

597	were bled once.....		Averaging	17	days in	Hospital with	13	deaths.
258	do.	twice.....	do.	19	do.	do. do.	5	do.
85	do.	thrice.....	do.	26	do.	do. do.	8	do.
31	do.	four times.	do.	41	do.	do. do.	3	do.
13 *a*	do.	five times.....	do.	57	do.	do. do.	3	do.
2 *b*	do.	six times.....	do.	132	do.	do. do.	0	do.
986 Total.							32	

a All very severe cases of Hepatic Affection of whom only 3 died—*b* one was a case of Remittent Fever, who subsequently got Paralysis, and in consequence Invalided — the other was a very severe case of dysentery who recovered.

No. 4.

Of 986 bled from the arm.....Averaging 19 days in hospital with 32 deaths.

33	lost from	10 to	20	ounces of	blood.	Averaging	43	days in Hspl.	with 3 deaths.
183	do.	20 to	30	do.	do.	do.	19	do.	do. 6 do.
375	do.	30 to	40	do.	do.	do.	13	do.	do. 7 do.
112	do.	40 to	50	do.	do.	do.	24	do.	do 3 do.
140	do.	50 to	60	do.	do.	do.	16	do.	do. 2 do.
53	do.	60 to	70	do.	do.	do.	20	do.	do. 4 do.
38	do.	70 to	80	do.	do.	do.	30	do.	do. 3 do.
30	do.	80 to	90	do.	do.	do.	37	do.	do. 2 do.
11	do.	90 to	100	do.	do.	do.	40	do.	do 1 do.
11 *a*	do.	100 to	138	do.	do.	do.	51	do.	do. 1 do.
986 Total.									32

a 8 of these were severe cases of Hepatitis all recovered—1 was a case of Pericarditis from Rheumatic metastasis who died—the other two are the cases of Fever and Dysentery of Note *b*. Tab. 3.

No. 5.

Of 1236 Acute cases treated.....Averaging 20 days in hospital.—43 died.
1013 had Leeches applied.....Averaging 22 days in Hospital with 36 deaths.

a 5 had from	6 to 10	leeches applied—Averaging				82	days in hospital with	0	deaths.
91	do.	10 to	20	do.	do.	do.	15	do. do.	3 do.
246	do.	20 to	30	do.	do.	do.	14	do. do.	2 do.
166	do.	30 to	40	do.	do.	do.	17	do. do.	5 do.
146	do.	40 to	50	do.	do,	do.	17	do. do.	3 do.
99	do.	50 to	60	do.	do.	do.	19	do. do.	2 do.
82	do.	60 to	70	do.	do.	do.	24	do. do.	3 do.
50	do.	70 to	80	do.	do.	do.	36	do. do.	3 do.
30	do.	80 to	90	do.	do.	do.	29	do. do.	0 do.
20	do.	90 to	100	do.	do.	do.	45	do. do.	4 do.
29	do.	100 to	120	do.	do.	do.	62	do. do.	1 do.
19	do.	120 to	140	do.	do.	do.	42	do. do.	3 do.
6	do.	140 to	146	do.	do.	do.	43	do. do.	2 do.
9	do.	150 to	168	do.	do.	do.	49	do. do.	0 do.
4	do.	170 to	180	do.	do.	do.	48	do. do.	3 do.
6	do.	180 to	188	do.	do.	do.	45	do. do.	2 do.
2	do.	193 to	194	do.	do.	do.	120	do. do.	0 do.
2 *b*	do.	210 to	224	do.	do.	do.	123	do. do.	0 do.
1 *c*	do.	339		do.	do.	do.	140	do. do.	0 do.
1013 Total.									36

a 1 was a case of Fever who had 6 Leeches applied to the Head he is one of Note *b* Tab. 3—1 a case of Stricture Urethræ who had 6 leeches applied to the Perinæum—1 Hæmorrhois—1 Chronic Cephalalgia—and 1 Hepatitis who was a long time in Hospital under the head of Dysentery and after his disease was changed to Hepatitis had 10 Leeches applied to the side.

b both of these were very severe cases of Hepatitis one is of Note *a* Table 4.

c Is the case of Dysentery who was Invalided of Note *c* Tab. 2.

No. 6.

Of 1236 Acute cases treated...Averaging 20 days in hospital—43 died.
1192 took Calomel.....Averaging 20 days in hospital with 37 deaths.

9	took from	5 to	10	grains of	Calomel	Averaging	19	days in Hspl.	with 0 deaths.
69	do.	10 to	20	do.	do.	do.	21	do. do.	1 do.
124	do.	20 to	30	do.	do.	do.	12	do. do.	1 do.
146	do.	30 to	40	do.	do.	do.	9	do. do.	3 do.
106	do.	40 to	50	do.	do,	do.	14	do. do.	0 do.
136	do.	50 to	60		do.	do.	16	do. do.	0 do.
413	do.	1 to	2	drachms.	do.	do.	19	do. do.	17 do.
128	do.	2 to	3	do.	do.	do.	30	do. do.	6 do.
39	do.	3 to	4	do.	do.	do.	47	do. do.	6 do.
10	do.	4 to	5	do.	do.	do.	55	do. do.	2 do.

8	do.	5 to	6	do.	do.	do.	50	do.	do.	1 do.
3 *a*	do.	6 to	7	do.	do.	do.	173	do.	do.	0 do.
1 *b*	do.	7 drms. & 14 grains			do.	do.	199	do.	do.	0 do.
1192 Total.										37

a One wa s a protracted case of Chronic Rheumatism subsequently Invalided ; vide Note *a* Tab 2—the 2d a severe case of Dysentery also Invalided ; and the other was a severe Case of Hepatic Affection ; vide Note *a* Tab 4. — *b* A case of Chronic Hepatitis subsequently Invalided.

No. 7.

Of 1236 Acute cases treated. Averaging 20 days in hospital—43 died.

1192 took Calomel.....	Averaging 20 days in hospital	with 37 deaths.
44 took no Calomel		with 6 deaths.
1236 Total.		43

Of the foregoing 1192 that took Calomel.

24 had Ptyalism.....		with 1 death.
100 had their mouths very sore or ulcerated but without free Ptyalism		do. 12 do.
393 had only their Gums affected.....		do. 3 do.
675 had not their mouths affected.....		do. 21 do.
1192 Total.		37

Of 24 who had Ptyalism with 1 death.

1	took from	30 to	40	grains of	Calomel	with	0	death.
2	do.	40 to	50	do.	do.	do.	0	do.
1	do.	50 to	60	do.	do.	do.	0	do.
8	do.	1 to	2	drachms.	do.	do.	0	do.
6	do.	2 to	3	do.	do.	do.	0	do.
3	do.	3 to	4	do.	do.	do.	0	do.
1	do.	4 to	5	do.	do.	do.	1	do.
1	do.	6 to	7	do.	do.	do.	0	do.
1	do.	7 drachms & 14 grains			do.	do.	0	do.
24 Total.							1	

[12 deaths.

Of 100 who had their mouths very sore or ulcerated but without free Ptyalism with

2	took from	20 to	30	grains of	Calomel	with	0	death.
6	do.	30 to	40	do.	do.	do.	0	do.
1	do.	40 to	50	do.	do.	do.	0	do.
7	do.	50 to	60	do.	do.	do.	0	death.
34	do	1 to	2	drachms	do.	do.	4	do.
31	do.	2 to	3	do.	do.	do.	2	do.
14	do.	3 to	4	do.	do.	do.	5	do.
2	do.	4 to	5	do.	do.	do.	1	do.
2	do.	5 to	6	do.	do.	do.	0	do.
1	do.	6 to	7	do.	do.	do.	0	do.
100 Total.							12	

Of 393 who had only their Gums affected with 3 deaths.

1	took from	10 to	20	grains of	Calomel	with	0	death.
19	do.	20 to	30	do.	do.	do.	0	do.
32	do.	30 to	40	do.	do.	do.	0	do.
30	do.	40 to	50	do.	do.	do.	0	do.
45	do.	50 to	60	do.	do.	do.	0	do.
196	do.	1 to	2	drachms.	do.	do.	1	do.
53	do.	2 to	3	do.	do.	do.	2	do.
11	do.	3 to	4	do.	do.	do.	0	do.
2	do.	4 to	5	do.	do.	do.	0	do.
3	do.	5 to	6	do.	do.	do.	0	do.
1	do.	6 to	7	do.	do.	do.	0	do.
393 Total.							3	

Of 675 who had not their mouths affected with 21 deaths.

9	took from	5 to	10	grains of	Calomel	with	0	death.
68	do.	10 to	20	do.	do.	do.	1	do.
103	do.	20 to	30	do.	do.	do.	1	do.
107	do.	30 to	40	do.	do.	do.	3	do.
73	do.	40 to	50	do.	do.	do.	0	do.
83	do.	50 to	60	do.	do.	do.	0	do.
175	do.	1 to	2	drachms	do.	do.	12	do.
38	do.	2 to	3	do.	do.	do.	2	do.
11	do.	3 to	4	do.	do.	do.	1	do.
5	do.	4 to	5	do.	do.	do.	0	do.
3	do.	5 to	6	do.	do.	do.	1	do.
675 Total.							21	

Recapitulation of the foregoing Tables.

No. of Cases.	Effects.	Quantity taken.											Average quantity taken drachms.	Total Number of Deaths.	Proportion.
		from 5 to 10 grs.	" 10 to 20 do.	" 20 to 30 do.	" 30 to 40 do.	" 40 to 50 do.	" 50 to 60 do.	" 1 to 2 drms.	" 2 to 3 do.	" 3 to 4 do.	" 4 to 5 do.	" 5 to 6 do.	" 6 to 7 do.	" 7 ds. & 14 grs.	
24	Ptyalism	0	0	1	1	2	1	8	6	3	1	0	1	1	2
100	Mouth sore or ulcerated, but without Ptyalism	0	0	2	6	1	7	34	31	14	2	2	1	0	1 in 24
293	Gums affected only	0	1	10	32	30	45	196	53	11	2	3	1	0	1 in 8½
675	Gums not affected	9	08	103	107	73	85	175	38	11	2	3	0	0	1 in 131
44	* Have had no Calomel	0	0	0	0	0	0	0	0	0	0	0	0	0	1 in 32
		0	0	0	0	0	0	0	0	0	0	0	0	0	1 in 7½
1236	Total Number of Cases	9	09	124	146	106	136	413	128	39	10	8	3	1	0
	Do. do.	0	1	1	3	0	0	17	6	6	2	1	0	0	1 in 28
	Deaths														

In estimating the deductions to be made from the Tables No. 6 and 7 it should in fairness be stated how the Mercury was prescribed, and with what specific view? Since it is not the actual quantity which is exhibited,

* These 44 were chiefly Cases of Cynanche, Catarrh and other trivial acute affections, and a few were cases of diseases changed to other acute affections—Of these 44 cases were 2 Phthisis Pulmonalis, 1 Hepatitis, and 1 Amaurosis (Acute) all changed from other diseases—1 a case of Apoplexy who dropped and expired immediately, and 1 Contusio Cerebri who survived only 6 hours after a fall from his Horse.

but the mode of its administration, that will influence its effects; as similar quantities differently prescribed would lead to totally different results or diversified conclusions.

Whilst disease was active and unchecked, 10, and 20 grain doses were prescribed morning and evening, and then followed by purgatives daily, or every 2d day—to reduce as soon as possible abnormal movements, and vascular excitement arising from general or local affections.—A large, exciting less irritation, than a small dose.—In the Dysenteric cases generally, 5 or 10 grains with Ipecacuanha 2 or 3 times in the 24 hours.—It was omitted as soon as either the disease gave way or some of the specific actions of mercury were observed. —Alterative doses were sometimes, but not often, exhibited, either to restore the biliary secretions, or change morbid determinations. Hence it will be seen that we seldom exceeded 2 or 3 drachms—often indeed not more than one half—one third—or one fourth of that quantity.

Then again these Tables show the very curious fact, that disease is not dependent on the action of this remedy, or the quantities administered, but rather as it appeared to us, the effects of the Mercury were dependent on the mildness, tractability, or remission, or otherwise of the malady—Thus free ptyalism, has been followed by death in 1 case out of 24, in ulceration of the mouth in 1 case out of 8½—whereas, when there has been no effect from the Mercury, but 1 death in 32—and where the gums were simply affected 1 in 131 cases—all of which shows in our humble opinion, that mercury has no specific curative action on disease; it only aids other remedies, either by lessening the state of excitement, reducing action by increasing the power of Cathartics, or increasing or restoring the secretions.—That its utility, however important, is subordinate, and dependant on other remedial means, and hence the fallacy of pushing Mercury, as it is styled, to ptyalism.—Mercury seldom if ever shows its specific constitutional action till disease remits or is subdued.—Equally gratuitous and absurd is it to say, that the quantum of mortality, and quantum of mercury, are the results of its exhibition.—For here we see men die who have only had a few grains; and that the greatest mortality, as well as most numerous recoveries are, where we have used from 1 to 2 drachms of Calomel!—Alike unphilosophical is it to say, that it must be injurious, since we find that out of

100 men who averaged 2 drachms of Mercury—the mortality was one in every 8½ treated.—Without considering that those were the most severe cases, in which mercury did not show its proper salutary effects, and to whom more was given, yet we found neither the disease remitted, nor the salutary action of the mineral showed itself on the system; besides which, more cases took more mercury, not only without injury, but without any apparent specific action whatever. Hence the absurdity of reasoning exclusively on the action of a remedy so liable to vary in its operations on the system, and which has therefore been viewed with such bias in its favour, or prejudice against its efficacy. A partial view of facts would countenance either supposition, but which, if more closely examined, would be found incorrect. Since, not only does its effects vary, but that the deaths, recoveries, ptyalism, sore gums, ulcerated mouth, and the apparent action on the system, bear no ratio to the quantity of the mineral prescribed, but each exhibit results and conclusions, however valuable in themselves, quite at variance with such exclusive conclusions and deductions.

How far our reasonings are correct or satisfactory, it is not for us to judge. We have given the data whence they have been derived, and others may draw their own inferences. It is always a step gained in these enquiries to have the facts on which such estimates are made, since either their refutation, or subsequent establishment will tend to more correct views, so necessary in the administration of all remedies, and in none more so than mercury. With the like intention is added a Table of the practice adopted in our Hospital for the last 7 years.

Abstract of the Average period in hospital with Treatment &c., of the acute Cases admitted into the Hospital of H. M. 13th Regiment of Light Dragoons from 1st January 1832 to 31st December 1838 inclusive.

Diseases.	Total No. of cases treated in 1832-33-34-35-36-37 and '38	Total No. of Deaths in 1832-33-34-35-36-37 and '38	Average period in Hospital:—days	Greatest quantity of blood drawn, ℥	Average do. do.	Greatest number of leeches applied No.	Average do. do.	Greatest quantity of calomel taken Grs.	Average do. do.	Average number of salivations in each case
Febris Remittens Bil.	269	8	21	38	41	150	39	597	441	22
„ Cont: Comm.	528	0	16	80	29	156	15	217	22	29
Cynanche Tonsil.	97	0	13	50	14	116	22	27	27	8
„ Parotidæa.	11	0	20	55	10	80	42	27	27	8
Pneumonia—Pleuritis. Tracheatis and Bronchitis.	135	1	19	616	35	262	89	711	84	29
Pericarditis and Carditis.	7	0	57	72	83	76	31	61	69	30
Gastritis.	15	4	13	40	18	126	63	63	90	158
Enteritis.	47	2	15	80	21	177	61	61	158	30
Hepatitis Acuta.	449	27	247	157	44	224	63	63	90	30
„ Chronica.	4	0	57	60	8	118	41	41	158	30
Splenitis.	4	0	13	65	35	60	63	63	90	30
Nephritis.	7	0	9	75	0	65	42	42	158	30
Cystitis.	1	0	6	0	0	65	45	45	90	30
Otitis.	17	0	71	0	0	36	38	38	158	30
Rheumatismus.	244	0	40	20	2	126	24	24	90	30
Hæmorrhois.	58	0	11	90	0	65	23	23	158	30
Catarrhus.	180	0	35	76	24	65	20	20	90	30
Dysenteria.	640	16	686	124	14	39	14	29	31	24
Apoplexia and Paralysis.	35	7	353	80	22	186	22	24	31	24
Colica.	12	0	6	60	14	42	15	23	31	24
Cholera Morbus.	206	1	15	56	12	70	18	14	31	24
„ Indiana.	59	16	9	46	15	78	82	14	31	24
Diarrhœa.	65	1	18	32	13	65	62	14	31	24
Anasaria and Hydrothorax.	18	3	311	50	19	62	68	14	31	24
Cephalalgia.	28	0	21	60	9	152	152	14	31	24
Concussio Cerebri.	3	3	117	40	8	150	150	14	31	24
Delirium Tremens.	28	28	10	78	8	270	270	14	31	24
Other affections.	170	170	25	101	101	27	27	14	31	24
TOTAL.	3280									

Average number of days each case was ultimately got Ptyalized in consequence Invalided.—8 This was a very severe case he was bled 4 times to that quantity.—‖ In conjunction to Hydrothorax that first time ultimately Invalided.—† A case with much Cephalalgia who ultimately died.
with several leeches.—‡ With a case of long standing with much sympathetic disease and several relapses ultimately Invalided.—* A case with much Cephalalgia who ultimately died.

The causes of disease are ever obscure. Those usually assigned by Soldiers must be taken with great qualification. In fact they are more or less inosculated with his whole existence, and are as varying and as fluctuating as the changes to which he himself is liable. With every allowance for fallacy, yet are they important, in the etiology of all his maladies.

The following Table illustrates in a very curious manner several of our Reports, in as much as the causes assigned by the men for their maladies have been lessened, so also has disease itself been diminished, which used to be referred to those sources. Thus in No. 1 how remarkably have the attacks which used to be assigned to the cold on Line Guard been diminished, since the new Line Guard-house was erected? Likewise 4—6—7—8 and 17 where exciting cause has continued to exist, there is no more fluctuation in the seizures than might be expected or accounted for by the state of different seasons. Thus 1838 has been a very dry season—less than the average quantity of rain fell, and its influence accordingly is apparent by fewer attributing their maladies to *cold*. The last though a dry, has not been a hot season, which is again illustrated by the table. Thus (see 10) 1833 was a very hot as well as a dry season, and here we see the numbers who impute their diseases to drinking cold fluids when heated—and so also 1836 during 2 or 3 months. The same will be observed from exposure No. 17 in 1833. It will be seen that 1837 and 1838 No. 3, fewer men impute disease by sleeping in open verandahs, as during these years the men on standard Guard have had a more comfortable and commodious Guard House. Since 1831 can form no exception, as the men at first were unwilling or reluctant to attend to these circumstances. So that however liable such details may be to the errors inseparable from the nature of the enquiry and giving no insight into the predisposing cause, as exposure to the sun, intemperance, the fatigues of duty, exercises &c. yet is the detail curious and valuable as being one of the links, so important to investigate in the Military Medical Economy of Soldiers, and their liability to disease.

Table of the Causes or assigned Causes of Acute Disease from 1831 *to* 1838 *inclusive.*

No.	Cause or supposed exciting Cause.	During the Years. 1831	1832	1833	1834	1835	1836	1837	1838	Total.
1	Who impute their disease to cold caught on line Guard, and Picquet, by sleeping under the trees or in the open air, or in the sick lines and exposed to a current of air	38	56	136	5	5	7	9	3	259
2	Who impute their disease to cold caught on their posts whilst sentry at the Sick lines, Hospital, Pay Masters and the Barrack Guards, or by going round with the relief	1	2	3	8	21	30	8	22	95
3	Who impute their disease to cold caught on Barrack, Mess House, Paymasters, and Choultry Guards, by sleeping in the Verandahs or open air, and exposed to a current of air	4	11	31	23	27	17	10	2	125
4	Who impute their disease to cold caught by sleeping opposite Windows or Doors, in the Barracks that were left open	19	58	58	37	28	39	30	18	287
5	Who impute their disease to cold caught by being out with the Band of the Regiment at Balls	0	3	0	0	1	0	0	0	4
6	Who impute their disease to cold but are unable to particularize how	25	2	22	56	27	38	59	32	261
7	Who impute their disease to cold caught by getting wet in the rain when on Barrack Guard, Line Guard, Parades, Sentry, Shoeing horses, at Lines, Field Exercise, whilst going to the Privy, Bazar, or by getting the soles of their feet wet	14	11	25	21	52	29	28	17	197
8	Who impute their disease to cold caught by the changes of the Weather	5	2	6	8	3	5	13	1	43
9	Who impute their disease to cold caught by neglecting to put on their flannel Jackets	1	1	0	2	1	0	0	1	6

Table of Causes of Acute Diseases, &c.

No.	Cause or supposed exciting Cause.	During the Years. 1831	1832	1833	1834	1835	1836	1837	1838	Total.
10	Who impute their disease to cold caught by drinking cold water or buttermilk, or by bathing in cold water when heated.....	3	4	19	8	6	10	2	3	55
11	Who impute their disease to cold caught by sleeping on the floors of the Barracks on account of being annoyed by bugs.....	0	0	2	0	0	0	0	0	2
12	Who impute their disease to cold caught by sleeping in the open air.....	2	2	0	0	0	0	1	1	6
13	Who impute their disease to cold caught by sleeping uncovered in the Barracks.....	0	0	0	2	2	4	3	3	14
14	Who impute their disease to cold caught on the march from Poonamallee.....	0	0	0	0	1	1	2	1	5
15	Who impute their disease to could caught during their confinement in the Barrack Guard and Cells.....	1	0	0	2	3	4	1	0	11
16	Who impute their disease to cold caught by being a long time in water to get out a Boat.....	2	0	0	0	0	0	0	0	2
17	Who impute their disease to exposure in the sun whilst on Barrack Guard, Line Guard, Shoeing Horses, Sentry, on duty Superintending horse-keepers at work, piling up Hay, going to and returning from Church &c.....	15	7	18	2	5	4	7	4	62
18	Who impute their disease to Diet as having eat Molagahtawny, and Rice, Country Greens, Cold Meat, boiled and Mashed Potatoes, Fat Bacon, Milk and Bread, Eggs, Curry and Rice, Jackfruit, Oranges, Cucumbers, drinking hot Tea, Milk and cold water.....	4	1	9	1	6	0	5	0	26

Table of Causes of Acute Diseases, &c.

19	Who impute their disease to jerks or falls from their horses whilst at riding school, going to water, field exercise, or out in watering order, to the tightness of their full dress, to costiveness, to rubbing in Mercurial Ointment on Mangy Horses, to violent exertions, &c. &c. &c. *a*.....	0	8	9	7	4	15	10	6	59
20	Whose diseases were caused by Intemperance.....	0	9	19	3	8	25	18	23	105
21	Who know no cause for their disease but have been drinking.....	0	0	0	0	0	0	13	1	14
22	Who know no cause for their disease. *b*.....	0	189	470	240	161	174	190	234	1658
23	Diseases Re-admitted from the above from changing to other acute affections.....	0	10	15	9	11	6	20	27	98
	Grand Total..	134	376	842	434	372	408	429	399	3394

Here then is the first step which should guide us in these enquiries, the cause or assigned cause of disease, as given by the sick themselves. However imperfect from the very nature of the enquiry, yet is it important and valuable from the collateral testimony it bears of correctness, and therefore to be regretted that the immediate assigned exciting cause, may be probably in many cases merely accidental cause of that which intemperance &c. had given the predisposition, or susceptibility. Independent of which often it is not noticed and very often purposely concealed by the Soldier. Thus a man gets drunk, lies out and is attacked with disease; he is reluctant to confess that which is likely to draw down both displeasure and punishment, since men who create disease by their vice or intemperance are liable to lose the benefits arising from service, and which will account for the very few under the head of Intemperance, and the many who know no cause for their maladies. Where such objections do not occur, the Table possesses no common interest and value, and which has already been in some measure illustrated. Still the curious fact—first, of the numerous

a This alludes to acute inflammatory and not to local affections.—*b* Not noted for 1831.

cases referred to *cold*, and secondly, the diminution of these as the comforts of the Soldiers on duty have been considered or increased, must be apparent, and tend to show that these enquiries are not more curious than they are important. We shall therefore offer no apology for reiterating the following remarks from our report of 1835—(the more especially as this may be the last report we may have to make of the regiment in this Country) and will therefore give the whole subject at one view—as well as our reasons for recording and pursuing the enquiry, and suggestions emanating from those circumstances for the improvement of the Barracks &c.

It was stated in our report for 1832, that there had been less disease, from the removal of the men on line guard to the sick horse stable, for want of a more suitable place to lodge the soldiers on that duty—"The former line guard (for we quote from a former report) "houses in the troop lines, were small, close and confined with a "room for grass on one side, and for gram on the other, and infested "with all sorts of vermin, as well as swarming with musquitoes.— "So harassed were the Guard, that no consideration would induce "the men, to remain in them all night, and by sleeping outside un- "der the Trees, in the chilly cold damp night air, numerous attacks "of the worst kind of sickness, has been the result."—However in 1833 a new line Guard house was erected, and its superior advantages over the sick line stable was immediately established, as the latter had been over their former guard rooms, and sleeping exposed under the Trees.—It was noted the end of 1833, that "the "seizures on line guard and picquet duties, have been nearly as "1 to 34.—Thus from the 15th August to the close of the year, only "4 men have traced their diseases to cold taken whilst sleeping in "the new guard house—whereas in their former guard room, if the "sick horse stable merit such a name, from the 1st January to the "14th August, no less than 132 men attributed their ailments "to exposure whilst sleeping when on line guard or picquet "duty."

To render this more apparent we shall compare the number of seizures for the last 7 years.

In 1832 there were 56 men attacked on line guard &c.
In 1833 do. 136 do. do. do.

In 1834 do. 5 do. do. do.
In 1835 do. 5 do. do. do.
In 1836 do. 7 do. do. do.
In 1837 do. 9 do. do. do.
In 1838 do. 3 do. do. do.

In like manner if we analyse the rest of the seizures from cold, wet, &c we shall find the results of different years pretty much the same, and to have continued unaltered to the last.—Hence any fluctuations referrable to variety of seasons or accidental causes are easily explained.—Again we find that the seizures on Barrack Guard have diminished, since the new Guard House in 1837 has been occupied.

Thus in 1832 there were 11 men attacked on Barrack Guard
do. 1833 do. 25 do. do. do.
do. 1834 do. 20 do. do. do.
do. 1835 do. 20 do. do. do.
do. 1836 do. 22 do. do. do.
do. 1837 do. 7 do. do. do.
do. 1838 do. 1 do. do. do.

Hence it becomes a very fair inference, that the decreased seizures on line and barrack guards, are attributable to the increased comforts of the new line guard and standard Guard rooms—since the diminution of attacks seems confined to the men on those duties, leaving the other sources of seizures unchanged for the better, and fluctuating as we already have noticed, according to the changes of seasons and variety of years. We have in consequence been induced to recommend extensive changes in the Barracks. But we will give the original letter.

BANGALORE, *6th December* 1835.

Sir,—I have the honor to return the accompanying documents, relative to the proposed alterations of the Barracks now occupied by H. M.'s 13th Dragoons—and in doing so, I avail myself of the opportunity of offering a few remarks.

It appears from the state of the roofs of the Barracks, the very long period since they were originally constructed, the complete state of decay of the Bamboos, as well as the faulty principle of their construction (for during the last monsoon, there was during

the period the rain fell scarcely a dry spot in any of the ranges, where the men could place their cots to sleep) their being totally unprovided with any means of ventilation, and from the roofs swarming with bugs and vermin &c. that some very general and material repairs and alterations should be made, to render them either comfortable, and I might almost add habitable. It becomes consequently a question, what will be the most beneficial to the health of the men, suitable to the climate of this station, and economical to the state.

At Bangalore the nights are always chilly and often cold, and the air damp, all Barracks therefore should as in Bengal, have enclosed verandahs. None else will admit a proper degree of ventilation, without subjecting the men to exposure or pernicious currents of air, and which has been the fertile source of almost all our diseases. Ventilators in the roof are quite useless. Then again the temperature here seldom rises above 90, some years not so high, and the annual average about 74 and in the house so equable as to have some years an average range of only 7½ degrees. Which at once led me to suggest the Syrian arched roof, as being lasting, requiring little repair, a perfect preventative to the bugs, and if adopted I should say by far the most suitable for this climate. These views are not speculative as I can confidently refer to Captain Underwood's house, a model illustrative of my opinions, and uniting all the advantages which led me to its recommendation.

I have the honor to be &c.

To

Lieut. Col. BRUNTON,
Commdg. 13th Drags.

(Signed) J. MOUATT, M. D.
Surgeon H. M. 13th Lt. Drags.

Trivial as these circumstances may appear, the extent of their combined agency or united influence must be apparent to the most superficial consideration. Could we in like manner analyse the effects of exposure to the sun, the sleeping in currents of air in the Barracks, to the exposure on various duties, the effects of Intemperance, the irritation of bugs &c., the result would be alike evident and palpable. We have already pointed out the diminution of mortality in the Corps for some years past, and we should be inclined to refer it to the improved condition of the Soldier. The Bedding—the abolition of Picquets—the lessening the severity and duration of Field duties—the new line and Barrack Guard houses—the Church parades early in the morning or in the Barracks, mounting regimental guards in undress &c. have all had their influence; but for Intemperance there is probably no check; it may be diminished, or a less pernicious beverage substituted for the Narcotic and poisonous mixtures sold by the natives. This appears to be the utmost that a commanding officer at present can hope to attain in this country. The other sources of disease are certainly capable of relief or modification. But we shall not here enter on the detail, except that every years experience tends to confirm the observations formerly made in our reports, that the health of the Soldier is ever commensurate to the attention paid to his comforts.

The foregoing remarks relate to acute disease in the aggregate, as also the whole of the previous Tables &c. We shall now give the causes or assigned causes of particular affections, and which after our already lengthened remarks needs no illustration to point out its interest or importance.

Table of causes or assigned causes of 399 *acute cases admitted into the Hospital of H. M.* 13*th Regiment of Light Dragoons from* 1*st January to* 31*st December* 1838.

No. and Disease.	Cause or supposed exciting Cause.	No.
94 Fevers	To cold caught on Line Guard but are unable to particularize how.....	3
	To cold caught on their posts on Line Guard.	6
	To cold caught by sleeping uncovered in their Barrack Rooms.....	2
	To cold caught by sleeping next to doors left open in the Barracks.....	6
	To cold caught on Mess Guard	1
	To cold caught but are unable to particularize how.....	7
	To cold caught by getting wet in the rain at Line Parade.....	2
	To cold caught by getting wet in the rain whilst at Watering order.....	1
	To exposure in the sun whilst working in a compound.....	1
	To exposure in the sun whilst piling up Hay	1
	To exposure in the sun whilst on leave for a day.....	1

Table of causes of acute cases, &c.

No. and Disease.	Cause or supposed exciting Cause.	No.
	To exposure in the sun whilst shoeing Horses.	1
	To a fall from his horse at the Riding school.	1
	To Intemperance	11
	Admitted from the Surgical Ward	1
	Know no cause	49
	Total.	94
12 Cynanche Tonsillaris.	To cold caught on his post on Line Guard	1
	To cold caught but is unable to particularize how	1
	To Intemperance	2
	Know no cause	8
	Total	12
2 Cynanche Parotidæa	To cold caught by sleeping next to a door left open in the Barracks	1
	To cold caught but is unable to particularize how	1
	Total.	2
10 Pneumonia	To cold caught by sleeping next to doors and windows left open in the Barracks	2
	To cold caught but is unable to particularize how	1
	Know no cause	7
	Total.	10
3 Carditis	To cold caught by sleeping next to a door left open in the Barracks	1
	To cold caught but is unable to particularize how	1
	Knows no cause	1
	Total.	3
1 Gastritis	Knows no cause	1
	Total.	1
5 Enteritis	To costiveness	1
	Know no cause.	4
	Total.	5
79 Hepa. Act	To cold caught on their posts on line Guard.	3
	To cold caught on Line Guard but are unable to particularize how	2
	To cold caught by sleeping in the Verandah and exposed to a current of air on Barrack Guard.	1
	To cold caught by getting wet in the rain	2
	To cold caught by getting wet in the rain at Watering order	3

Table of causes of acute cases, &c.

No. and Disease.	Cause or supposed exciting Cause.	No.
	To cold caught by getting wet in the rain on his post on Barrack Guard	1
	To cold caught but are unable to particularize how	4
	To drinking cold water when in a perspiration	1
	To drinking some Butter milk	1
	To the discontinuance of wearing his flannel Jacket	1
	To a blow received from the Muzzle of his horse whilst grooming him	1
	To Intemperance	2
	Admitted from Febris Remittens Biliosa	2
	do. Febris Cont. Commun.	1
	do. Dysenteria Acuta	5
	do. Dyspepsia	1
	do. The Venereal Ward	1
	Know no Cause	47
	Total	79
2 Nephritis	Know no cause	2
	Total.	2
5 Otitis	To cold caught on line Guard but is unable to particularize how	1
	To cold caught by sleeping next to doors left open in the Barracks	2
	Know no cause	2
	Total.	5
36 Rheumat: Acutus	To cold caught on his post on Line Guard	1
	To cold caught by sleeping next to a door left open in the Barracks	1
	To cold caught by sleeping on damp hay on Line Guard	1
	To cold caught by getting wet in the rain at Line Parade	2
	To getting his feet wet when mounting Line Guard	1
	To cold caught but unable to particularize how	6
	To drinking cold water when in a perspiration.	1
	To the fall of rain or changes in the Weather	1
	To Intemperance	1
	Admitted from the Venereal Ward.	4
	Know no cause	17
	Total.	36

Table of causes of acute cases, &c.

No. and Disease.	Cause or supposed exciting Cause.	No.
2 Rheumat: Chron.	To Intemperance	1
	Knows no cause	1
	Total.	2
1 Variola	Admitted from Febris Cont: Commun:	1
	Total.	1
1 Varicella	To cold caught but is unable to particularize how	1
	Total.	1
6 Erysipelas	Know no cause	6
	Total.	6
1 Phthisis Pulm:	Admitted from Catarrhus Ac:	1
	Total.	1
8 Hæmorrhois	To cold caught on their posts on Line Guard.	2
	Know no cause	6
	Total.	8
17 Catarrh: Ac:	To cold caught on their posts on Line Guard.	2
	To cold caught by sleeping next to doors left open in the Barracks	2
	To cold caught but are unable to particularize how	3
	To cold caught by getting wet in the rain at watering order	1
	To Intemperance	1
	Admitted from Rheumatism	1
	Know no cause	7
	Total.	17
78 Dysent: Ac:	To cold caught on their posts on Line Guard.	3
	To cold caught on his post on Hospital Guard.	1
	To cold caught on his post on Sick Line Guard	1
	To cold caught by sleeping next to doors and windows left open in the Barracks	3
	To cold caught by sleeping uncovered in the Barracks	1
	To cold caught by getting his feet wet on the march from Poonamallee	1
	To cold caught by getting wet in the Rain	1
	To cold caught by getting wet in the rain which fell on him through a hole in the roof of his Patcherry Hut	1
	To cold caught by getting their feet wet on Line Guard	2

Table of causes of acute cases, &c.

No. and Disease.	Cause or supposed exciting Cause.	No.
	To cold caught but are unable to particularize how	3
	To Intemperance	4
	Admitted from the Venereal Ward	1
	Know no cause	56
	Total.	78
4 Paralysis	To cold caught but is unable to particularize how	1
	Admitted Febris Remitteus	1
	Know no cause	2
	Total.	4
1 Dyspepsia	Knows no cause	1
	Total.	1
4 Epilepsia	Know no cause	4
	Total.	4
1 Colica	Knows no cause	1
	Total.	1
3 Cholera Morb:	Know no cause	3
	Total.	3
3 Cholera Indian:	Know no cause	3
	Total.	3
1 Diarrhœa	Knows no cause	1
	Total.	1
3 Anasarca	To fatigue on Line Guard	1
	To taking too much exercise when a convalescent	1
	Knows no cause	1
	Total.	3
1 Scorbutus	Admitted from Erysipelas	1
	Total.	1
4 Icterus	Admitted from the Venereal Ward	1
	Know no cause	3
	Total	4
2 Dysuria	Know no cause	2
	Total	2
1 Obstipatio	Knows no cause	1
	Total.	1

Table of causes of acute cases, &c.

No. and Disease	Cause or supposed exciting Cause.	No.
7 Delirium Tremens	To Intemperance	3
	Admitted from Febris R. B.	1
	do. Febris C. C.	1
	do. Dysenteria Acuta	1
	do, Hæmorrhois	1
	Total.	7
1 Concussio Cerebri	To a fall from his horse whilst at field exercise	1
	Total.	1
399	Grand Total	399

Bangalore, 14th February, 1839.

ARTICLE V.—*From the* RECORDS OF THE MEDICAL BOARD *by Permission.*

EXTRACTS *and* REMARKS *from the* OFFICIAL CORRESPONDENCE *of the Superintending Medical Officer &c. of the* MADRAS TROOPS, *which served against the* BURMESE, *during the* WAR *of* 1824-5-6.

In the inspection Report of the Hospitals of the Madras Division of the Army, dated Rangoon 29th September 1824, by Superintending Surgeon Heward, it is stated "the greater part of the Madras Division, consisting of H. M. 41st Regiment, 1st Madras European Regiment, Detachment of Artillery, 3d, 9th, 12th, 18th, and 34th Regiments of Native Infantry, with a Detachment of the Dooly Corps, arrived at Rangoon on the 11th day of May, in a state of the highest health."

"H. M. 89th Regiment and 7th and 43d Regiments of Native Infantry, joined in the first week of June; the whole exhibiting a total of only 52 men in the Returns of the Sick for May; 20 of whom were Europeans and the remaining 32 made up from the different Native Corps."

In the month of June, fever of an epidemic and ardent character, made its appearance among the Troops, and continued to prevail during the whole of July; such was its universality, that neither the European nor Native Soldier, or even Officer escaped its influence, which for the most part left the patient under circumstances of extreme exhaustion and weakness, not to be easily obviated upon a diet of salt provisions. This fever however was not of fatal result, and its attack and subsequent results were met with great success by the prompt and judicious practice adopted by the Medical Officers of the Division."

"It will be unnecessary in this place to remark either upon the nature or extent of the duties to which the Troops have been subject, or upon their privations in diet since their arrival at Rangoon; although to these conjunct circumstances rather than to any peculiarity of climate, may be traced that particular state and condition of constitution, which is now unhappily found to exist, more especially in the European Soldier, rendering him obnoxious to the ravages of disease."

"The disease," continues Mr. H. in a subsequent part of his report, "which is now found so generally to afflict the European Soldiers, and with such fatal visitation, is Dysentery combined with a scorbutic taint of constitution. The disease does not appear to possess any other striking peculiarity in its character than the extreme fatality that attends it, and which may be reasonably accounted for from its combination with scurvy, aggravated by the previously debilitated and exhausted constitutions of its victims. When the patient does not sink rapidly under the disease, he falls into a Dropsical state, the swelling commencing in the feet and extending upwards, when the belly becomes tumid, respiration laborious, deglution difficult, the countenance bloated, and his sufferings continue to increase, until terminated by death."

Ulcers too have become numerous in the Hospitals, and by comparison it will be seen, greatly more so among the Natives than the Europeans. The smallest scratch or abrasion of the skin degenerates into an ulcer, and a few cases among the Sepoys have degenerated into that particular character of sore, which has been denominated 'Hospital ulcer,' and been considered at times

highly infectious, although nothing has yet appeared among the Troops, to lead to the belief that it has assumed this character."

In the copy of a communication dated 21st July, addressed to the Brigadier General commanding the Madras Troops, and appended to Mr. H.'s inspection Report, it is stated: "referring to the Returns of the Madras Division of the Army since its arrival at Rangoon, the number of deaths in the European Corps more especially will be found gradually to increase, and while some of the casualties have been occasioned by wounds received in the various conflicts with the enemy; still the greater proportion of the whole loss, will be found to have arisen from acute disease in the character of Fever or Dysentery. The diet of the Europeans in quarters, as is well known consists, I believe, entirely of salt rations with biscuits or rice, but without any admixture of vegetable food, so essential to nourishment, and the due functions of health; such diet, being the least of all nutritious, will satisfactorily account for the pallid and dispirited appearance, so obvious among the Europeans of the division; and doubtless, predisposes in the strongest manner to disease among them."

He again continues in his concluding observations to the Board, "it only remains for me to state, that if the men of the different European Corps who are designated 'convalescents' be continued at Rangoon, the greater part of them will in my opinion be sacrificed to the circumstances of our present situation; for I am persuaded," he continues, "that no measure that may be had recourse to, which falls short of an entire change of place and circumstance, will be found adequate to their recovery or tend materially to the restoration of their shattered constitutions."

Selections having been made, from the Hospitals of the several European Corps, of such patients as appeared to the Medical authorities to be likely to receive benefit from change of air, they were embarked for this purpose on board of Transport Vessels ordered to proceed to the mouth of the Rangoon River, or a short distance to Sea. Each vessel was supplied with a medical officer, and such a proportion of comforts &c. for the sick, as the situation of the Force rendered available. The Superintending Surgeon, having received orders to proceed to those vessels, for the purpose of inspecting them, and reporting on the state of the Detachments

of Sick, observes in his communication to the Brigadier General commanding the Forces of 25th September, "It would be highly satisfactory to my own feelings, were it in my power to report, that an appearance of change in any degree favorable to returning health, was apparent among those unfortunate men. On the contrary however, a great proportion of the men belonging to the Madras Division, has suffered a marked deterioration of health, while many casualties by death occurred among them."

"The convalescents of the First, or Bengal Division, who have been on Ship-board near a month, have only obtained 5 or 6 rations of fresh food during that period; and the men of the Second or Madras Division who have been embarked nearly twenty days have received only two rations of fresh food during the latter period."*

* *Statement of the number of days fresh meat has been issued to the whole of the European part of the combined force under the command of Brigadier General Sir A. Campbell, K. C. B., also to the Sick in Hospital, from the 17th May to the 31st December* 1834.

Bengal Division.	No. of Days.	Remarks.
Fresh meat issued to the effective part of the Force from 17th May to 25th October 1824....	10	N.B.—Bullocks or Buffaloes were often shot and Sheep purchased and were issued to the Sick, and frequently to part of the Bengal Brigade. As no price was paid for such cattle consequently they did not appear in the Commissariat Book. (Signed) T. F.
Do. Do. to the Sick in Hospital from the 17th May to 4th October 1824.....	26	
Issued daily to the Sick from 5th October up to the present date.....	88	
Issued to the whole of the effective part of the European Troops daily from 26th October up to the present date both days inclusive.....	67	
Total No. of Days.....	191	
Madras Division.		
To the whole of the Effective part of the Force from 17th May to 25th October 1824.....	12	
To the Sick from do. to 4th do.....	31	
Do. Do. from 5th October up to the present date.	88	
To the whole of the Effective from 26th October to the present date.....	67	
Total No. of Days.....	198	

Deputy Commissary General's Office, Rangoon, 31st December 1824.

(Signed) T. Fiddes,
Deputy Commissary General.

The following Statement accompanies the Report adverted to; the Sick having been nearly equally divided among 4 Vessels.

Regiments.	Number Embarked.	Able to appear on deck.	Unable to appear on deck.	Died.
H. M. 38th.....	62	32	15	15
H. M. 13th.....	80	26	35	19
H. M. 89th.....	74	36	29	9
1st M. E. Regt....	28	10	9	9
H. M. 41st.....	56	30	21	5
Artillery.....	29	10	11	8
Total....	329	144	120	65

It appears that in the beginning of October, the progressive increase of disease and continued privation, under which the Troops suffered, originated an enquiry regarding the state of the Force, by the Superintending Surgeon, and four Medical officers detailed for this purpose by the Brigadier General commanding the Madras Division. The proceedings of this committee, contain the following Remarks. "It appears by the Returns of Medical officers in charge of European Corps, that on the 17th Instant (October) there were 361 men in hospital, and 91 Invalids and convalescents in quarters, forming a total of 456 men unfit for duty."

"The loss of Europeans by death, since the arrival of the Force at Rangoon, up to the above date, is 692, exclusive of the deaths that may have taken place in that part of H. M. 89th Regiment, which left Rangoon on the 16th August, and which are not yet known."

"If the total number of European Troops sent from Madras be estimated at 2640, which the committee have reason to believe to be nearly correct; it will be seen from what is here stated, that the efficiency of that portion of the Force is already diminished to one half, and that the number of casualties amounted on the 17th Instant to about 2-7ths of the whole."

"It is satisfactory to observe that the Native Troops are suffering by no means in the same degree as the Europeans, and that the total number in Hospital on the 17th amounted to no more than 1032."

"The diseases also to which the Native Troops are subject are comparatively of mild character, and easy of cure, so that the efficiency of this part of the force may be considered as but little impaired. Bowel complaints, slight febrile disorders, rheumatism, cutaneous affections, and ulcers, are the diseases chiefly prevailing among them: while the disease, which almost exclusively prevails throughout the European part of the force is scurvy, combined in most instances with dysentery and dropsy, of which it so far alters the usual character, as to render them incurable by any other means, than what will at the same time remove the scorbutic taint upon which they are ingrafted."

In order to effect the above object, the committee proceed to point the absolute necessity of the immediate and entire disuse of salt provisions, recommending fresh animal food, and a sufficient quantity of esculent and acescent vegetables &c. Aware however of the impracticability of procuring for the force, such supplies as were necessary, they recommended the removal of men tainted with scurvy from Rangoon, solely with the view of procuring for them the benefits of the diet abovementioned. "During the last week" it is stated "the deaths in the European Hospitals from scurvy, and diseases intimately connected with it, amount to 60, which supposing the mortality to continue at the same rate, gives a monthly loss of 240."

The consequences therefore, to be apprehended to the European part of the force, if speedy and effectual measures are not taken to ameliorate their situation in respect to diet, may be readily inferred, and the committee have no hesitation in declaring it to be their opinion, that if the constant and exclusive use of salt provisions be persevered in, the whole of the Europeans will fall victims to the prevailing diseases, or be so far disabled by them, as to be rendered useless for every military purpose.

In a letter from Mr. Heward of 26th November, with P. S. dated 4th December, after briefly recapitulating the circumstances under which the force had been situated since May; he alludes to the above proceedings in the following terms: "The diet therefore laid down by the Medical Committee, copy of whose proceedings

has been sent to the Board, was mere hypothesis, as every member of that body was aware, that to procure milk and esculent vegetables at Rangoon was impossible."

He next adverts to the plentiful supply of Wines and Spirits, Sugar, Tea, Sago and Coffee, which had been recently introduced into Rangoon by an influx of traders to the Port, "although" says he "we are still in want of bread, milk, fruit and vegetables for our sick and convalescents, and of mutton, poultry and fish for the subsistence of the European and Native Soldiers."

"The prevailing diseases" he continues "among the European troops as the returns exhibit, are dysenteric affections, fever and dropsy, to which scurvy in a great proportion of cases may be said to be superadded, and a great proportion of deaths which have occurred among the Europeans have been from bowel complaints, a proportion from fever, and many from dropsy. Among the Native Troops again, fever, dysentery and ulcers form the more prominent class of diseases; but bowel complaints among the Natives have mainly contributed to the small comparative loss which we have sustained among their ranks. Fever also in some cases has proved fatal, although that disease has seldom assumed an unmanageable form."

"Referring generally to the class of diseases which have prevailed in the European part of the force, and proved so fatal to so many of them; I am of opinion that their causes will be best found in the duties, the fatigues, and the privations of the Troops. It is satisfactory however to observe that the complexion of disease, has within the last fortnight assumed somewhat a new character, and can now in many instances be controlled by the ordinary power of medicine, and the men appear to be rallying. The Native Troops again whose duties are severe, are much worn down."

In a para of his P. S of 4th December he states "for the last three days, we have been surrounded by a numerous Burman Army, and a considerable part of the Troops have been constantly engaged for the last 36 hours, with the enemy, and when the contest may terminate, appears uncertain, as the Burmese are stockading themselves within about a mile and a half of Rangoon. Many Casualties from wounds are taking place, and some deaths have

also occurred, but both have been less numerous than could reasonably be looked for from the character of the opposing enemy."

A letter dated 2d January 1825 contains the following statement "upon the health of the Troops it may be observed, that their duties generally have latterly been rendered less arduous, and that they are recovering from their late fatigues. Some cases of Cholera have occurred among both the Europeans and Native Troops &c."

"Scurvy however appears again to be on the increase among the European Troops, manifesting itself in swellings of the legs and feet, blotches which are confined mainly to the upper and lower extremities, sponginess and bleeding of the Gums, fætid breath, with cough and dyspnœa, prostration of strength, Diarrhœa, and in a few instances general Anasarca."

"Little or no fruit has been procurable at Rangoon, and the only vegetable available to the Troops has been wild spinach or country greens, and that even in a very limited quantity."

In another communication of 19th January accompanying the returns to the end of December, it is stated by Mr. H. that they exhibit an increase of sick "as well in the European as Native ranks arising" he continues "from the nature of those duties in which the troops were engaged for the first fifteen days of December. It is satisfactory to observe that the state of Rangoon is gradually bettering;—the European Troops having of late been supplied with freshmeat from Bengal, whence numerous other articles of supply have been received." He continues in his concluding para "but all this, it will be obvious to the government, can do little more than merely alleviate partial suffering; for unless the men in barracks be sustained in health, it will be but too clear, where debility obtains to no inconsiderable extent, unaccompanied with any particular or marked disease, that the utmost exertion of medical assiduity can do little more than merely palliate the more prominent symptoms that may arise, and that this is not an exaggerated colouring of the state of the Native Force generally, I must respectfully refer to the number of men returned effective by the officers commanding corps for the pending service in advance."

In another communication of the 5th March "the general weekly reports of the sick of the Division," says Mr. H. "from the 24th January to 28th February inclusive, exhibit a progressive improvement in the health of the Troops, and since the departure of the army for Prome, some thousands of the former inhabitants of Rangoon have returned; and as the country is becoming every day more accessible and open, we are fast exchanging our late state of privation, for abundance of many articles of subsistence."

Mr. H. again reports in a communication accompanying the returns of his department for February 1825 as follows: "So marked has been the improvement observable among the Troops, arising from the abundant supplies pouring into the markets since the march of the army in advance, that I trust a further necessity, of sending from hence any part of Troops, (wounded men excepted) in search of better health, will not to any considerable extent again take place.

On the 25th April Mr. H. makes the following report to the Medical Board: "The Troops in advance, it is satisfactory to learn, have been abundantly supplied with every article of necessity, combining at the same time many of the comforts of subsistence, and as a consequence arising therefrom, an obvious improvement of health has manifested itself among them—"Rangoon" he mentions in conclusion of his letter "continues to be abundantly supplied with most articles of subsistence, and since the fall of Donabue has remarkably increased in population."

In a letter of 5th June, "it will be seen" says Mr. H. "that three or four cases of Epidemic Cholera have occurred among the Troops during April, and two of these in the Native Regiment at Martaban; but adverting to what are usually considered as the predisposing causes of that disease, to which the Troops have more than ordinarily been exposed, it must be allowed, that since the arrival of the army in these parts we have altogether experienced a singular exemption from the ravages of Cholera, and it will be satisfactorily observed that the Troops generally maintain a desirable share of health, and from particular accounts which I have just now received from Prome, coming down to the latter end of May, the army generally was in the best health."

In a communication of the 13th June it is stated "the rains commenced in these parts very generally in the first week of last month, but the monsoon has heretofore assumed a mild character compared with that of last year."

Mr. H. reports his arrival at Rangoon from Prome and Donabue in a communication to the Medical Board of 21st September, and continues, "it may be satisfactory to the Board to be apprized, that, with the exception of the Royal Regiment, and 47th Foot, the Troops at Prome and Donabue may be viewed as possessing as great a share of health as could reasonably have been anticipated from the nature of the service in Ava."

The Natives were by far the most enfeebled class that I have yet met with, and bore the strongest resemblance to persons who had been suffering for a long period under the greatest privations or absolute want."

The Hospital ulcer I regret to say, has become somewhat prevalent at Rangoon, and the cases in the Native General Field Hospital are more numerous than they have heretofore been. It is satisfactory to state that the Troops at Prome are altogether exempt from this ulcer."

In a letter of 12th October, "The hospital ulcer," says Mr. H. "adverted to in my letter of the 22d ultimo, I am happy to observe is on the decrease among the Natives. Those cases now in Hospital are improving in their appearance, and there is every reason to hope, from the dry atmosphere which now obtains (for the rains may be already considered to have ceased for the season) that most of the men labouring under that affliction may still recover. The Royal Regiment is the only European corps in the Madras Division which can be viewed just now as suffering from disease, and dysentery, as was the case with most of the European Regiments last year, is, as is usual in camps, the prevailing complaint. This disease, in a great number of instances, and especially in its latter stages, when great debility prevails, is combined with Abdominal Ascites, or what is more frequent, general dropsy.

In the "Inspection Report" for August and September forwarded by Mr. H. on 21st November; after stating that the

Head Quarters of the army (having left Rangoon on the 11th February) arrived at Prome on the 25th April after several contests with the enemy; he continues "the whole army maintained, during its operations and March, an unusual exemption from disease, while with few exceptions the general health of the European Troops was greatly improved." In conclusion of his report he states "I may be allowed to observe, that a retrospect, to the number and condition of the European sick of the army last year, contrasted with the present state of the Hospitals, will afford some evidence of the nature of the former season, the extent of the soldiers duty, and the peculiar hardships of his fare and situation during that unprecedented service.

"Recurring to the state of the Native sick, it may be expected that I should advert to those causes, which may be supposed to have more immediately led to that deterioration of health, so observable among the Native Troops serving in Ava. That the cause is not altogether climate, I infer from the robust frames of the Native inhabitants of Pegue; but without entering into a particular consideration of this subject, it may be in order here briefly to observe, that an exuberantly wooded country—where the monsoons are usually heavy—where vegetation consequently abounds—and where the densest fogs load the atmosphere, and the grass is nightly saturated with dews, which are not exhaled until a late hour in the morning, with a difference of temperature during the cool season of more than 30° in the twenty four hours, it may reasonably be expected that if bodies of men be exposed to such causes, which all experience has proved to favour the accession of active diseases; fever probably modified by constitution, will become prevalent, as also Bowel complaints and Cholera."

"That the Native Troops however, have been placed under circumstances which involve some privations, in regard to the nature and quality of their rations, when compared with that food which this class of men mainly subsist on when in India, will I feel assured be readily admitted, and while the established ration laid down for the Native soldier and public followers of the army, must be considered very ample in quantity, in so far as regards those articles of which it is composed, yet any additions made thereto by the individual himself must for the greater part arise from the country where the Troops are employed. In Ava where the Cow and Buffalo form no part of the food of the inhabitants, milk &c. so extensively in use among us, are not procurable for our Native Troops on the present service. I am therefore disposed to consider a great deal of that wasting and emaciation which appear among the Native Ranks, has arisen out of the hardships and privations which were experienced by the troops generally, during the preceding year; and which there can be no doubt, would have manifested itself to a far greater extent than what we have seen take place, had not the army by its advance, unlocked the resources of the country, throwing open its supplies to the Troops, and thereby diffusing to all, that relief of which, from the peculiar nature of the preceding campaign all had been deprived."

"After every thing that has been either said upon the diseases of the troops, or may hereafter be stated on the subject of those causes of sickness, and consequent mortality, which have taken place in the ranks of the army during the present service, they will still be found mainly to resolve themselves, with some diversity and modification, into the duties, the fatigues, and the privations of the Troops."

"The climate of Prome differs little in point of temperature from that of Rangoon: the greatest heat indicated by a Fahrenheits Thermometer in the shade during the months of August and September at 2 P. M. was about 90°, but this will be regulated by the kind and quality of the house in which this scale is exposed."

The Monsoon in the interior would appear to be comparatively light, for the rains at Prome during the abovementioned months fell only in showers, and those were usually of short duration.

Early in December 1825, the Troops left Prome to advance on the Enemy's capital, and in a letter to the Medical Board dated 22d December "Cholera" says Mr. H. "has, I regret to observe, been more than ordinarily prevalent among the Troops since the march of the army, connected a good deal there is reason to believe with that exposure which is inseparable from Field service; several fatal cases of the disease have also occurred at

Rangoon, attributable to the same cause, induced by dissipation among the men, arising from their having received large balances of pay, which had accumulated while on ship board."

A letter from Mr. H. dated Rangoon 3d March contains the following paras "the greatest activity is being acted upon by the commander of the force, to embark the army of Calcutta and Fort St. George, and six European Regiments will leave Rangoon, it is expected in the course of the ensuing week, for their respective Presidencies."

"About two hundred and thirty Native sick from the Pegue Brigade arrived here three days ago; and one hundred and fifty from Prome nearly at the same time. The sick from Pegue are with few exceptions suffering from ulcer, chiefly in the lower extremities, many of which are large and sloughing sores; while the men again who came from Prome are mostly cases of emaciation and debility."

In a communication of 20th June from Surgeon Campbell, then Senior Medical Officer at Rangoon (Mr. H. having returned to Fort St. George) when the principal strength of the army had embarked on its return from active service, he reports "The proportion of sick, in the corps left at Rangoon has increased since the commencement of the rains. In the Europeans from Remittent Fever, particularly in H. M. 45th Regiment, the men of which appear to retain a predisposition to it, acquired in the Kandian country; in the native Regiments the ulcer cases prevail, and cases of Cholera have occurred lately, but not in sufficient numbers to render it alarming."

Statement exhibiting the total number of "effectives on different days," and of "sick present," of the Troops of the Fort St. George Establishment, employed against the Burmese during 1824-5-6, *with reference to the periods more particularly alluded to in the above extracts and remarks.*

Years.	Months.	Day of the month.	Effective. Europeans.	Effective. Natives.	Total.	Sick present. Europeans.	Sick present. Natives.	Total.	Remarks.
1824	June	30th	1919	4633	6552	372	1170	1542	About six weeks after the arrival at Rangoon of the principal part of the force. Heavy rains since last week of May:—Para II.
,,	July	31st	1734	4807	6541	381	887	1268	Constant heavy rains. The force remaining in Rangoon, and at times actively engaged with the enemy.—Para VI.
,,	Sept	30th	1377	6754	8131	353	890	1243	The force still at Rangoon, and prosecuting a desultory and harrassing warfare, under an incessant and heavy monsoon.—Para. X.
,,	Nov.	30th	866	6362	7228	275	1110	1385	The force situated as before. Cessation of rains. Para XIII.
,,	Dec.	31st	1189	6181	7370	311	1132	1443	The force having been actively employed against the enemy during the first half of the month and during dry weather.—Para XV.
1825	Feb.	28th	1547	5832	7379	76	580	656	The force generally having been almost in a state of inactivity until 11th instant. Continued dry weather.—Para XVII.
,,	Apr.	30th	1614	6480	8094	59	500	559	The force having been constantly moving, and at times actively engaged with the enemy from 11th ultimo, until 25th instant.—Para XIX.

Statement exhibiting the total number of effectives and sick, &c.

Years.	Months.	Day of the Month.	Effective. Europeans.	Effective. Natives.	Total.	Sick present. Europeans.	Sick present. Natives.	Total.	Remarks.
„	May	31st	1529	6432	7961	142	551	693	The force stationary, although at times detached in parties against the enemy. Rain commenced about 15th instant.—Para XX.
„	Sept	30th	1312	6557	7869	139	691	830	Rains continue, force situated as before.—Para XXV.
„	Dec	31st	1363	7133	8496	316	759	1075	After the force had been for upwards of a month at times actively engaged with the enemy, and three weeks after marching from Prome. Para XXVI.
1826	Feb.	28th	1357	8577	9934	201	880	1081	Immediately before the breaking up of the army.—Para XXVII.

ARTICLE VI.—*On the use of* SALINE ENEMATA *in* CHOLERA, *being Extracts from a Correspondence in the Conservative Newspaper.* MADRAS 1838.

Notwithstanding the number of years which Cholera has prevailed throughout India, and the awful experience which the Profession generally have had of it, every candid medical man who has seen much of the treatment of the disease, must often feel himself at fault, and will acknowledge that we are nearly, if not quite as much in the dark both as to its *Etiology*, or *Pathology* at the present moment, as we were at the period of its first prominent (or rather perhaps we should say clearly recorded) appearance in 1817; and that we do not at present possess a knowledge of any medicine which we can safely depend on for counteracting, or arresting the progress of the disease; and further that those remedies which we now employ under the name of stimulants to support the powers of life in

the collapsed stage are generally *per se* ineffective, if not hurtful to the patient.

During the last year several letters appeared in the Madras Newspapers on the nature and treatment of Cholera, and amongst other suggestions therein contained, the use of *hot saline enemata*, for restoring the vital energies in the stage of collapse, was strongly recommended to the notice of the profession by Doctor Murray; and some cases were given in which trials of this remedy had been made with beneficial effects.

As the treatment of this disease is of paramount interest, not only to the medical profession but to the human race generally, we consider it peculiarly our duty to bring prominently to notice any reputed remedial agent which may have been found useful in combating this enemy of mankind; and therefore we shall reprint a few extracts from these letters, in the hope of inducing some of our readers to make a trial of the remedy, and to report the results for the benefit of their brethren.

LETTER No. I.

SIR,—So many remedies have at different times been extolled as specifics in this appalling disease, which have afterwards turned out to be inefficacious, or at least very undeserving of half the praise bestowed upon them, that I almost hesitate to announce any particular mode of practice as having been found pre-eminently successful. However, as it is the proper duty of all persons to give every information to the profession likely to tend to the public weal, I hasten to communicate through the medium of your paper, an extract of a letter I have just received from an intelligent and observant Physician of the Bengal Presidency, who has seen and treated Cholera on a tolerably extensive scale, and who writes me on the subject as follows:—

"Since last I wrote you regarding the great benefit I had obtained "from the use of *Hot Saline Enemata* in Cholera, my confidence in "this remedy was rather shaken, by the unsuccessful result of it in "some cases I had among the Camp followers during our late march: "but as none of them had any pulse at the wrist when I was called "to them, and I am not certain that they got regularly what I or-"dered, I scarcely consider it to have had a fair chance. The Na-"tives have a very great aversion to Enemata, and much reliance can-"not always be placed in the Native Hospital attendants on such "occasions. I have since then, however, had a very interesting case

" of an European in the blue stage of *Collapse*, when the remedy fully maintained the character I formerly gave you of it. It is the only " thing in which I place any confidence in this advanced stage, having found most of the others usually employed, *but too often to do* " *more harm than good*; and frequently to interfere with the salutary " action, and the regular administration of the Enemata.

" I have had too much professional experience to consider this remedy as infallible, nor shall I attempt to theorize in regard to its " modus operandi; but I can say, that it seems to have an exciting " and exhilirating effect upon the ganglial nervous system—that it " has the power of arousing vascular *reaction*, (which is the grand " object of all our therapeutic indications in the stage of Collapse,) " and that I have not lost any European patient from Cholera (and " I have had more than 20 cases) since I began its use in 1834.

" The ingredients I use are—common Salt 1 oz. Carbonate of Soda " or Potash 1 drachm, warm water (at 120° Farenheit) 1 pint. This " I give, *pro enema*, every half hour—hour—or two hours, according " as I find it necessary; *i. e.* till the circulating powers are excited " into *reaction*, and the pulse rises to a satisfactory degree of strength."

I am, Sir, Yours obediently,

D. I.

MADRAS, *6th June* 1838.

No. II.

SIR.—Under the initials of Deputy Inspector, I before wrote to you regarding the efficacy of HOT SALINE ENEMATA in Cholera, in consequence of information I received, which I thought worthy of being communicated to the public.

I have since been favored with another letter from the same gentleman, and I should not be doing justice to the information it contains, if I did not authenticate it by my own signature, and recommend it to the notice of the profession.

The further particulars I have now to communicate, are chiefly relative to the use of the Saline Enemata; and I give them from my friend's letter (hoping he will excuse me) without his knowledge or authority. His letter runs as follows:

" From being ignorant of the Pathology, my treatment is purely empirical. We used to inject saline solutions into the veins, from its " having been discovered by chemical tests that the serum of the blood " in Cholera-patients is deficient in some of its natural saline ingredients, and the operation was certainly attended with astonishingly " restorative effects; but, situated as we generally are in this country

" this plan is impracticable; and therefore I was led to substitute the " Saline Enemata, *as hot as the patient could bear*, which can always be " readily and speedily administered. Of the *modus operandi* of this " remedy I am ignorant. Its action is peculiar, however, and is first apparent in its allaying the spasms and vomiting, in increasing the volume " and diminishing the frequency of the pulse, restoring the natural appearance and temperature of the skin, and renewing the secretions.

" This effect I have seen follow its exhibition, after the pulse was imperceptible at the wrist and the other symptoms alarming, without the " assistance of any other medicine: No febrile excitement followed, " neither was there any secondary disease developed upon the restoration " of the circulation, which leads me to think that the disease is not " essentially one of inflammatory character, seeing that in the reaction " after collapse induced by extensive burns and scalds, there is violent " inflammatory excitement; and if Cholera consisted in abdominal inflammation, I should imagine that the repeated use of hot stimulant " injections would rather develope it: but these, along with bitter laxatives, and an occasional mercurial, I have often found sufficient to " complete the cure. The last case I had was in a drunken European " gunner. When I first saw him, he had vomiting, his pulse was almost " imperceptible at the wrist, his skin was quite cold, he had cramps, " and his voice was a whisper. The *Hot Saline Enemata* were used, " and the pulse became stronger, but remained frequent (120): warmth " soon returned to the skin, and the vomiting and cramps ceased; but no " natural secretions appeared. Mercurial purgatives were therefore " given, and the Enemata intermitted. He again became cold, and the " Enemata were resumed and continued till the pulse rose. Calomel, " Opium, and Castor Oil were then given, and the Enemata again intermitted; but still no natural secretions appeared, the pulse again sunk " in strength, at the same time that it increased in rapidity (137), and " the coldness of the extremities returned. This was now 48 hours from " the time of his admission: and late in the evening. The Saline " Enemata alone were ordered to be persevered in during the night, and " in the morning I found that the secretions had become restored, and " that he had had several copious yellow fæculent dejections; and after " this his cure was soon *complete*. I have tried, and seen used most " other medicines of the Pharmacopœia; but, in the advanced stages of " this disease, their action appears to be merely mechanical—the larger " the bulk of the dose, the sooner it is vomited. After collapse my sole " trust is in the Saline Enemata; and this feeling of confidence in them " is indescribably cheering to me."

"I think what are called the secondary symptoms of Cholera are "very frequently the effects of the remedies employed; but when "the collapsed stage continues long, without intermission, (say a "couple of days,) the blood becomes decomposed, and seems to give "the disease a Typhoid character."

I remain, Sir, Yours obediently,

JOHN MURRAY, M. D.,

Deputy Inspector.

1*st July.*

No. III.

SIR,—I have received the following report from Surgeon Morgan, relative to the out-break and treatment of Cholera in H. M. 57th Regiment, which I send you, as it contains some interesting observations; and as it was written for my private information and not for publication, I consider it the more valuable.

"The disease was novel to the men of the 57th Regiment, and, al- "though they knew that it had been for some time in their immediate "neighbourhood, yet they were not prepared to recognize it when it first "presented itself among themselves. Thus the first three cases, as I may "say, ran a fatal course before they were subjected to any treatment."

We shall pass over, the description of the symptoms, treatment, and morbid appearances in these 3 cases, and the notice of the 4th fatal case, as they do not bear on the question of *Saline Enemata*, and proceed to

"The 5th case, which occurred subsequently to the receipt of your "letter recommending a trial to be made of the *Hot Saline Enemata*.

"The poor fellow was the Hospital Serjeant, a most temperate, well "conducted, young, and healthy man: strange to say, although he had "seen his comrades dying only a few days before, in consequence of "procrastination in reporting themselves sick, he suffered himself to fall "a victim to the same error. He had been slightly ailing during the day "(3d August) and at 2 P. M. was purged, which was several times re- "peated before eight P. M.; but he said nothing about it, and thought it "merely a slight irregularity of bowels, occasioned by his having that "day eaten some *cold potatoes* for dinner, which composed the chief part "of his evacuations. He went round the Hospital with me at 5, and "again at 8 P. M., and I observed nothing the matter with him—he went "to bed, but did not sleep, was again purged, and at 2 o'clock A. M. (4th "August) was seized with vomiting, when he ejected a quantity of cold "potatoes and meat unchanged. He then felt very ill, and sent for Mr. "Neville, who was in waiting that night, and who saw him immediately

"and found him with all the worst symptoms of Cholera. Eyes sunk, "voice shrill, pulse weak and easily compressed, skin moist and cold, "vomiting continued, and the motions were *coujee-like*. Agreeable to a "memorandum left by me to that effect, a *hot saline enema* (of the pre- "scribed form) was immediatly given, and repeated every half hour. On "my arrival it had been given for 10 successive times, and was persevered "in till he sunk at 2 P. M. He never showed the least symptom of ral- "lying. The pulsation at the wrists ceased at 4 A. M. The other re- "medies employed were nearly as in the first cases, except that stimu- "lants were very sparingly given, and diluents freely. His secretions "were all suspended, except that of perspiration, which had a horrid "fœtor. With each enema there came away a quantity of rice—like "flocculi, a characteristic symptom of the disease. Thus the first trial of "the hot Saline Enemata failed, and they had perfect justice done to "them in all but the subject, and that was too far advanced. Three men "from the Barracks were admitted during the day and night in which "these events are recorded to have taken place. The disease in all was "in its incursive stage, the *Hot Saline Enemata* were vigorously adopted "in all, from the very commencement, and continued until decided re- "action set in. The rest of the treatment consisted in Calomel and "warm Cathartics, with blisters, and stimulant frictions. The re-action "I must say *was speedy, and far more salutary* than that from spirituous "stimulants, which were here almost entirely withheld. Their convale- "scence has been uninterrupted, and I am glad to say no other case has "since occurred."

I am, Sir, your obedient Servant,

JOHN MURRAY, M. D.

Deputy Inspector.

Madras, 24th August, 1838.

No. IV.

SIR,—I send you an extract of another letter I have received from Surgeon Morgan, continuative of the history of the late appearance of Cholera in H. M. 57th Regiment, and of the treatment which he pursued. It appears from all that I learn of the *hot Saline Enemata*, that they are a remedy of considerable efficacy, when carefully and judiciously administered and that they will form a valuable addition to the other approved means of cure.

Cannanore, 23d August 1838.

"I have to communicate to you that although Cholera did not alto- "gether cease to afflict us after I last wrote, as I fondly anticipated; its "further appearance has been restricted to three cases. Immediately after

" my former letter was despatched, they presented themselves. One of " them, the man who laboured so long under scurvy (originating in the " Prison cells), whose case you called for, and who had been for some " time at his duty, apparently, in a state of rude (tho' recently acquired) " health: He had been ill for 18 hours before he reported himself; and, " when admitted he was in a state of collapse. All efforts to resuscitate " him proved fruitless. The hot Saline Enemata were vigorously perse- " vered in, and stimulants employed; but in vain. The other two were " brought under treatment early in the incursive stage of the disease, and " speedily recovered.

" The *hot Saline Enemata* I am inclined to think favorably of, especi- " ally in the early stage of the disease, assisted by Calomel and Opium, " with powerful and extensive counter-irritation: but it is by no means a " *self-sufficient* lever to raise the load that weighs upon the heart, or, per- " haps, upon the brain. When you reach your patient pulseless, cold and " wet, with his voice a whistling whisper, his eyes sunk back in their " sockets, his face blue, and his fingers like a washerwoman's (only more " livid,) I do not know that hot saline enemata will have any good effect, " if solely trusted to. There is not a doubt that internal stimulants ought " then to be used (in moderation) along with them; and also external " warmth, friction, shampoeing, punkahing, and counter-irritation—with- " out disturbing the patient much, which exhausts him. I have rather a " partiality to the application of scalding hot water to the Epigastric re- " gion and spine, as a counter-irritant, as its effect is quickest, and " seems to be most penetrating rousing to the suspended vitality. But, in " many cases, I am certain nothing can succeed."

I am, Sir, your obedient Servant,
JOHN MURRAY, M. D.
Deputy Inspector.

Madras, 30th August 1838.

No. V.

SIR,—I am sorry to find that Cholera did not entirely cease in H. M. 57th Regiment after Dr. Morgan's last letter of the 23d ultimo; I have received an account of the occurrence of another unfortunate case, which I here send you.

I am, Sir, yours obediently,
JOHN MURRAY, M. D.
Deputy Inspector.

Madras, 19th September 1838.

Cannanore, 9th September 1838.

" I delayed answering your last letter under the idea, that, as Cho- " lera had paid a second visit to the native population here, so pos- " sibly might it do to us; and I regret to have to communicate that it " made its appearance yesterday in a soldier who had been 8 days in " Hospital ill of Dysentery, but convalescing. The invasion was sud- " den, and with such overwhelming severity, that I prognosticated " at once that it would prove fatal. The patient was seized at 2 P. M., " and when seen, in 15 minutes afterwards, he was cold, wet, livid, " and nearly pulseless. As he had been labouring under Dysentery " I considered it a good reason for interdicting internal stimulants. He " got a scruple dose of Calomel with two grains of Opium in the first " instance, after which the hot Saline Enemata (at the temperature " of 118°.) were sedulously administered every half hour, and vesica- " tory counter-irritants were applied to the nape and prœcordium. The " Calomel and Opium dose was probably soon ejected, as the vomiting " and conjee-like purging were at first incessant; and I trusted chiefly " to the repated power of the Enemata, to relieve the symptoms and " restore the suspended vital energies—witholding every thing which, " could be considered to interfere with their salutary action. The most " urgent complaint made by the patient, as usual, (indeed it is *inva-* " *riable* for it is the only symptom never absent) was that of unquen- " chable thirst, and craving for cold water; which was partially re- " lieved by effervescing saline draughts frequently repeated: but no " improvement was manifested in the state of the Collapse. The vo- " miting, and the spasms of the hands and feet, which were at first dis- " tressing, soon ceased; and my resolution in persisting in the plan I " had adopted, was encouraged by the patient's falling into a short " tranquil doze, and expressing himself easier when he awoke. The " Enemata were therefore regularly continued every half hour, consist- " ing each, of a pint of hot sea water, to which was added a drachm " of the Carbonate of Potass. They were retained generally from 2 to " 4 minutes: and, when passed, were accompanied with the character- " istic rice-like particles, which constitute the congee stool. He had " received in this way 6 Enemata, when, seeing that no warmth of " body and no pulse were returning, and that restlessness with the " alarming *sepulchral* mouning began, and every moment increased; " at 5 P. M. I determined to give a trial to cold affusion..... " but he sank rapidly, maintaining his intellectual faculties, however, to " within a few minutes of his death.

" In this case there was strong evidence (at least I think so, from the " gorged appearance of the subcutaneous veins) that *congestion* took place " *very early* in the venous system. It was most apparent in the veins " about the head—in those traversing the temples, forehead, and root of " the nose; and it may be asked—would not bleeding, leeching and " cupping have relieved this; to which my answer, from experience, " is—*no:* and the only explanation I can give of this is, that the sup- " ply of that mysterious agent *the vital principle—nervous energy*—or " whatever that may be called which constitutes life, had ceased to be " furnished—the apparatus of the organs which elaborates this princi- " ple being destroyed as completely as it would be by a sledge hammer; " or so deranged as to furnish a destructive instead of a vivifying agency. " Supposing this to be the case, even if the congested vessels were re- " lieved of a part of their stagnant load, the heart would not thereby be " enabled to perform its part in circulating the remainder; nor, supposing " the mass of blood to be vitiated, if this were withdrawn and replaced " by transfusion of healthy blood, could this operation be of any use, " without nervous influence being supplied to keep the blood in a heal- " thy condition, and to give the heart the power to circulate it—Neither " could the stimulus of the injection of any saline solution into the veins " be of avail. The morbific cause, is, in such cases, so overwhelming, " as to render all human aid futile. " The wheel is broken at the cistern." " It is remarkable that the intellectual functions do not seem imme- " diately to participate in the destructive effect of the invisible agent, " but only the animal powers.

" The *Saline Enemata* are probably as good as any other *single* " remedy; but this case proves that they are no *specific*, and that they " are not to be relied upon for the cure of an *intense* case of the " disease: yet, they are not by any means to be thrown aside as " valueless on that account. In this last case no stimulating " remedies having been used, the appearances were exactly such " as are presented after drowning. The venous system throughout was " congested, especially in the head; yet, I do not think that this was " the cause of the mischief, but the effect of it; and perhaps only one " of the *minor* effects; for the mental powers remained intact till nearly " to the end of life. The stomach and small intestines were natural, and " any unhealthy appearance in the large intestines was rather attributa- " ble to the disease with which the patient had been previously affected " than to the effect of Cholera.—" In short he died of Asphyxia."

(Signed) A. B. Morgan.

No. VI.

Sir,—" The only case of Cholera I have had lately was the following, " in a Sepoy. *Petiah*—Æt. 30, admitted, *3d September* 1838, *at* 3 *P. M.* " with vomiting, and purging of congee-like fluid—countenance collapsed " —cramps in the extremities—no pulse at the wrist—extremities cold— " voice a whisper. He had been ill 11 hours, and was ordered—of Com- " pound Spirits of Ammonia, and Tincture of Opium, each 20 drops, with " water 2 ounces, by the Native Assistant on admission, before I saw " him. 4 *P. M.* has vomited twice, and has had two motions within the " last hour—other symptoms the same as before reported. Let him " have an Enema of common Salt ½ oz. Carbonate of Soda 1 drachm hot- " water (120°) 1 pint; to be repeated every half hour. 7 *P. M.* has got " the Enemata. The cramps have subsided, he has had 3 evacuations " but without any regular fæces in them. His voice is improving. " The pulse is perceptible, and is 120, fluttering and irregular. Hands " getting slightly warm. Complains of thirst. Continue the Enemata " every half hour; and let him have an effervescing draught every hour. " *Midnight*—Has had 8 Enemata. No vomiting nor cramps. Skin " warm. Pulse improving. To continue the Enemata and effervescing " draughts every hour.

" *4th September*—The Enemata were continued till 4 A. M. when he " fell asleep, and slept soundly for two hours. 6 A. M. He now feels " much better, but no fæculent matter has appeared in the stools. " Pulse 112 and weak. Skin warm. Tongue dark. Thirst less. To " have 5 grains of Calomel immediately, followed in 2 hours by an ounce " of Caster Oil. Thin sago occasionally. *Noon.* Two yellow motions. " Vomited twice soon after taking the oil, when a sinapism was applied " to the pit of the stomach. Has not vomited since. Continue a little " sago occasionally. *Vespere.* Has had two more liquid yellow stools, " and the renal secretion has become free. He slept during the after- " noon. Pulse 104, and more full. Skin warm. *5th September.* Has " slept well—no motion—is very hungry—Pulse 88—Tongue clean— " Skin natural. To have a dose of infusion of Senna and Cheryetta. " *Vespere.* Bowels open. No complaint. *6th September.* Convales- " cent. Slept well. Pulse 84. Appetite good. Feels strong.

" I must be allowed to make a few remarks on the above case. It " was in an advanced stage, and I considered the case a very fair one " for the trial of the Saline Enemata. I took means of insuring their " being regularly administered, and the result was very satisfactory. " No remedies were given that could interfere with their operation, until " after re-action was fully established, Perhaps the natural alvine

" evacuations would then have been restored without the calomel; but " I thought it safest to give it, and I did so at a period when I was sure " it would operate; viz. *after re-action*. I do not think this man could " have lived two hours longer at the time he was admitted, had he not " had Medical aid. No secondary disease became developed:—where " this does occur, it seems to be the effect either of Medical treatment, " or of concurrent cause.

I am, Sir,

Your obedient Servant.

H. A.

Many instances have come to our knowledge in which the Hot Saline Enemata have been tried, with various success; but on the whole the reports speak very favorably of the remedy.

The following observations are from the pen of a very talented Physician, who has seen much of the disease, and whose opinion is consequently of great value.

" I now wish to draw attention to a remedial agent, likely to prove " very efficacious in Cholera, as an adjuvant to other means, and to " which I had an opportunity of giving a fair trial in four cases, I mean " the Saline Enemata as recommended and brought to notice in a letter " published in the *Herald* newspaper by Dr. Murray of Madras, happen- " ing to have had a case on the 16th August, the day the *Herald* contain- " ing Dr. M.'s letter reached this place, I immediately directed the ad- " ministration of the Saline injections and with evident benefit in the " first patient so treated; no amendment whatever having manifested it- " self up to the commencement of the use of the injections. Saline Ene- " mata at the beginning ought in no instance to be omitted, the attack " with Natives frequently coming on after a full meal of cold rice, until " the dislodgement of which an insuperable bar exists to the successful " introduction of any remedies. Of the utility of stimulants I begin to be " more then sceptical, indeed the result of my observation on this last " occasion would incline one to dispense with their employment alto- " gether, in no instance, that they were given, could I discern benefit to " accrue, on the contrary it appeared to me that they were productive of " harm and augmented the patients distress."

Saline remedies in the treatment of Cholera are not new to the Profession;* but we do not remember to have seen any notice of Saline injections as here recommended by Dr. Murray, and we are not aware of their having been commonly used in Indian practice before this time.

We are inclined to think favorably of the remedy, and to recommend its adoption by our readers; but, in so doing, we beg them to give it a *fair* trial, and not reject it if it does not succeed in every case, and under all circumstances: all those who have tried it, agree in stating that the hot enemata are only useful as adjuvants to other remedies, to a certain extent this is the case with *stimulants*, *bleeding*, and in fact all the remedial means which we use in the treatment of Cholera, as unhappily there are no *specifics*.

* We insert the *Recipe* recommended by Dr. Stevens, and the following judicious remarks, on the plan of treatment recommended by that gentlemen, by a very accurate observer Ed.

[*A powder containing Carbonate of Soda half a drachm, Muriate of Soda one Scruple, Chlorate of Potash seven grains dissolved in half a tumbler of water*]

I tried the effect of the saline treatment, so strongly recommended some years ago in Cholera by Dr Stevens, in a good many bad cases, not very long ago, and found it possessed of considerable power in restoring the circulation. The 1st case in which I used it was that of a Sepoy, who had already taken a great many stimulants of every kind but without any effect, he had been some little time without pulse at the wrist, when the saline Medicine was commenced. His pulse began to be perceived after he had taken several draughts, and he recovered. The pulse was restored in a good many persons both grown up and Children by the same means; but some of them died comatose of a typhoid sort of reaction, with large sluggish pulse, not I think connected with the Medicine but in reality the 2d stage of the disease. In consequence of this, the amount of success was not great, but it should be remembered that the treatment was adopted in an attack of the disease in which the usual means had been found of little or no use. And, in some cases admitted in the very last stage, in which all excitability appeared to have left the system, this Medicine had no effect; still the impression left on my mind by numerous trials of it, is, that it possesses great power as a restorative in the collapsed stage of this complaint. How it produces its effects, I shall not attempt to say. Stevens recommends no opium, calomel, nor stimulants to be given at the same time; but I don't see why these might not be given in moderation, Simultaneously.

It is generally well retained on the stomach instead of the chlorate of potass of which I had none, I used carb: potassæ saturated with muriatic acid in equivalent quantity.

So many remedies, which have been boasted as specifics in Cholera at various times, have turned out failures, that unfortunately there is at present a great reluctance in the profession to attempt any new remedy; and many men consequently continue

Felices errore suo

blindly to follow the old routine, tho' they have experienced its inefficiency in a thousand instances: but we think that the evidence here adduced of the efficacy of this remedy, is sufficient to justify the most sceptical routinist, that he may make a trial of it without incurring the blame of attempting any rash experiment on his patient.

We shall conclude our remarks with thanking Dr. Murray for having brought this remedy to the notice of the profession; and we trust that he will continue the useful career which he has commenced, unheeding the sneers of those rigid adherents to the old *mamool*, who oppose all improvement, and who belong to that party who have gained for Madras the enviable *sobriquet* of the *benighted Presidency*.

CASES.

*Case of Amaurosis from Cerebral Tumour.**—Thomas Haslam aged 37 years, of a dark complexion, and stout habit of body, of intemperate habits, frequently in Hospital with fever and Delirium Tremens, and latterly impaired vision. Last admission 7th June 1836, when he complained of a great defect in his vision, could not discern objects a few paces off, and these had a misty, and indistinct appearance; had also severe head ache, Pupil of both eyes considerably dilated, but its edge perfectly regular and contractile, (though sluggish) on exposure to the light; the patients general health good, appetite and strength great, Tongue clean—Bowels regular—The treatment at this period consisted in repeated blistering—Emetic of Ipecacuana every other morning, and attending to the Bowels, but without any decided benefit, on the contrary the symptoms increased, and he became perfectly blind, so much so, that he could not distinguish light from darkness, and what was very anomalous the pupils, particularly that of the right eye, retained their mobility in a great degree, on exposing them to a strong light. Towards the middle of October he became heavy, drowsy, and indifferent about himself, which by 30th had increased to complete lethargy; Bowels very costive, no complaint but of thirst, the pupils permanently dilated,—November 5th lapsing into a state of complete stupor; Blisters, and Stimulating Enemas were resorted to, and on 11th November death came to his relief.

* Vide Travers on the Eye Page 153.

Dissection.—On removing the membranes of the brain, a quantity of recently effused blood was observed on the lateral portion of the left hemisphere; on making a transverse section of that Hemisphere, a portion of brain was seen in a state of *ramolissment* or softening, and beneath it, a hard and firm body was discovered, which turned out to be a tumour about the size of a Turkey's Egg, resting on, and taking its origin from the Dura Mater over the sphenoid bone, implicating the optic nerves about their decussation; the bone was rough and porous, as if worm eaten, but no puss was observed; the tumour of solid and fibrous structure, having a distinct central nucleus. The Amaurosis under which the patient had laboured so long, was thus very satisfactorily accounted for, his intellect had been unimpaired, which is to be explained by the very gradual growth of the tumour, and to its being situated in the anterior part of the brain.

Paralysis—Bolloh Paupadoo P.—Ætat 20.—*15th July* 1837.—When at work on the Roads yesterday about 2 O'clock, he suddenly felt giddy, and fell down insensible; does not know how long he lay, but when he attempted to rise, he found he had lost the power of the left side—He had headache, and pains all over the body, and limbs—At present he has a little pain over the Eyes, but none elsewhere; the skin is natural, Pulse about 82 soft, Tongue smooth and glassy in some parts, in others white, mouth moist, Bowels moved daily; passes urine freely, has no power over the left side, arm, or leg; is dull and languid, and disposed to sleep, he never had any attack of this kind before. Comes from near Ellore, has been four years a prisoner in the Jail.

The weather has been very hot for some days past, in conse-

quence of the want of rain—the thermometer is generally above 93° in the shade at present.

℞ Ol: Terebinth: ℥i. Ol: Ricini ʒiv. ft. mist. St: sumend:

Head to be shaved, and 18 Leeches applied to the temples and fore-head, and a blister to the back of the neck.

16*th.* Bowels were moved several times from the medicine; and the leeches and blister which rose well removed the pain in the fore-head—but he is dull and drowzy as before. The skin is cool and moist, Pulse 72 soft, when roused up, the pupils appear to be quite natural, and the eyes clear and bright, but not remarkably so —Rept. Hirud: xxiv.

17*th.* Appears to be much more clear in the head to-day and speaks freely. The leeches bled well—power of the left side gone.

℞ Nuc: vomicæ gr. v. ft. Pil: ter in die sumend:

31*st.* Has continued in the same state up to this date. The dose has been gradually increased to two scruples. Has had frequent twitchings, of all the limbs since yesterday, with pain and smarting in the Bowels, without any other observable effects of the medicine—Cont: remed.

10*th August.* Continues much in the same way, the dose has been increased to one Drachm, the twitching is again less, and within the last two days, he has recovered a little power of the leg, but none in the arm. The pain or rather smarting in the bowels continues.—Cont: Med: ʒi. gr. x.

15*th October.* No decided change, the quantity of Nux vomica now taken is one drachm and ten grains, but it has for 3 or 4 days done no good; but the smarting pain at the Stomach continues. He can walk about with a stick, but he cannot raise his hand to his head.—Cont: gr. lxxx.

26*th.* The burning, or uneasiness in the stomach increased with the increased dose, and continues, but to-day he complains of giddiness and dimness of sight. B: free, appetite good, no thirst, skin natural, Tongue white but moist, P: 66 soft and large. Omit: Medicine.

℞ Pulv: Ipecac gr. xxv. Aut: Tart: gr. ii. ft. Emetic:

℞ Calomel gr. v. Jalap gr. xx. ft. Bol: to be taken as soon after the operation of the emetic as it can be retained.

2d November. Has taken no medicine since last report, except what was required to regulate the Bowels. The uneasiness at the stomach and dimness of sight have now gone off. To have, Galvanism, 250 shocks twice a day. From this time the galvanism, was continued regularly and he gradually improved, and was discharged, well on the 25th December.

Case of Snake Bite.—A stout muscular man about 30 years of age, was awoke when sleeping in his tent by a snake crawling over his face, and in the act of suddenly springing up, was bitten somewhere in the forehead. He instantly killed the snake, and soon after, finding no ill effects from the wound, lay down and went to sleep again; between 11 and 12 o'clock P. M., or in 2 or 3 hours after, a person passing through the tent accidentally observed that the man appeared convulsed, and when spoken to he was unable to answer, he was therefore at once conveyed to the Hospital tent, and immediately seen by me. The symptoms were as follows; the entire body was in a state of violent spasm, the limbs being stretched at full-length and quite rigid, the muscles of the throat and fauces seeming to be most violently effected: Pulse very quick and weak, extremities cold, appears to understand questions but cannot speak, makes an exertion to point to his forehead as the seat of pain, when asked where he was bitten; the wound however could not be discovered, owing to the very dark colour of the skin, and probably the small size of the Puncture.

An attempt was made to exhibit a draught containing Spt. Ammoniæ, but the effort of swallowing induced such violent and general convulsions of the entire body, that several men were required to hold him, and a distressing sense of suffocation, lasting for several minutes, threatened the immediate extinction of life. The head, particularly the front part was constantly rubbed with the liquor ammoniæ, and some stimulating frictions to the limbs were kept up by the several attendants, whilst life remained. All attempts at introducing medicine into the stomach completely failed, the vital powers gradually sunk and he died in about 30 or 40 minutes after admission into Hospital.

The skin of the snake by which the above patient was bitten accompanies the statement, it is called by the Natives "Katla Pam" but it does not I believe answer to the description of that snake

given by Mr. Russel in his work on snakes, the animal he describes under that name not being poisonous.—*G. P.*

This case is remarkable from the circumstance of its occurring from the bite of a snake described by Russell as being innoxious; we have shewn *the skin* to several snake charmers, and they immediately pronounced it to be the "Katla Pam," and say that it is very venomous, and relate cases of persons dying from its bite; but from the great love of the marvellous always shewn by these people, little they say can be depended on. The "Katla Pam" is described by the natives generally of Madras as a small striped snake, very numerous, and very venemous. We have not been able to obtain a living specimen of this snake, and cannot give a correct anatomical description of it, but we trust some of our readers will furnish us with an account of it, from the sketch of its skin which we have given (vide plate.) Spasm of the throat has been considered peculiar to those bitten by the Cobra de Capello, but as it was a very prominent symptom in this case, we may conclude that it is a characteristic mark in all cases of bites of poisonous snakes.—*Editor.*

My Dear Rogers,

I forward you a case of extraction of a portion of the upper Jaw and Cheek bones, as I think it is worthy of being made known for two reasons; *first* that it may induce others to perform similar operations, without the least apprehension, which unfortunately (in this country at least) are neglected from either timidity, or indifference, or want of a well concocted plan; and *secondly*, that by leading to discussion, I may be put right in any part where I have held wrong opinions.*

Yours Sincerely,

Hydrabad Residency, *February 5th* 1839. E. Palmer.

* This operation shews Mr. Palmer to be a skilful and, intrepid Surgeon, and does him great credit; we hope he will favour us with further results of his practice in operative Surgery.

This branch of the profession is too much neglected in India, and from want of practice, Surgeons become timid, and are unwilling to undertake operations: We are sorry to say that we can call to our recollection some fatal cases, in which, a different result might have been expected, had timely resort been had to an operation. With a little *trouble*, and some *tact* with Natives, numerous cases for operation may always be procured in large Towns in India, and any man will be amply repaid for his pains by the confidence he will thus gain in the use of the knife. —Editor.

Muddun Khan a Jemadar of Horse, by caste a Kaim Khanee Pathan, a large tall man, very muscular, and apparently capable of undergoing the greatest bodily fatigue and suffering; of a florid complexion, and about 38 years of age. Was put under my charge for a wound received, in a scuffle by a powerful man of his own caste, in the left cheek. The wound was inflicted by a Native dagger about 12 or 14 Inches long, and 2 inches broad, which entered the cheek, close under the orbitar plate of the left eye, penetrating integuments, muscles and malar bone, then running diagonally towards the right side, coming out in the middle of the palate bone, transfixing the tongue, and its point penetrated deeply into the right side of the lower maxillary bone: but the wound was inflicted with such force and so deeply, (owing to the great strength of the patients adversary) that when the inflicter of the wound attempted to extract the dagger, the blade broke off close up to the wound under the eye, leaving the greater length of the blade remaining in the patients face, so that only a portion of about 1-10th of an inch was visible at the wound where the weapon entered; the point could not be seen, as it was embedded in the lower jaw bone without passing through it, thus locking, or rather pinning the two jaws together, and preventing deglutition and speaking. As the greater part of the wound was through bone, and as the thickness of the dagger was very small and fitted its wound tightly, there was consequently little or no hemorrhage, as long as the knife remained in the face. In this state the Jemadar was brought to me.

The first sight of the wound, was sufficient to convince any one, that extraction of the portion of the dagger broken into the face, by a forceps ever so powerful, were it even advisable, was impossible; as there could be no purchase on a weapon so planted, where all the grasp one could command was of a point of $\frac{1}{10}$ of an Inch. The attempt at extraction by forcing upwards might perhaps have been made at the mouth, where the middle portion of the blade (about an inch long) was visible, viz: between the tongue and the palate; but as many arteries must have been wounded, by the course the dagger took, and as from the position and size of the wound the bloodvessels could not have been secured, either by ligature or compression, this mode of extracting the blade would have been unadvisable, on account of the internal hemorrhage which would have ensued; and it will presently be seen, that this mode of extraction, was also found to be practically impossible.

The man had been wounded the night before his applying to me, and being a resident of the city of Hydrabad, his first resort, to have the brok-

en blade extracted, had been to the city practitioners both Native, and European. They commenced by enlarging slightly the wound under the eye, and attempted afterwards by force,(which was continued for upwards of three hours) by reliefs of different hands, to withdraw the blade by powerful bone forceps. The result was of course fruitless, as might have been expected, owing to the small purchase on the broken blade, and very fortunate indeed that it was so, for if my former reasoning be correct, and had these city practitioners extracted the blade, the patient most probably must have died from copious internal hemorrhage. This method having failed in their hands, they, not in any wise intimidated or foiled, afterwards called to their assistance a certain robust blacksmith, notorious in the city of Hydrabad for his Herculean strength, and having made him apply his strongest and largest iron forceps, (previously wrapped round with a piece of cloth) to the portion of the blade visible between the roof of the palate and tongue, caused him, while two persons grasped the forceps firmly, to deal sundry blows with his hammer, under the shaft of the said forceps. The second attempt was as futile as the first, and God only knows, how the patient was preserved from all these rough and butcher-like attempts; but, certain it is, that the poor man having undergone all this cruelty for a whole night and morning, came to me at mid-day, with the blade sticking in his face, not in the slightest degree removed from its original position.

Under these circumstances, convinced of the impracticability, and if practicable, of the danger of forcible extraction, I immediately resolved to undertake the operation of excision of a portion of the upper Jaw bone, and cheek bone, and having called in the assistance of two professional men, viz. D. Vertue Esq. and J. Cox Esq. I began the operation at 4 P. M. Having placed the patient in a convenient position with the wounded cheek turned towards the light, I began by cutting slowly through the skin and cellular substance of the cheek: my first incision extended from the lower margin of the eyelid to the bottom of the upper lip, then, deepening my incision carefully, I cut through the orbicularis of the mouth, and eventually through the substance of the upper lip itself. In this part of the operation, several arteries were cut, branches of the temporal and facial artery amounting to five in number, all of which, were immediately secured in succession as they were cut by the Gentlemen assisting, nevertheless, during the interval of the arteries being cut and tied, a good deal of blood flowed from the incision, and this conjoined, with the blood oozing continually from the wounded tongue, and soft parts below it, not only was the occasion of a great deal of trouble and delay, but filled the patients mouth and threatened suffocation; this

was relieved by inclining the patients head over the Couch, and by placing a small piece of sponge inside the mouth, and wringing it out from time to time, when gorged with blood. The above incision, it must be remembered, was made exactly over the course taken by the knife in the patients jaw, that is to say diagonally, from the middle of the lower eyelid down through the muscles of the cheek and left side of the upper lip, cutting through the latter, in order to allow a clear space for the application of the Saw.—When the Arteries were secured, and the above precautions taken to prevent suffocation from internal bleeding, and to permit as little blood as possible descending into the stomach and intestines, I next proceeded to clear the bone from all muscle, and widen the incision at its base, making one flap turn towards the ala of the nose, and the other towards the outside of the face; the two flaps thus widened at the base meeting at their apex under the eye. This was done, with the intention of taking out a piece of bone of a triangular shape, but before proceeding to saw, Mr. Cox extracted the Canine and three adjacent molar teeth; a good deal of difficulty was experienced in sawing out of the portion of cheek and upper jaw bone, as when the saw was used from below upwards, the eye was exposed to danger, and when from above downwards, the bottom of the mouth and soft parts were liable to be hurt by the point of the saw: but both these points were guarded in some degree by large pads of lint heaped over the eye, and the sponge inside the mouth. After some time, by working with the small hand saw, and the semicircular trepan saw, a portion of bone was taken out, extending in length, from the orbitar plate of the eye down through the alveolar sockets of the teeth, and in breadth at the base, from the second incisor of the left side, to the 4th molar tooth, meeting at the apex in a point below the orbitar plate. In this situation, the whole length of the knife was seen, and being laid bare, was easily drawn out by a forceps, the point sticking in the lower jaw, requiring a little force. The ends of the ligatures of the blood vessels being left outside, the flaps of the wounds were immediately brought together by sutures neatly applied, and straps of adhesive plaster placed in the intervals of the sutures, over which was put a piece of lint immersed in diluted spirits of wine; two Compresses to keep the lips of the wound in close juxtaposition, one, being placed on the hollow of the cheek externally, and the other, on the hollow of the side of the nose, the whole was carefully yet firmly bound down by a double headed roller, a small piece of sponge, supporting the two sides of the wound from inside, was left in the mouth, and the attendants ordered to squeeze it out when saturated with saliva &c.

and to moisten the dressings from time to time with cold water, in order to prevent excessive inflammation.

There was subsequently little, or no inflammation, which, considering the long time he was under the hands of the city practitioners, and my own operation which occupied nearly two hours, is astonishing. The dressings were removed on the 8th day, the wound doing very well, and no inflammation of the eyes, which was to have been expected, considering that the wound was so extremely close on the eyeball. But inflammation in this organ had been prevented, by not exposing the eye to the light, by taking two or three turns of the roller over it, and by the roller being kept constantly in a moist state—On the 31 day after the operation, a purgative enema was given, when some clots of dark blood came away, and relieved the patient much: on the 10th day, the Ligatures came away, without any secondary hemorrhage. Beyond this time the patient continued to do well, improving daily, the wound healing rapidly, he was kept on a strict antiphlogistic regimen as long as there was danger of inflammation; and supported, by nourishing Diet, and Bark when profuse suppuration came on. In the course of 50 days, the wound had entirely healed, and and no Ectropeon of the lower eye lid ensued, except of so slight a nature, that at a short distance it is hardly perceptible. This was effected, by keeping the upper portion of the wound, close under the eye open, till strong granulations had sprung up from the bone at the bottom, and when, strong attachments had taken place between the flesh and bone at the bottom, the superficial part of the wound was brought together and allowed to heal. It is now nearly a year since the operation was performed, and the Jemadar is quite well, no sinus or fistula of the cheek; eats voraciously, (as most of his caste do) and is so slightly disfigured, that, considering he was rather an ugly looking chap from his mothers womb, he has nothing to regret on the score of beauty. It is but justice to add, that, during the whole course of the above tedious and painful operation, the patient evinced not only perfect composure of mind, but encouraged me in the course of my duty, by expressing his perfect willingness and confidence, in every and whatever step, which I thought necessary to adopt. In fact, I never in the whole course of my own or others practice, witnessed such manly resignation to, and such unflinching and steady resolution in undergoing a necessary but painful cure; indeed the happy and safe progress, not only of the operation, but the successful result of the subsequent treatment, I must attribute in a very great measure, to the patients most praiseworthy conduct.

EDWARD PALMER.

Second Attacks of Typhus.—I heard of a good many instances of this; but, compared with the great number of typhus cases, they did not amount to more than a very small exceptional number.

Treatment of Typhus.—Towards the end of the season, the method of treatment with nitric acid, and alcohol in its various forms, and other stimulants, was found to be much more successful than other methods; but it is not very clear whether or not this greater success arose partly from any change in the character of the disease, as compared with what it may have been in the earlier parts of the season.

Emigration.—With regard to the subject of emigration in general, it is evident that an extensive, methodical, and well-conducted system of emigration is what the mother country now requires; and as to the colony to which emigration should be encouraged, there is the economical reason for sending emigrants to British North America, rather than to the Australian colonies, that the same sum which it costs to send one person to the distant Australian colonies, would convey three persons to the much nearer colony of Canada: also, if a settler is disappointed and wishes to return, it is much easier for him to do so from Canada than from Australia.

There are also political reasons why the British government, instead of promoting emigration to Australia, should rather encourage a flow of British settlers to Canada, a colony which contains a great number of inhabitants of another race, and which is bounded to the south by the United States. In the event of internal disturbances, it is unnecessary to allude to the advantage of having a preponderance of British settlers, and, in case of war, of having a well-peopled colony to repel invasion.

Montreal, Canada,
August 1848.

ART. VI.—*Cases of Dysentery treated by Enemata of Warm Water.* By JAMES IRVING, M. D., Assistant-Surgeon, Bengal Army.

THE following cases afford examples of a practice recommended by Dr O'Beirne of Dublin, in a work published in the year 1822 ("New Views of Defæcation, &c."), and which has lately been revived in India by Assistant-Surgeon Hare, of the 7th Bengal Irregular Cavalry, in a pamphlet published during the present year ("Hints for an improved Treatment of Remittent Fever and Dy-

sentery." Delhi, 8vo. Pp. 36.) Before relating the cases, it may be as well to detail briefly the rationale of the practice.

It is well known that in dysentery, fæcal accumulations are apt to occur at the sigmoid flexure of the colon, and at the *caput cæcum*, and that the lodgment of these masses, to quote the words of Annesley, tends "very evidently to irritate and inflame the mucous surface on which they lodge, and cause ulceration and even sphacelation in a very short period, if neglected or injudiciously treated." (Researches on the Diseases of India, vol. ii. p. 152.) Hence, in the treatment of the disease, purgatives have been pretty generally recommended by authors and practitioners; and various drugs of this class have been employed, many of them of an irritating description. Annesley used to prescribe twenty grains of calomel at night, and a black dose in the morning. Bampfield, another author of very varied experience in the treatment of dysentery, gave eight or twelve grains of calomel twice or thrice a day, till salivation and purgation were produced; and, to ensure a full purgative action, used also to give thirty grains of jalap, or an ounce of salts. He occasionally purged with extract of colocynth and infusion of senna. Purgatives are also recommended as an important part of the treatment, by Curtis, Wade, Ballingall, Lempriere, and Twining, all of whom saw much of the disease within the tropics; and there are few writers who do not advise the occasional use of laxatives as a part of the cure. The difficulty commonly experienced is, to fix on the proper period for their administration, and to give such as will act effectually and mildly, without irritating the inflamed mucous membrane. For this purpose, Dr O'Beirne recommended the injection of a quantity of warm water through an elastic tube, passed above the sigmoid flexure; and he affirms that, by this means, the bowels are effectually opened, and accumulated fæces are removed, while the warm water rather soothes than irritates the inflamed membrane; and that, moreover, the effect is produced much more speedily than by purgatives given by the mouth,—only a few minutes being required. He shows that in dysentery, besides the mechanical obstruction to fæces in the twisting of the colon at the sigmoid flexure, there are other obstacles, such as, the contraction of the gut from spasm, and swelling of the inflamed membrane; while the fæcal accumulation, by impeding the circulation below it, causes further swelling, which may be to such an extent as to give rise to *prolapsus ani*.

In order to administer the enema as recommended by O'Beirne and Hare, the patient lies on his back, and the elastic tube of Reade's or Weiss's stomach-pump is passed through the anus, and carried gently onwards for about nine inches, when the end will reach the flexure; warm water, or milk and water, of the

temperature of 90°, and in quantities varying from three to six pints, is then pumped into the bowels, which may be observed to become gradually distended. On withdrawing the tube, and if the patient can bear it, he should be laid on his left side, or have his belly gently rubbed and pressed. On his going to stool the injection is returned, and generally procures a free fæculent evacuation. By means of the pumping, the water is intimately mingled with any accumulations; and the tube, by being moved from side to side, or gently up and down, assists more effectually to break up hardened masses. The water, in fact, thus performs the part of those fluid secretions which the accumulations cause the intestines in cases of dysentery to throw out, and which soften and break them down, and thus procure their gradual discharge. Purgatives must act in a similar manner, by soliciting from the intestines fluid secretions, which act on scybala in a similar manner. Mr Hare observes—"By the first injection, some fæcal matter, at least, will be softened and removed, and the injection can be applied again and again, till the relieved intestine eject itself the harder matters, reduced as they must be in size, if any remain." P. 26.

In chronic dysentery, where we have either ulcers or great irritability of the colon, this remedy would seem likely to prove serviceable. It is found to be a good laxative, removes ill-digested fermenting fæces from the delicate mucous membrane; and, by means of it, the swollen or strictured gut can be gently distended with a bland fluid, while it also affords a ready means of applying astringents to ulcers of the intestines. But in chronic dysentery this practice presents another advantage, pointed out by Mr Hare, viz. that we can sooner give tonics and generous diet, because, when the intestines are thus regularly washed out, we do not fear the presence of fermenting ill-digested food. When ulcers exist, and it is wished to employ astringent lotions, Mr Hare first washes out the intestines, and then throws up the medicated enema. Those substances from which he has derived most benefit, are fifteen grains of nitrate of silver dissolved in two pints and a half or three pints of water, a strong decoction of bark, or a mixture of catechu and chalk.

This plan is now extensively adopted in Bengal, and has been used to some extent in the Artillery Hospital at Subathoo, where I have had an opportunity of judging of its effects. In using the tube of the stomach-pump, it is advantageous to close the holes at the side of the extremity of the tube, and to bore a large aperture at the end, so that a stream of water may be directed forwards with some degree of force. It also appears to be of great importance to have the warm water as long as possible in contact with the mucous membrane, so as to foment its tender surface; hence the patient should try to retain it as long as possible. But to the enema I often add,

with advantage, a few drops of laudanum and a few grains of acetate of lead, which exert an astringent as well as sedative action on inflamed parts. The good effects of this plan, as personal experience enables me to testify, are often striking. A patient who before has had frequent small stools, accompanied by pain and tenesmus, after the enema has a copious fæculent motion without tenesmus, and from this time the evacuations become less frequent, contain less blood, and by the daily repetition of the injection, with scarcely any other remedy, a cure is produced. In other cases, as those in which the liver is affected, the relief is merely temporary; and a few cases occur in which the use of the remedy seems to add to the uneasiness of the patient, to increase the frequency of the stools, and the violence of the straining. It is proper to remark, that although, as in all stations in the Himalayas at this season, bowel complaints have been common, yet no very severe case of dysentery has occurred at Subathoo; and consequently this practice has only been tried in the comparatively mild cases which have occurred. In two chronic cases, in which it was used, it proved of little avail; the administration first of a warm water enema, followed by one of nitrate of silver solution, rather adding to the discomfort of the patients; but perhaps both of them had suffered too long from chronic dysentery to admit of benefit from any remedies; and after death the colon in each was found to contain one mass of ulceration.

The following testimony, however, as to the success of this method in a case of some standing, is well worthy of notice. Surgeon Baddeley of the Artillery thus relates his own case in the 3d number of the India Register of Medical Sciences:—"Mr Hare's plan of administering hot water injections in cases of dysentery, is, I think, likely to prove a most valuable therapeutic agent in that hitherto intractable complaint. The effect of its operation in my own case was remarkable, for it produced what may be considered a cure after the third application. My disease had continued for near five months, and though at the time of my making trial of the plan, it had assumed a milder form, the motions still numbered about eight daily, and were generally mixed with bloody albuminous matter. After the third application of the hot water, the frequency of the motions was sensibly diminished, and the bloody secretion ceased, and the bowels appeared to have suddenly resumed almost entirely their healthy function. It is now nearly a month since I used the remedy, for I have continued so well ever since, that I have not thought it necessary or advisable to repeat it again. I have for the last month given the plan a further trial in hospital practice, both for Europeans and natives, and with apparently favourable results. I have likewise found decided advantage from its application in mild forms of *delirium tremens*, and the after effects of dram-drinking. The injection in these cases has always been preceded by an emetic, and the rapidity with which the debilitated nervous system is restored by this plan is most marked."

In the same Journal, Captain Richardson of the 73d Regiment, N. I. writes thus:—"My dysentery commenced June 1847, and continued uninterruptedly with great reduction of strength till January 1848, during which time I took purgative pills and laudanum, the latter daily, without any but temporary relief. I was indeed in the habit of keeping a lump of opium by my side, which I constantly used, and, from constant purging, could not venture from my house without it. In January 1848, after the arrival of my regiment at Lahore, I saw Dr Hare, who for some time treated me with a variety of medicines, according to the old routine, without the least benefit. He then recommended that I should try his new method, which he explained by lending me his book. I passed the tube without the slightest inconvenience or pain, and it brought away such an enormous stool, that I nearly fainted. I had strong purgatives previously, which quite failed to bring away this large accumulation. From that moment I felt great relief, and continued to improve in health and strength to the present time (11th February 1848), occasionally only using the injections, and am able to take active and even violent exercise."

Case 1.—The first case which I shall give is one, in which warm water enemata seemed to prove very beneficial in arresting the disease.

Sergeant D. G., aged 30, 6th Battalion, Artillery, was admitted into hospital on the 29th July with tertian fever, from which he recovered in a few days; but, on the 11th August, he complained of griping, with small frequent stools, consisting chiefly of blood and mucus. For this he took five grains of blue pill with half a grain of opium, followed next day by a dose of castor-oil, and also Dover's powder on the 12th, 13th, and 14th. But the griping, tenesmus, and small bloody stool continued. On the morning of the 15th, an enema of four pints of warm water with seven grains of acetate of lead was administered.

August 16th.—The enema administered yesterday brought away a full fæculent stool along with several scybala; he passed no blood, and the bowels have not since been moved.

Enema to be repeated.

Vespere.—The injection brought away a large accumulation of hardened fæces. No stool since; feels quite easy.

18th.—The bowels were now quite natural, and he had no longer tenesmus or pain, but continued a few days longer in hospital on account of rheumatism.

Discharged 21st August.

Case 2.—Gunner H. M., aged 25, 2d Brigade, Horse Artillery, 4¾ years in India, admitted 5th August 1848, with dysentery. States on admission that he has had diarrhœa for a fortnight, and that since yesterday he has had very frequent calls to stool, with tenesmus. Has had about forty stools to-day, consisting principally of blood and slime. Tongue red on the edge; pulse 92.

Ten grains of calomel with one grain of opium were ordered to be given in the form of pill at the hour of repose. The diet to consist of sago.

August 6*th.*—Has had very frequent calls to stool during the night; stools greenish, and mixed with mucus and blood.

Two scruples of the compound jalap powder were ordered to be taken immediately; and after the interval of five hours, an enema of warm water to be administered.

Vespere.—Felt much relieved after the enema, which brought away a few scybala; stools less frequent, with less blood. Hab. enema anodyne.

7*th.*—No motion since last evening. Slept well; free from pain, but feels very weak. Pulse 84.

The enema of warm water with six grains of acetate of lead to be again administered; arrow-root for diet.

Vespere.—Only four stools since the enema this morning; a few hardened knots of fæces.

8*th.*—Four bilious stools in the night. Little or no tenesmus. Pulse 76; tongue natural; appetite good; enema to be repeated.

9*th.*—Two stools after the enema yesterday; no blood.

A draught, consisting of one ounce and a-half of the infusion of chirayta (*Gentiana Chirayta*) with four grains of bicarbonate of soda, was directed to be given three times daily.

Low chicken diet.

10*th.*—Two feculent stools yesterday, of better consistence. Continue half-chicken diet.

Vespere.—One natural stool.

12*th.*—Discharged.

Case 3.—Bombardier D. D., aged 35, 4th Battalion, Foot Artillery. Admitted into hospital under Surgeon Tritton, 25th June 1848, with dysentery; twelve years in India. State on admission:—bowels much relaxed; had about thirty stools yesterday, passed with gripings, and containing blood and mucus. Tongue white, with red edges; pulse 96; abdomen soft and tender generally, especially around the umbilicus; stools muco-purulent, with blood.

Twenty leeches were ordered to be applied to the umbilical region; and an enema, consisting of two pints and a-half of warm water, to be administered at 2 P.M.

Spoon diet.

Vespere.—Pulse 80, soft; has been much easier since taking the enema. Bowels very freely moved; stools pale, fæculent, with blood.

June 26*th.*—Pulse 96; fourteen or fifteen stools since last report, very slightly tinged with blood; griping and straining much less; thirst; no appetite.

The enema to be repeated, and to have, immediately, a draught consisting of one drachm and a-half of Rochelle salt (tartrate of potassa and soda), half a drachm of gum in powder, and half a drachm of tincture of opium and camphor in one ounce and a half of peppermint water.

27*th.*—Pulse 78; tongue red; thirst; no pain; four loose stools, fæculent, with undigested matter mixed; no griping; slept well.

Enema to be repeated. Sago diet.

Vespere.—Pulse 74; stools five or six, fæculent.

To have, at the hour of repose, four grains of blue pill and one grain of ipecacuan powder in the form of pill.

28*th.*—Pulse 74; tongue more natural; thirst nearly gone; two fæculent stools, imperfectly digested. Enema to be repeated.

29*th.*—Pulse and tongue natural; no pain; slept well; no stool since yesterday morning. Half-chicken diet.

30*th.*—One healthy evacuation; no pain or uneasiness; appetite good.

To take, twice daily, a draught consisting of one ounce and a half of the infusion of chirayta with ten drops of dilute nitric acid.

July 1*st.*—No complaint. One pint of beer.

2*d.*—Discharged.

Case 4.—Sergeant R. P., aged 30, 1st Battalion, Foot Artillery. Admitted 3d August 1848, with dysentery. States that he has had diarrhœa above a fortnight; but latterly his stools have been very numerous (twenty yesterday), and he has been passing blood and slime with much tenesmus. Slight pain over the cæcum; skin hot; tongue white.

To have, at the hour of repose, a pill consisting of ten grains of calomel, one grain of ipecacuan, and one grain of opium; after the lapse of four hours, half an ounce of castor-oil; and in the evening to have ten leeches applied over the right iliac region. One drachm of laudanum with six grains of acetate of lead in two ounces of cold water to be administered in the form of enema.

August 4*th.*—Less tenderness over the cæcum; pulse 84, small; fifteen stools in the night, fæculent, bilious, with much blood and mucus. Tongue moist; great thirst; tenesmus.

To have an enema of three pints of warm water; six grains of

ipecacuan powder with five grains of mercury and chalk to be given immediately; and in the evening, six grains of Dover's powder with three grains of mercury and chalk.

5th.—Felt much relieved yesterday after the enema, which he retained for ten minutes, and afterwards having a fæculent easy motion. Had a bad night; twenty stools; tenesmus; motions fæculent, mixed with blood and mucus; tongue furred.

Enema of warm water to be repeated; six grains of ipecacuan with three of extract of hyoscyamus to be taken immediately, and repeated after an interval of six hours.

Vespere.—Feels easier after the enema; always vomits after taking ipecacuan in any form or dose; considerable tenesmus. An anodyne enema to be administered.

6th.—Had a better night; two stools, freer and more natural. Sago diet.

To have immediately two scruples of compound jalap powder.

Vespere.—Seven stools during the last three hours; consist of fæces with mucus and blood passed, with tenesmus.

An enema of two pints and a-half of warm water to be administered with forty minims of laudanum and four grains of acetate of lead.

7th.—Three stools after the enema; no pain; very slight tenesmus; stools more fæculent, with a mere trace of blood; pulse of better strength.

To take two scruples of the compound rhubarb powder, and, after the interval of six hours, the enema with laudanum and acetate of lead to be repeated.

8th.—Two small fæculent stools in the night; no tenesmus nor pain; no blood. He retained the enema half an hour yesterday, and felt much better afterwards.

The enema with four pints of warm water, forty minims of laudanum, and six grains of acetate of lead, to be repeated. Low chicken diet.

9th.—Three natural fæculent motions free from blood after the enema yesterday. Two stools in the night; bilious, fæculent, streaked with blood.

To have three times daily a draught consisting of two ounces of infusion of chirayta and five grains of carbonate of soda. The enema to be repeated.

10th.—One stool after the enema; one ill-digested stool in the night.

To have immediately one drachm of the compound rhubarb powder. The draught to be continued. Half chicken diet.

12th.—Nearly well; bowels are becoming regular. The draught to be continued.

14th. One natural stool this morning; feels better than he has done for four months past; gains strength. The draught to be continued.

16th.—Discharged.

Case 5.—Gunner C. H., 6th Battalion, Foot Artillery, aged 30; two years five months in India. Admitted 20th August 1848. States that he has had looseness of the bowels for a week past, and has latterly passed nothing but small, white, slimy stools, with much tenesmus. Complains of tenderness in the course of the colon, but chiefly at the cæcum. Great thirst; no appetite. Has been at stool several times in an hour all yesterday and last night. Tongue dry in the mornings, now moist and red; pulse 88.

To have immediately an enema consisting of four pints of warm water with eight grains of acetate of lead and forty minims of laudanum. Spoon diet.

Vespere.—Felt much relief after the enema; stools since fæculent; less tenesmus. Enema to be repeated.

August 21st.—Four stools since the enema of last night, greenish, mixed with fæces; no blood or tenesmus; slight tenderness over the sigmoid flexure.

The enema to be repeated, with the addition of four ounces of infusion of ipecacuan. Milk diet.

Vespere.—Two stools before, and four since, the enema: a quantity of fæces came away; nearly free from pain in the sigmoid flexure; no tenesmus.

22d.—Twelve pale-yellow fæculent stools in the night; no pain nor griping; pulse 80.

To have immediately five grains of blue pill and one grain of opium.

23d.—Two stools yesterday; two in the night; bilious.

To have one drachm of the compound rhubarb powder. Low chicken diet.

24th.—Half diet.

27th.—Discharged.

Allusion having been made to various diets, I may briefly state that a man on half-diet gets eight ounces of mutton, one pound of bread, butter, tea, and four ounces of rice, besides various condiments and spices. The only difference in half-chicken diet is that the patient gets chicken instead of mutton. A man on low diet is allowed the soup from either eight ounces of mutton or a chicken, eight ounces bread, with tea, spices, &c. Milk diet is composed of one pound of bread, two pints of milk, butter, and six ounces of rice. Spoon diet consists of eight ounces of bread, or four ounces of sago, tea, and rice-water.

Subathoo, 29th August 1848.

ART. VII.—*Case of Ovarian Cyst Accidentally Ruptured by a Blow; Partial Effusion of Contents into Peritoneal Cavity; Violent Acute Peritonitis terminating Fatally eleven weeks afterwards; Post-mortem Appearances, and Chemical Examination of the Contents of the Cyst.* By WILLIAM BIRD HERAPATH, M. B., London, M. R. C. S., &c., Surgeon to St Peter's Hospital, Consulting Accoucheur to Bristol Dispensary and Dorcas Society.

THE accompanying case is worthy of record, as it presents several features of peculiar interest. Cysts of the ovary are still of very doubtful origin, and their occurrence is not, fortunately for our patients, an event of every day practice. It therefore behoves us to pay particular attention to every example within our reach, in order that, by comparison with others on record, we might eventually obtain a clearer insight into their pathology and physiological origin.

The short time which this poor patient was under my care prevented me from making any accurate diagnosis. The existence only of a tumour in the hypogastric region was ascertained; that this was uterine or ovarian I had very little doubt; but of what nature, it was impossible to conjecture;—the patient's debilitated and wretched state precluded all further examination. One very remarkable circumstance connected with it is the time elapsing between the rupture of the cyst and the death of the patient.

It is evident that it was ruptured at the time of the accident, from the state of collapse and the violent peritonitis subsequently arising; yet eleven weeks elapse ere life sinks under the effects of the injury. The evidence derived from the post-mortem examination is conclusive, and removes all doubt from our minds. The discovery of the old adventitious cyst, possessing almost cartilaginous walls, and containing within it a portion of the peculiar unctuous fat, identical in composition with that subsequently found in the ovarian cyst, proves distinctly that considerable time must have elapsed since the rupture. The peritonitis produced such extensive pathological changes, that it is really wonderful how peristaltic action could have been continued, as the functions of the peritonæum must have been completely interfered with.

The results obtained from the chemical analysis of the contents of the cyst are also fraught with interest, as they furnish a method of accurate comparison with similar cases; and it is only from such careful investigations that we can hope to obtain any insight into the origin of these mysterious diseases.

The fatty acids, &c. present in this substance do not differ from those usually found in the human subject. The existence

alcohol, yielded a solution containing a large proportion of *margaric acid.*

(*e*) The substances *insoluble* in boiling ether (*a*) were then repeatedly treated with boiling alcohol, which removed small quantities of chloride of sodium and a peculiar extractive matter; this substance precipitated infusion of galls, but was *not* gelatine; it closely resembled the body called osmazome in its properties, but its exact nature could not be determined, on account of the small quantity present.

(*f*) The insoluble residue from (*e*) was examined under a microscope; it appeared to consist of little more than epidermoid or pavement-epithelium cells, with a few hairs; these cells were lighter than water; they were dissolved in warm nitric acid, becoming an orange-coloured solution, which assumed a still deeper colour upon the addition of ammonia. When boiled in a solution of potass, they became gelatinous and disintegrated; when ignited, they gave a white ash (*g*).

The hairs do not differ from those previously described, a few of which had escaped separation by the process adopted.

(*g*) Upon igniting the fatty matter in an open platina capsule, it burnt off with a bright smoky flame, and left a black carbonaceous residue, which, upon continued ignition, became a white ash; this consisted chiefly of carbonate, and phosphate, of lime, with a little phosphate of iron, and a small per-centage of chloride of sodium, and carbonate, sulphate, and phosphate of soda, 0·834 per cent. A quantitative analysis gave the following results:—

Quantitative analysis (after separation of hair).		
Elaine soluble in hot ether, -	4·69	84·69
Do. cold ether, -	80·00	
Margarine (margarate of glycerine), -		11·68
Extractive matter and chloride of sodium,		1·24
Epidermoid cells with hairs, - -		2·39
		100·00

The inorganic constituents consist of—		
Soluble salts,—carbonate of soda,	traces.	
..... phosphate of soda,		
..... sulphate of soda,	0·209	0·209
..... chloride of sodium,		
Insoluble salts,—carbonate of lime,	0·243	0 243
.... magnesia,	trace.	
..... phosphate of lime (tribasic),	0 243	0·243
.... magnesia, -	trace.	
..... phosphate of iron, -	some	

Insoluble salts,—sulphate of lime,	-	minute trace	
..... silica and charcoal,	-	0·139	0·139
	Per cent.	-	0·834

ART. VIII.—*On Medical Topography as Connected with the Choice of a Site for a Lunatic Asylum in a Tropical Country.* By JAMES MACFADYEN, M. D., F. L. S.

IT must be gratifying to the friends of humanity to observe the interest which has of late years been displayed, and the exertions which have so generally been made, to improve the condition of the insane. This commendable expression of feeling has not been confined to the British islands. It has been exhibited in the remoter portions of the empire. *There* also a sympathy has been awakened, and a disposition shown to follow the example and emulate the exertions made in the parent state, towards alleviating the sufferings and remedying the condition of those who have been visited with this, the most calamitous and overwhelming of all maladies.

The asylum hitherto provided for lunatics in Jamaica, is not less defective or objectionable than similar institutions were, and, I fear, still are in many instances, in Great Britain. To use the language of the late Dr Bancroft, "The Institution consists of three equal and parallel buildings, each 120 feet in length and 16 feet in breadth, which are surrounded by an open gallery or piazza, 7 feet wide, and are enclosed by a high wall, within an area 300 feet square." Each building contains a series of twelve rooms, 13½ feet long, and 9 feet broad. The whole accommodation, therefore, is limited to thirty-six small rooms. The consequence is, that frequently four and even five lunatics have been confined in one room. I need scarcely say how unfavourable to recovery confinement under such circumstances must have been;—the buildings situated in a populous part of the town; the rays of a tropical sun reflected from the high brick walls; with no prospect but the clear unclouded sky overhead; the time of the lunatic spent in listless inoccupancy, with nothing to withdraw his mind from the delusions with which it is disturbed. Under scarcely more unfavourable circumstances could the afflicted have been placed, in respect to comfort and recovery. The object of such a receptacle must have been the seclusion and safe custody of the lunatic; his recovery and restoration to reason could never have been contemplated.

To remedy the evil, and in accordance with the spirit of the

times, the Legislative Assembly of Jamaica voted a considerable sum (L.30,000) to erect an asylum on an improved construction. A site was fixed on. It was on the occasion of an opinion being requested in approval of that site, that the following considerations were suggested.

I need scarcely insist on the paramount importance, in establishing a lunatic asylum, of selecting a suitable site. The best planned edifice, the best appointed institution, and the most judicious system of management, may be to a certain extent unavailing, if the locality be unhealthy, and the circumstances connected with it be otherwise unsuitable. We accordingly find, in treatises on the management of the insane, that this subject receives due consideration. "An asylum," observe the Metropolitan Commissioners of Lunacy, "should be placed upon elevated ground, and should command cheerful prospects; the soil should be dry, and there should be a plentiful supply of water, and means of proper drainage. The buildings should be surrounded with land sufficient to afford out-door employment for the male, and exercise for all the patients, and to protect them from being overlooked or disturbed by strangers." It is recommended by other authorities, that a situation at a moderate distance from a town be selected, and that the scenery of the neighbourhood be of a pleasing and interesting character. Let us take, to give interest to our inquiry, the site of the future lunatic asylum; ascertain what are the requirements peculiar to the climate, and determine how far the site selected possesses the advantages described as necessary.

In commencing, I would, in the first place, state, that the plain of Liguanea extends from the sea, rising by a gradual ascent for several miles into the interior. It is at the lowest point of the plain, at the sea-shore, that a site has been selected for the future asylum. The plain is watered by no river, but there is an abundance of underground springs, supplied by the rains which fall on the neighbouring hills. In the centre of the plain, these springs are in many places upwards of 200 feet in depth. Along the sea-coast, springs of water are found near the surface, either making their appearance above ground, and rendering the soil damp and marshy, or they are to be met with by digging a few feet. Let us add that in the immediate vicinity is the large town of Kingston, and that the General Penitentiary is at a short distance.

Let us now inquire what are the advantages and disadvantages of such a site.

The first and principal advantage which a site at the sea-shore possesses is, that the materials for building are readily procurable, and that there is the advantage of a cheap and easy carriage. Land-carriage in tropical countries, especially in the West Indies, is very expensive, and adds considerably to the cost of

building; whereas, near the sea-shore, the materials can be conveyed to the spot by water. A consideration, however, of this kind ought not to be entertained, in erecting a building for the express purpose of relieving suffering humanity. What is the saving of a few pounds, if thereby the duration of human life is abridged, the degree of human suffering unnecessarily augmented, and if, as I think it will prove, the disease, for the amelioration of which the building is erected, is rendered, by faultiness of site, more untractable and aggravated? Doubtless a very inadequate erection, in a cool and suitable locality, would fulfil the purposes of an asylum better than the most costly building, placed in an unhealthy situation. In the case before us, I fear the intentions of a liberal humanity will be rendered nugatory by an ill-judged parsimony.

As one of the recommendations of a site near the sea-shore, may be regarded the benefit in some diseases derived from the peculiar condition of the atmosphere in such situations. The remedial influence of the air at the sea-coast, in a number of maladies, has long been recognized, although the principles on which its salutary effects depend, cannot, even in the present day, be said to be clearly ascertained. Doubtless much of the benefit procured is dependent on the equable temperature, subject to no sudden changes, regulated by the temperature of the mass of waters over which the breezes are conveyed. Hence during the hottest period of the day, the sea-breeze at the shore blows with greater force than elsewhere; possessing, at the same time, a refreshing coolness. This remarkable coolness of the breeze at the shore is doubtless the consequence of a process resembling evaporation. The air passing over the sea reaches the land saturated with moisture; as soon as it reaches the heated land the moisture becomes rarified, and, expanding, is carried upwards. This rarification of the moist atmosphere of the sea also accounts for the force with which the breeze blows at a short distance from the shore, compared with more inland situations; there being a rush of cool air from the sea to replace that which has been rarified and carried upwards.

Cool, however, and delightful as the breeze in this situation is, it has been remarked that the sun's rays are there found to be more intense and scorching than elsewhere, and to have a more powerful effect in darkening and blistering the skin. It ought also to be borne in mind that, between the tropics, there are periods of every day during which the breeze is lulled; and also, that there are certain seasons of the year during which, for days and even weeks in succession, no sea-breeze blows. The heat at such seasons is always felt most intensely at the shore,—much more so, in proportion, than at some distance inland. I can only account for this by the circumstance, that the atmosphere, by its

stillness at such times, accumulates and holds in suspension an unusual quantity of moisture in the form of vapour. In passing through this damp atmosphere, the rays of the sun must become, I presume, concentrated, and their power of producing an intense heat be thereby increased. Wherever, indeed, the atmosphere is calm, and loaded with moisture, as in the vicinity of lagoons or marshy lands, the same intense and scorching heat, on exposure to the sun's rays, is perceptible.

But the sea air has other peculiarities dependent on accidental admixtures. Notwithstanding the opinion of Berzelius to the contrary, sea air does hold in suspension certain proportions of sea salt and chlorine capable of being conveyed a certain distance. Certain proportions of these are received into the lungs during respiration, and are readily absorbed and enter into combination with the blood. That saline particles are suspended in the atmosphere, is proved by the circumstance that the presence of salt can be detected on the surface of plants and other objects at a certain distance from the sea-shore. Hence, also, pastures in the immediate vicinity of the sea are, especially in this part of the world, noted for their fattening property. Now experiments have shown that, although chlorinated substances, when employed medicinally in respiration, are at first irritating to the air-passages, they are speedily found to exert a powerful antiphlogistic influence in chronic affections of the chest, even when they are of an inflammatory character.* Hence sea-air has been found most favourable in those diseases, such as phthisis, where the indication is to diminish the tendency to the intensity of inflammatory attacks, alleviating diseased action, and prolonging the life of the sufferer.

I may add that it is an advantage possessed by sea-air, that it is purer and freer than that of the land from carbonic acid and mephitic exhalations. It is therefore better adapted for respiration. In ordinary health, the benefit derived from it may not be appreciable. It is different, however, when the lungs are in a great measure unserviceable and impermeable from disease, and where but a small portion remains sound to fulfil their essential function.

I would now proceed to remark that a residence at the sea-shore must be unhealthy, from the high degree of atmospheric pressure. The influence of this condition of the atmosphere on the health has been well ascertained. It has indeed been admitted to a certain extent ever since the discovery of Torricelli. It is an old observation, that apoplexy is more common and more fatal when the barometer is high, and that derangements of the

* Guastalla, Annales de Therapeutique, Nov. 1843.

health appear to be consequent on frequent fluctuations in the mercurial column. Dr Caspar (British and Foreign Medical Review, No. 47), has deduced from numerous observations the axiom that a high atmospheric pressure increases, and a low pressure diminishes, the rate of mortality. Tables kept carefully for a number of years at Berlin, Paris, and Dresden, registering the variations of the barometer and the numbers of deaths, all agree in the fact that the deaths are more numerous when the barometer is above the mean (29·83 inches), than when it is below it, the proportion being as 101·5 to 100. This difference may be regarded as trivial. It will not be so considered when you bear in mind that a certain number of additional lives will be sacrificed, should you make choice, for a building calculated to contain nearly 300 inmates, of a situation nearly on a level with the sea, in preference to one more elevated and otherwise more eligible. You are to recollect that the building you are about to erect, is intended for the permanent habitation of a numerous succession of human beings, and that there are no circumstances bearing on the health or the duration of life that ought, in commencing such an undertaking, to be overlooked.

There is another objection to low-lying situations near the sea-shore, and that is the high temperature which there prevails. It amounts almost to an axiom in medical statistics, that extremes of temperature, whether high or low, are eminently destructive to life. This is confirmed by the tables of mortality issued weekly by the Registrar-General. When the summer heat is more than usually intense, there is found to be a corresponding increase of disease and death. In like manner, according to the Berlin tables, the mortality of a severe, compared to that of a mild winter, is as 17·3 per cent. to 15·1. At Paris, in twelve summer months, with a temperature under 66°, the deaths were 21·895; while in twelve summer months, with the temperature above 66°, the deaths were 22·471 (British and Foreign Medical Review, No. 47, p. 97).

But there is a further objection, peculiarly applicable in the present case, in selecting the site for a lunatic asylum, and that is, that high temperatures are favourable to the development of diseases of the nervous system. Insanity is more the product of irritability than of inflammation, and hot climates are obviously unfavourable to the removal of that state of the system. We find, indeed, that diseases dependent on nervous debility for their origin, are more frequent in warm than in cold climates. In northern countries, such as Scotland, the excessive and long-continued use of ardent spirits commonly declares its pernicious effects by inducing schirrhous hardness of the liver. In Jamaica, that disease is rare, and it is the nervous system that suffers,

delirium tremens being the usual catastrophe. In England, scrophulous meningitis is a common disease of childhood. In Jamaica it is rarely observed; whereas we have in its place, as one of our most common and fatal infantile complaints, inflammation of the membranes of the brain, running its course in one or two days. This latter disease is evidently connected with very high atmospheric temperature. It is exceedingly prevalent in the arid and hot plains of St Catherine's, known as the Salt-pond District, proving fatal even to the children of black parents. On the contrary, it is rarely met with among the families residing in the more elevated districts.

Lempriere* observes, that, "during the months of July, August, and September, the nights are uncommonly sultry and oppressive from the failure of the land-wind." The skin becomes dry and parched, requiring repeated spongings with cold water to moderate the scorching heat. There is also throbbing of the temples, accompanied with an excited state of the nervous system, productive of restlessness, and banishing repose; and it is not till the cool land-wind comes down, on the approach of morning, that sleep establishes its balmy influence over the exhausted frame. On awakening in the morning, after such a night, there is languor and pains of the limbs, and a feeling of exhaustion and weariness beyond what is usually felt after a mere sleepless night. At this season of the year, how delightful to escape to the mountains! The nights there, even in the hottest months, are cool and refreshing, bringing with them, to the exhausted visitor from the plains, the long-absent blessing of sound and refreshing slumber.

But it is not necessary, in search of cool nights, to go far into the interior. These may always be found within a few miles' distance from the sea-shore,—for instance, within a short distance from Kingston, at the more elevated situations of the plain of Liguanea. It is remarkable how very few degrees of the thermometer separates the agreeably warm from the oppressively hot. The thermometer at 85°, the heat is tolerable; but when it ascends to 90°, it becomes almost insupportable.

When you recollect that sleeplessness is one of the most constant symptoms of mania, and that to remove this state is one of the most indispensable indications of the treatment, the principle of placing an asylum in a cool locality is obviously a consideration of the first importance. One of the earliest and most certain proofs that the mind is about to recover its calmness, is when a refreshing and sound sleep brings oblivion to interrupt the wild and irregular course of the ideas. On the contrary, in an asylum situated on a low position, near the sea-shore, where the temperature is always high,

* Practical Observations on the Diseases of the Army in Jamaica. By William Lempriere, Apothecary to His Majesty's Forces. 2 vols. 8vo. London, 1799.

we have every reason to expect, that during the oppressive and sultry night of midsummer, all amendment must not only be checked, but that the sleeplessness and consequent nervous irritability, the character of the disease, will be aggravated. Beyond dispute, it is a great error, in erecting a lunatic asylum in a tropical climate, to place it in a low hot situation, and not to secure, what can readily be obtained—a cool temperature during the night season. Unquestionably, this error has been committed in fixing the site of the intended Jamaica asylum; for the district selected is one of the hottest in the island.

We now come to a consideration the most important in making choice of a locality for an hospital or asylum in a tropical climate, —the ascertaining whether the circumstances of the locality are favourable or otherwise to the production of malaria. It is now well understood that the immediate vicinity of a morass is not the only or most common condition necessary to render a locality malarious. In the place of our contemplated lunatic asylum, there is an extensive lagoon about four or five miles to windward. I do not consider it possible that malaria can be conveyed such a distance. In the first place, it would be diluted and dissipated by the strong sea-breeze; and, in the second place, the intense heat of the land along the shore, over which it must pass, would rarify, and cause to ascend the vapour or moisture, the vehicle in which it is suspended.

But we have the best authority for asserting, that malaria in the most intense degree may be produced when the surface of the soil is dry, and shows no sign of moisture. Dr William Fergusson, in his paper on the Nature and History of Marsh Poison, published in 1821, remarks, that remittent fevers of the most malignant and fatal character uniformly prevailed, during the campaigns of the Peninsula, whenever the army was obliged to occupy the arid encampments of the level country. This was particularly remarkable on the retreat through the plains of Estremadura, after the battle of Talavera. The march of the troops lay through a dry and arid country, with the Guadiana and the smaller streams, from the want of rain, dried up, with no vestige of water, except a few detached pools. At this time the army suffered so much from fever, evidently of malarious origin, that it was generally believed by friends as well as enemies, that the British host had been extirpated. This is corroborated by the testimony of Dr Joseph Brown, in the article *Malaria*, in the Cyclopædia of Practical Medicine. He informs us, that he can state from personal observation, that cases of fever and ague abounded in parts of Estremadura at a distance from any stream, where no influence from visible water or dampness could be supposed to favour their production.

As water equally with heat, together with the remains of organic bodies, is necessary for the production of malaria, it may be asked, where are the indications of its presence in cases such as those alluded to? It will be found that the dryness is only superficial. According to Dr Fergusson, the only condition indispensable to the production of marsh poison on all surfaces capable of absorption, is the paucity of water where it had previously recently abounded, —a rule without exception in climates of high temperature.

In the case of the site of the proposed lunatic asylum, we are aware, as has been already stated, that there is an abundance of water near the surface, from the soil being richly supplied by springs. The surface itself may be baked and dry as a brick-ground, and vegetation may be utterly burnt up. But the subsoil is full of moisture, combining with the organic remains which it contains, developing, under the powerful influence of a tropical sun, those noxious emanations productive of one or more of those diseases claiming a malarious origin.

It is different with the central district of the plain of Liguanea. The springs are at a great depth,—not less than 200 feet below water the surface. The soil is dry and gravelly, and there is, in ordinary seasons, a perfect immunity from diseases of a malarious origin. It is different after the vernal or autumnal rains. As soon as the soil, saturated with moisture, begins to dry, diseases of a malarious origin begin to show themselves, and intermittent fever and dysentery very generally prevail.

My opinion is, that the site selected for the new asylum is decidedly malarious. The poison during the day, when the sea breezes prevail, may be innocuous. But it is different in the evening, or during the period of the year when the customary winds cease to blow or are irregular. At such times the atmosphere is loaded with moisture, affording a suitable vehicle to hold suspended the noxious exhalations till they are gradually condensed. Be it remembered, that this locality has ever been regarded as one of the most unhealthy in the vicinity of Kingston. We are told of families at one time resident there, all of whom, mother and children, have been swept away, all of them dead, the father alone escaping, from the greater portion of his time being spent in the town, at a distance from the seat of the malaria. Bereavement and sickness have ever been considered the doom of a family venturing on the occupancy of the locality.

It may be suggested that much has been done by draining and other agricultural processes in rescuing from the domain of malaria districts once noted as unhealthy. But there are districts, such as the Pontine marshes and the Maremma of Tuscany, all of them, like the site of this asylum, situated near the sea-shore, which have proved incorrigible, and to improve which all the art of man has been exerted in vain. I do not assert that the situation under

consideration is at all to be compared with those specified in point of insalubrity. I am confident, however, that like them the site will always prove to a certain extent unhealthy.

I now proceed to examine the opinion entertained by some even of the medical profession, that if a locality is not remarkably infested by febrile diseases of a remittent or intermittent character, it must therefore be pronounced free from the influence of malaria. This opinion on examination will be found perfectly erroneous. As remarked by Dr Baly in the third of his Gulstonian lectures, some unappreciable condition of the atmosphere determines "whether the malaria shall produce a mild diarrhœa, a severe dysentery, cholera, or fevers of different kinds." In certain spots ague is endemic; in others, where ague is never seen, other endemic diseases are rife. There must, therefore, be distinct varieties of atmospheric poison, or certain modifications, depending perhaps on greater or less intensity, acting determinately, though in different modes, on the constitutions of those exposed to its influence.

It is malaria, according to Dr Baly, which has rendered the Millbank Penitentiary so unhealthy. Diarrhœa has seldom, since the institution commenced, been altogether absent; and dysentery has been a frequent disease, prevailing in one particular year as a severe and fatal epidemic. The prevalence of these diseases cannot be attributed to defective ventilation, poorness of diet, or any other assignable cause. The sickness was also found to prevail most at those seasons, and in those states of the atmosphere, which most favour the decomposition of organic matter in the soil. Dr Baly concludes, that to malaria is the prevalence of the disease attributable.

Dr Budd, in the Medical Gazette for 1841–42 (No. 51, p. 939), in noticing the epidemic which prevailed at the Millbank Penitentiary in 1823 (to inquire into which Dr Latham and Dr Roget were appointed by government), expresses his doubts as to its malarious origin, and speaks with confidence as to its being propagated by contagion. Doubtless dysentery is a disease capable of becoming eminently contagious, when a number of human beings are crowded in a limited space. The fever, which is always present in severe cases; the frequency of the evacuations; their putrid and offensive character; and the circumstance, that in prisons, at least with us, there is but a limited number of conveniences, generally in common use by the diseased and the healthy,—all must combine to cause the development in a concentrated form of that element in the exhalations of the human body, capable of calling forth that diseased action in the human system with which it is connected. I am favourable to the opinion, that dysentery, under certain circumstances, is contagious. But

this does not account for the origin of the disease. To me, the facts and reasoning of Dr Baly on this subject are conclusive. They are quite in accordance with my own observations and experience.

The Kingston General Penitentiary appears to me to afford an analogous proof of this doctrine. The number of the prisoners is seldom under 600. Here also bowel complaints are of frequent occurrence, and dysentery is remarkably fatal. To me, the only assignable cause appears to be malaria. There are free ventilation, good food, and an abundant supply of water for the purposes of cleanliness. The source of the malaria must be the abundance of springs that are situated immediately below the surface. The site itself was a reclaimed morass. The surface is hard and baked like a brick. But the heat, combined with the under-ground moisture, acts on the organic principles contained in the soil, so as to generate the subtle and malignant principle of malaria.

It is remarkable that, both in the case of the Millbank and of the Kingston Penitentiaries, in order to disprove the presence and influence of malaria, it has been alleged that the immediate vicinity is not considered more than usually unhealthy. Dr Baly has answered this objection by stating, that the health of free persons not confined to the locality, who spend a great proportion of their time abroad,—their bodies kept in health by active and voluntary exercise, and by cheerful and varied trains of thought, and not denied the opportunity of gratifying their palate or appetite with any articles of diet and drink within their means,—is not to be considered as a test of the salubrity of a locality. Such may have their homes in a malarious locality, and have an immunity from the effects of the morbific agency prevailing there; while the reverse may be the case with those who are imprisoned on the spot, never removing from the place, and constantly exposed to the influences of the locality.

As the site of the asylum is in the immediate vicinity of that of the penitentiary, and as it is of a similar character, we have good cause to fear that there also the effects of malaria will be manifest, if not in the development of febrile diseases, in the not less to be dreaded or less fatal prevalence of diarrhœa and dysentery.

In conclusion, let me note some additional disadvantages which would lead us to form an unfavourable opinion of the site. The first disadvantage of the site is the immediate vicinity of a large town. The asylum, when completed, will form a portion of the suburbs of Kingston. The neighbourhood of a numerous idle and profligate population, such as that of Kingston, must compel the institution to be enclosed, in order to exclude frequent

and mischievous trespassers. High walls and strong gates must be erected, giving to the premises the appearance of a prison. This ought always to be avoided, as it tends to produce the impression of the place being one for punishment and restraint,—an impression which it is desirable should not be entertained. This impression will, doubtless, be strengthened, and have a more depressing effect, from the circumstance that the asylum is contiguous to the penitentiary. The associations which such a neighbourhood is calculated to call up, must have a very injurious effect. The insane even in his worst paroxysm has a consciousness of the calamity which has befallen him, and is acutely sensitive to the scorn and contumely directed against him by the thoughtless and unfeeling. The site of a vast prison, encountered in the progress to the asylum, and the walls and gates which, on reaching his destination, shut him out from intercouse with the world, must have a mischievous influence on his malady, and aggravate the mental sufferings.

We have already enumerated, as one of the desirable qualifications of the site for a lunatic asylum, that it be rather elevated, so as to command a cheerful prospect. In the site chosen for the Jamaica asylum, this consideration has been neglected. Its elevation is not many feet above the level of the sea, while there is a gradual ascent towards the interior; so that there is no view in that direction, with the exception of the distant summits of the mountains. As for the prospect of the sea, it has been well remarked,* that "a wide unbounded view, though striking at first, is apt to pall and weary the minds of those who, day after day, year after year, look out only on this one monotonous landscape."

In the treatment of the insane, it is of the greatest importance to operate on the mind by means of the external senses; and of all the senses, that of sight is found the most available in transmitting a variety of impressions to the brain. This aid we deny ourselves, when we select a site with a limited prospect, or one that is tame and uninteresting. No pleasing objects meet the eye. The mansion of the wealthy proprietor, with the scattered dwellings of industry and labour; the changes the face of the country undergoes during the progress of the year, or of cultivation,—all of them calculated to attract the attention and to interest the mind; and in place of the wild imaginings and the hallucinations which disturb their peace, to awaken the impressions of former and happier days, and to afford the materials for calm reflection.†

Such are the observations I have been induced to offer connected with this interesting and not unimportant subject. It is

* North British Review, No. vi. p. 390.

† The question may be asked, is it not probable that the constant proximity to the sea may awaken a propensity to suicide by drowning?

a subject on which medical information is still very deficient, and on which we are as yet without any established principles to guide us in our opinions. The notions commonly entertained as to the nature and origin of malaria, are vague and undefined, serving rather to embarrass than assist us in our inquiries. It hence happens that a non-professional person, if possessed of shrewdness and observation, is more likely, by attending to the dictates of common sense, to arrive at a correct opinion on this subject, than the medical man with his imperfect information and ill-defined principles.

It is to be hoped that the preceding observations may be of some service to those who, in other tropical countries, may have the task allotted them of planting a site for a lunatic asylum. We have good grounds for the apprehension that the Jamaica Lunatic Asylum is destined to afford an illustration of the evils and disadvantages of an ill-selected site. It may be some time ere this be generally allowed. Many unfortunate beings will have had their days shortened; many cases which promised well for recovery will remain unrelieved, or fall back into hopeless idiocy, ere the unsuitableness of the site be generally allowed. The few who now dissent from its condemnation, will in time become converts to the opinion which common sense and common observation dictated from the first.

Kingston, Jamaica,
8th May 1848.

ART. IX.—*History of a Case in which a Foreign Body, Lodged in the Œsophagus for nearly Five Months, proved Fatal by producing an Ulcerated Passage into the Trachea.* By ROBERT PATERSON, M. D., F. R. C. P. E., one of the Physicians to the Royal Infirmary, and to the Leith Dispensary, Humane Society, and Casualty Hospital, &c.

FOREIGN bodies which enter the pharynx accidentally, or are intentionally introduced for suicidal purposes, are of very various sizes, nature, and characters, as regards their external surface and figure. The anatomy of the pharynx and gullet proves that no body from its size alone is likely to be impeded in the course of the œsophagus, if it only pass the inferior constrictor of the pharynx; the muscular contractions of the œsophagus being sufficient for pressing that body downwards into the stomach. But the shape of bodies thus introduced into the pharynx, and the circumstance of their being bounded or not by sharp edges and

angles, often exercise remarkable influence on their transition along the tube, or the position they may occupy; and if the edges and angles of those bodies are such that they interrupt its progress along the tube, very serious consequences may result from the body or bodies being thus impacted in the walls of the pharynx. We have on record some most remarkable cases of bodies of large size passing into the stomach. A number of clasped-knives, some of them of large size, were in one instance swallowed at different times, and conveyed into the stomach; buckles, rings, coins of various sizes, small padlocks, and even a gold watch and seals, have either been accidentally or intentionally swallowed; and my friend, Dr Jackson of London,* has recorded the history of a case, in which a female pressed the ring of a large key a certain length down the œsophagus for the purpose of committing suicide, and which had caused death by inducing inflammation of the œsophagus, the larynx, and trachea.

In all these instances the bodies possessed blunt or rounded edges and angles. When these angles are sharp, the body is detained in some part of the pharynx or œsophagus, causing lacerration and ulceration of parts, and producing the most formidable change, by effecting false openings and new communications between contiguous organs. Dr James Duncan describes, in the first number of the Northern Journal of Medicine,† a remarkable instance, in which a thin gold plate, with sharp extremities, and to which were attached two artificial teeth, had been allowed to slip into the œsophagus, where it became fixed by the sharp angles of the metal, caused ulceration of the œsophageal textures, and gradually worked its way to the arch of the aorta, in which it had effected a perforation of the size of a large crow quill, about half an inch below the origin of the left subclavian artery. This perforation was the cause of the death of the patient by hemorrhage.

There would seem to be great varieties in the size of the inferior pharyngeal opening in different individuals. Some persons can swallow bodies of considerable size; while in others, a comparatively small body is arrested, and often requires to be removed by manual extraction. Thus, in adults, shilling and farthing pieces, buttons, &c. have been known to require to be extracted in this manner.

Those bodies, however, which have a rough-pointed or angular surface are by much the more dangerous from accidents of this kind. They are liable to be arrested in the folds of the pharynx, and, if they are not caught there, they are often detained in passing the inferior constrictor, or at some portion of the œso-

* Edinburgh Medical and Surgical Journal, Vol. lx. p. 195. Edinburgh, 1843.
† May 1844, p. 16.

applying, for one instant or such a space, to the skin, a flat iron button gently heated by the flame of a spirit-lamp. The operation is completed in a few seconds; it is productive of little or no pain; it is very speedy in its effects; it is not said whether pathological or therapeutic; and it is quite free from harm.

The merit of introducing this method of medication, the author believes to be due to the late Sir Antony Carlisle, who, in a letter addressed to Sir Gilbert Blane, on blisters and rubefacients, published in 1826, describes an instrument adapted to these several purposes; and, in the November number of the Philosophical Magazine, addressed to the editor a letter on the same subject. In 1829, M. Mayor of Lausanne published a small essay, *sur la Cauterization avec le marteau*, in which he shows that, by means of this instrument, the effect either of a mustard poultice or a blister, or even of moxa, may be on the shortest notice produced. Trousseau published afterwards an Account of Experiments made by the hammer of Mayor. The method, nevertheless, does not appear to have attracted much attention.

In 1845, Dr Corrigan published an account of several cases very successfully treated by similar means. Dr Day having had occasion to try the comparative value of the counter-irritants in ordinary use, took the opportunity of putting to the test the practice of Dr Corrigan. In the mode of application, Dr Day differs slightly from that employed by Dr Corrigan; but, as the difference is unimportant, and involves no difference of principle in accomplishing the object intended, Dr Day claims no originality in the proposition. Dr Corrigan makes no reference to the writings either of Sir Antony Carlisle or M. Mayor.

The instrument employed, as most convenient, by Dr Day, is shorter and more portable than that used by Dr Corrigan. It consists of a button, or roundish piece of iron, about half an inch in diameter and one-fourth of an inch thick, attached to an iron shank, which is furnished with a small wooden handle. The shank is curved nearly at a right angle, at the distance of about half an inch from the upper surface of the button. The whole instrument resembles a very small hammer. The button is heated about a quarter of a minute in the flame of a spirit-lamp, while the end of the fore-finger is held on the curve. When the heat becomes uncomfortable to the finger, the instrument is ready for application. Dr Corrigan's method of procedure is to touch, as lightly and rapidly as possible, the surface of the part affected, at intervals of half an inch. Dr Day has usually found it of more service by drawing very tightly the flat surface of the heated button over the affected part, so as to act on a greater extent of surface. The cuticle is never raised, and the only visible effect is a slight degree of local redness, either in lines or in circular patches, according to the mode in which the instrument is applied.

In the paper by Dr Corrigan, that physician relates one case of paralysis of the upper and lower extremities, cured by applying the button daily for about three weeks along the spine, thighs, and legs; cases of lumbago, and other forms of aponeurotic and muscular rheumatism, of sciatica, of neuralgia of the fifth, and paralysis of the seventh pair of nerves.

Dr Day, in like manner, relates cases of lumbago, sciatica, and neuralgia, cured speedily and effectually by the application of this agent.

We have no doubt that the remedy is a good one; yet it is not new. It is merely the cautery proposed and employed by Cottugno of Naples in 1764, which that physician found so efficient in the treatment of sciatica, and which has been since that time unduly neglected. It seems to be of no great moment by what means the iron is heated, provided it is heated.

It is true that it is not made red and glowing, and thereby perhaps the pain of the radiant heat and the apprehension of a formidable object are obviated. The difference, however, is only in degree.

IV. SURGERY.

Opacity of the Cornea removed under the use of Iodide of Potassium and Mercury. By M. J. Bateman Wilson (*Guy's Hospital Reports*, Second Series, Vol. vi. Part I. p. 53. October 1848).—It is well known that opacity of the cornea is often a most intractable disorder, and when once established, is incapable of being removed, so that the patient is either blind or nearly so. It hence also happens, that for few diseases of the eye have a greater number of remedies been proposed, and hence the treatment is too often irregular, empirical, and such that its certainty can never be depended on. Mr J. Bateman Wilson found that, under the use of iodide of potassium with blue pill, the disease disappeared in the following case.

A young woman, aged 21, applied to Mr Wilson for assistance for the removal of an affection of this kind, on the 4th May 1842. She stated that when at Harrowgate in August 1841, she felt dimness in one eye, with intolerance of light, and some catarrhal symptoms, which she ascribed to having slept in a damp bed a few days previously, on her journey to Harrowgate. The dimness gradually increased; and in three weeks the other eye became affected in a similar manner. She then applied to a surgeon, and was under his care till the beginning of October, without any improvement. About this time she went to Westmoreland, and during her residence there her eyes got so much worse, that she could scarcely distinguish any object except day from night. About the end of October, through the liberality of a nobleman, she was sent to London to be under the care of an eminent oculist, who ordered blisters, strong lotions, and tonics. After ten weeks of this treatment she experienced no benefit, and returned to the country. On the journey from London to Stamford, in Lincolnshire, in the beginning of January 1842, her vision was so much impaired, that she could not tell how many persons were in the coach. At Stamford, she was six weeks under the care of a surgeon without relief. She left Stamford on the 23d March for Whitehaven, in the vicinity of which town her father resided. In the country she remained four months, occasionally led about by friends for exercise, yet without any amendment in the sight, which she now despaired of recovering. On the 4th of May she consulted Mr Wilson, who found the corneæ of both eyes quite opaque, the iris being quite concealed; the conjunctiva of the sclerotic and eyelids vascular; the appearance delicate, and indicative of strumous habit; the tongue loaded at the base; the bowels said to be regular; catamenia scanty; the pulse small and quick.

Mr Wilson ordered two grains of iodine with ten grains of iodide of potassium to be dissolved in six ounces of water, and of this solution the patient to take one table-spoonful three times daily. Half a drachm of blue pill mass, one scruple of rhubarb, and five grains of ipecacuan, were directed to be formed into twenty pills, two of which were ordered to be taken on alternate nights. The patient was allowed nutritious diet, without stimulants.

On the 31st of May the corneæ were clearer at the circumference, and the patient was able to distinguish large objects. Half a grain of iodine was added to the mixture; and a lotion of sulphate of zinc, eight grains to three ounces of water, was ordered to be used. On the 20th of June the opacity was diminished, and the patient, though unable to discern small objects, was able to read large characters, as the leading titles of a newspaper. Another half grain of iodine was added to the solution, so that it now contained equivalent to three grains to the six ounces. The blue pill and rhubarb pills were continued; and around the eyes belladonna was applied. On the 20th of July very little opacity of the corneæ remained; and the patient was able to distinguish distant objects. On the 3d of August the corneæ were quite clear; the patient was able to read small printed characters, and saw objects as well as at any period of her life.

After this time the health continued good, and the eyes free from disease.

From this case the author draws two inferences: 1st, That iodine is very efficacious in removing the effects of inflammatory action of long standing; and, 2d, That opacity of the cornea may be removed without the strong lotions recommended by ophthalmic writers.

The author has seen several cases similar to that now related; and while in all those which were subjected to the treatment pursued in the earlier stages of this case, the progress was invariably tedious, — when the iodine was employed, disappearance of the opacity was speedily, and in general easily effected.

V. MISCELLANEOUS.

Report on the Mortality of Edinburgh and Leith, for the months of September, October, and November 1848. By James Stark, M. D., F. R. C. P. E.—The mortality of Edinburgh during the months of September, October, and November 1848 amounted to 1608,—721 being males, 833 females, and 54 still-born. The mortality of Edinburgh during the corresponding months of the years 1845, 46, and 47, was respectively 933, 1263, and 1805.

The mortality of Leith and Newhaven during the months of September, October, and November 1848 amounted to 485,—219 being males, 241 females, and 25 still-born. The mortality in Leith during the corresponding months of the years 1845, 46, and 47, was respectively 135, 238, and 256.

During September the mean temperature was 53·94 Fahr., and the range of temperature 41 degrees,—76 being the highest, and 35 the lowest noted during the month. The mean temperature, therefore, was 3 degrees higher than the mean of September last year, and the range of temperature 6 degrees greater in amount. South and south-west winds were more than usually prevalent during the first three weeks of September, while easterly winds blew almost constantly during the last week. It is important to note, that during the last week of September the air was overloaded with moisture, and the air felt hot, close, heavy, and irrespirable; and there was more or less constant damp mist, relieving itself every now and then in heavy showers. Indeed, the whole rain during the month, amounting to 1·45 inches, fell within the last week of September. The daily range of temperature during this week, instead of amounting to 18 or 20 degrees, which is about the average here, never exceeded 6 degrees.

During October the mean temperature was 46·72 degrees, being nearly 2 degrees lower than during October of last year; while the range of temperature amounted to 36 degrees, being from 28 to 64 degrees. The quantity of rain which fell was excessive, amounting to 4·56 inches. The air was constantly damp and overloaded with moisture; and, from the want of evaporation and of a sufficient range of temperature, especially during the first week, the atmosphere felt hot, close, and oppressive. South and south-west winds were more than usually prevalent during the month.

During November the mean temperature was 40·31 degrees, or nearly 5 degrees below the mean temperature of November of last year. The monthly range of temperature was unusually small, being only 28 degrees, 25 being the lowest, and 53 the highest noted in the shade during the month. The quantity of rain which fell amounted to 2·42 inches; and the month was characterized by the excessive prevalence of damp fogs, great atmospheric moisture, and south-westerly winds.

As it is interesting to compare the mortality here with that occurring in other towns of Britain, the following table is drawn up for the purpose of exhibiting the comparative mortality of different towns during the third quarter of the years 1846, 1847, and 1848. The calculations of the mortality in the English towns are based on the Registrar-General's "Returns of the Mortality in 117 Districts of England for the Quarter ending 30th September 1848." The Greenock returns I owe to the kindness of John H. Tuelon, Esq. of Greenock.

TABLE I.—Proportional Mortality of different Towns during the Third Quarter (ending 30th September) of the years 1846, 47, and 48.

Places.	Mortality of Third Quarter, 1846.	Mortality of Third Quarter, 1847.	Mortality of Third Quarter, 1848.	Percentage of mortality in 1848, with that of 1846.	Percentage of mortality in 1848, with that of 1847.
England and Wales,	51,405	49,479	43,445	— 18·32	— 13·88
London, .	12,601	13,187	13,503	+ 7·15	+ 2·39
Birmingham, .	1,623	1,161	1,009	— 60·85	— 15·06
Carlisle, .	281	279	165	— 70·30	— 69·09
Liverpool, .	2,946	5,669	2,189	— 34·44	—113·28
Manchester, .	2,354	2,783	1,779	— 32·32	— 56·43
Wolverhampton,	687	774	483	— 42·23	— 60·23
Edinburgh, .	1,201	1,729	951	— 26·18	— 81·80
Leith, .	247	241	214	— 15·42	— 12·61
Greenock, .	238	546	256	+ 7·56	—113·28

Note.—The — mark in the above table denotes that the mortality of 1848 was below that of the years 1846 or 1847 by the amount specified. The + mark denotes that it was greater.

This table, then, shows that the mortality in all the above-named places, with the exception of London and Greenock, was less during the third quarter of 1848 than during the corresponding period of the years 1846 or 1847. In Greenock, though the mortality of the third quarter of 1848 is slightly above that of 1846, it is no less than 113 per cent. below the mortality of 1847; the high mortality of 1847 being caused by the influx of Irish to that seaport.

With the last day of September terminated the improvement of the public health both in Edinburgh and Leith. On the 1st of October the Epidemic Cholera made its appearance at Newhaven, a fishing village to the north of Edinburgh, in North Leith parish; and on the 2d, the first cases of that disease occurred in Edinburgh. By the 30th of November,

to which date this report alone extends, 534 cases were reported by the police as having occurred in Edinburgh, of which 276 were stated to have proved fatal; and 329 cases in Leith and Newhaven, of which 139 were said to have died. As the cases were reported very irregularly at first, these numbers only give an approximation to the truth; but if the proportion of deaths is accurately stated, we can calculate from the actual deaths which occurred, and which are registered in the Edinburgh and Leith Mortality Tables, the number of cases in Edinburgh and Leith up to the 30th of November. On the supposition that the mortality of the unreported cases was the same as those reported, seeing that 296 deaths are registered as occurring in Edinburgh, and 181 deaths in Leith and Newhaven, 572 cases of cholera must have occurred in Edinburgh, and 464 cases in Leith and Newhaven, during October and November. Assuming these numbers as approximations to the truth, they show that, during October and November, one case of cholera occurred out of every 245 inhabitants in Edinburgh; but to the extent of one case out of every 59 persons in the population of Leith and Newhaven. In Loanhead, again, a village to the south of Edinburgh, about one case of cholera occurred out of every 20 inhabitants.

EDINBURGH.—As atmospheric agencies appear in Edinburgh to exert a stronger influence on the public health than in most other places, attention has naturally been much directed to this point. Previous to and during the first week of the outbreak of cholera here, almost exactly the same kind of weather prevailed, though in a milder degree, as prevailed immediately before and during the outbreak of influenza last year. In my last year's report it was noticed that the atmospheric conditions which appeared to give rise to that disease were excessively mild, damp relaxing weather, with the air overloaded with moisture, followed by sudden changes to frost, which gave rise to the formation of dense wetting fog or mist. Now, without intending to assert that cholera is produced by atmospheric causes, it is certainly curious to notice, that the weather, during the last week of September and the first week of October, was of an excessively relaxing kind, being very close, very mild, and the air so damp and overloaded with moisture, that the slightest change of temperature gave rise to the formation of a thick, damp fog or mist. When these changes were more sudden or greater in degree, the mists passed into thick, drizzling, and most wetting rain, occasionally even into heavy and continuous torrents of rain. In fact, a close heavy mist hung over the town most of these two weeks, only partially clearing off during bright sunshine, and the quantity of rain which fell during that period was unusually great. During all this period the range of temperature was extremely small, averaging only four degrees daily,—never exceeding six degrees within the 24 hours. The contrast with our ordinary weather was therefore very striking, indeed, the air felt hot, thick, heavy, and irrespirable.

From the moment of the setting in of this weather, diarrhœa and derangement of the bowels became exceedingly prevalent, and on the 1st of October the first case of cholera occurred at Newhaven, and on the morning of the 2d October two cases occurred in Edinburgh.

Whatever influence this weather had on the cholera, or on its manifestation here, certain it is, that from that period the mortality of all classes of disease largely increased. In fact the unknown epidemic influence giving rise to cholera, which was generated by, rendered virulent, or arrived along with this kind of weather, had precisely the same effect on the general mortality which the arrival of the epidemic influenza, with its analogous weather of a more severe type, had on the

general mortality of last year. Both fearfully increased the prevalence and aggravated the fatality of the prevailing epidemics (typhus fever last year, scarlet fever and cholera this), while they increased the general fatality of all diseases. Thus during the past months, with the advent of the epidemic influence, the general mortality in Edinburgh, excluding still-births, rose from 350 which it was in September, to 516 in October, and to 688 in November. The mortality of epidemic and contagious diseases rose from 151, which it was in September, to 290 in October, and to 398 in November. It is thus apparent that epidemic influence not only largely increases the mortality of that class of diseases on which it may be supposed to have most influence, but also largely increases the deaths from all causes.

These facts will be illustrated by the following table, in which is stated the number of deaths in Edinburgh and Leith during the months of October and November 1845-6, 7, and 8. There was no prevalent epidemic influence here during 1845 or 1846; but that of influenza was present in 1847, and that of cholera in 1848.

	1845.		1846.		1847.		1848.
Edinburgh, ...	607	...	801	...	1249	...	1204
Leith, ...	87	...	147	...	153	..	396

One conclusion seems fairly deducible from these facts, and that is, that damp foggy weather accompanying, following, or alternating with very mild, close, damp, relaxing weather, during which the air is overcharged with moisture, is invariably followed by a greatly-increased mortality; and it depends on circumstances of which, as yet, we have no knowledge, whether such weather introduces or gives rise to influenza or cholera.

During the above three months the mortality of the zymotic (epidemic, endemic, and contagious) class of diseases greatly increased. Thus during August the deaths from this class of diseases numbered 115 only; during September, chiefly in consequence of the increased mortality during its last week, the deaths from zymotic diseases amounted to 151; while during October they rose to 290, and during November to 398. Not only the actual but the proportionate number of deaths from zymotic diseases increased since the advent of the epidemic influence. Thus the deaths from zymotic diseases amounted to 37 per cent. of the total deaths during August, to 43 per cent. of the total deaths during September; but rose in October to 56 per cent., and in November to 57 per cent. of the total deaths.

Typhus fever cut off only 81 persons during the above three months, a proportion not much greater than the average quarterly mortality of that disease. Scarlet fever, on the other hand, which has been excessively prevalent, has proved fatal to 313 persons during September, October, and November. Indeed Edinburgh has not witnessed such a severe epidemic of this disease since the autumn and winter of 1835-6. Of the deaths from scarlet fever, 150 were males and 163 females. Of these, 20 were under one year of age, 45 between 1 and 2 years, 153 between 2 and 5 years, 80 between 5 and 10 years, 10 between 10 and 15 years, and 2 above 15 years of age. Small-pox proved fatal to 31 persons during the above months. Of these, 27 were ascertained not to have been protected by vaccination; of the others, one was reported to have been vaccinated; nothing was ascertained with regard to the remainder. Measles and Hooping-cough, as is usual during the prevalence

of scarlet fever, have been exceedingly rare during the above months, but during November they have exhibited a slight tendency to return. Should this continue, it may be looked on as a favourable change, and as indicating a tendency in the present epidemic influence to abate.

There is one circumstance connected with the relative prevalence of measles, hooping-cough, and scarlet fever as epidemics, which is worthy of note, inasmuch as their relative prevalence last year and this corroborates the acute remarks of Noah Webster relative to the phenomena of epidemic periods. As the results of the numerous facts which he has most industriously collected, he pointed out that certain epidemics followed in the wake of one another, observing to a certain extent a regular order. For instance, that measles and catarrhs were usually the harbingers of epidemic influenza, followed by scarlet fever, which was the usual precursor of plague, fluxes (cholera?) and dysenteries. It will be recollected that, previous to the outbreak of influenza, measles and hooping-cough prevailed as epidemics. As these three diseases, influenza, measles, and hooping-cough, all affect more or less the respiratory mucous membranes, it is quite reasonable to conclude that they are in some way connected with the same or analogous epidemic influences. Scarlet fever, and the anginas which attend it, on the other hand, more especially affect the mucous surfaces and organs connected with the upper portion of the organs of digestion; while cholera, dysentery, and diarrhœa are severe affections of the lower portions of the same organs. It is quite possible, therefore, that these last diseases are also in some unknown way connected together, so as to be under analogous epidemic influences. In any case, as these epidemics have occurred in Edinburgh in the same exact order as Noah Webster pointed out they had done in many previous epidemic or pestilential periods, it is right that attention should be directed to the subject, with the hope of its throwing some light on that most inscrutable of all diseases—Cholera.

The deaths from Diarrhœa were more numerous during September than during either October or November,—a circumstance which may be accounted for partly by the diminished tendency to bowel complaints during the colder months of the year, partly perhaps to the greater attention which was paid to checking the disease in its early stages during these latter months, lest it should lead to cholera, also perhaps to several of the cases of diarrhœa passing into cholera.

Though cases of Dysentery were common in Edinburgh, especially during the month of October, few proved fatal, though for the most part they proved more rebellious to treatment than in ordinary seasons.

Cholera, during the two months it has prevailed here, has proved the most fatal of the epidemics, cutting off 297 persons in Edinburgh, from the 2d of October. This disease has selected its victims almost entirely from among the inhabitants of those parts of the town most in need of sanitary measures. Almost all the old and favourite haunts of typhus fever have furnished their quota of cholera cases; indeed, it is quite remarkable how very closely the sites of cholera, typhus fever, and dirt, are identical. During the progress of the disease several of the known facts regarding it were observed. At Newhaven it was for a considerable time confined to one side of a narrow lane before it attacked any of the inhabitants on the opposite side. Many cases occurred in which intoxication passed into cholera; indeed, intemperance seemed to be one of its chief predisposing causes. At first, almost every case had premonitory diarrhœa; and at Newhaven almost every inhabitant suffered from that disease during the prevalence of cholera. Later in the disease the persons were at once struck down without any pre-

vious warning. Generally speaking, the disease showed itself to be non-contagious, though a very few instances did occur in which it is difficult otherwise to account for its extension to the healthy. It, however, showed a most distinct tendency to localize itself in particular situations, of which many very remarkable instances occurred. It was when the disease showed this tendency to localize itself that temporary removal of the whole inhabitants from these localities to houses of refuge was found of the utmost utility in arresting the further progress of the disease; indeed, when this was not done, the family continued to be mowed down successively by the pestilence. Though many remarkable instances of this occurred here during the progress of the epidemic, one only need be noticed. One case of cholera occurred in a lodging-house, and the authorities wished to remove the remaining 14 inmates, but they refused. They were all successively attacked, and most of them died; whereas, of 110 persons taken to the house of refuge, only one person was attacked, and his extremely intemperate habits sufficiently accounted for his falling a victim to the prevailing epidemic. The removal of the family from the infected locality arresting the further progress of the disease is of itself a tolerably strong argument in favour of the non-contagious nature of the disease. Had it been contagious, they would have carried the contagion with them, and propagated the disease in their house of refuge; whereas none of the removed parties, so far as I am aware, with the above single exception, were affected with the disease.

This fact of the localization of the disease certainly goes far to support the view of those who hold that cholera is produced by some miasm or local exhalation from the earth. But it must be apparent to all that something more is needed than simple miasm to excite this disease, else why does this miasm only give rise to cholera at long and distant intervals, while during other years the miasm from the same soil gives rise to, or favours the generation of, typhus fever or other epidemic diseases? It is scarcely conceivable that the miasm from the soil or locality should differ much one year from another, though it may vary in intensity; and though cholera in its march seems by preference to attack those places which are situated on the banks of rivers, or on badly-drained ground, or are in a bad condition as to cleanliness, around which filth is allowed to accumulate, or which are exposed to the emanations arising from open ditches, drains, &c., and more especially when the inhabitants are uncleanly in their habits, are in want of the necessaries of life, and are addicted to intemperance,—yet, as all these causes may be in operation for years without the outbreak of cholera, it is manifest that a something more is needed to give rise to the disease. This something more may fairly be inferred to be an atmospheric cause, as I shall now shortly endeavour to show.

Whenever, during the progress of the epidemic, unusually mild and damp, close, relaxing weather occurred, and was followed by any change, but especially by a change to frost, so as to cause the formation of a damp fog or mist, the cases of cholera increased in numbers, in some cases were more than doubled. Such weather occurred in a very marked degree during the last 3 days of October and first 4 days of November, after which frost set in. Much rain fell during this period, the air was surcharged with moisture, and fogs or mist were almost constant. From the 4th to the 10th of November we had more or less frost every day, attended with cold cutting winds and occasional falls of snow. It was during this period, viz. from 28th October to 7th November, that cholera attained its height of severity in Edinburgh,—the cases rising

from 9 on the 26th October to 20 on the 28th, and ranging from 14 to 20 till the 7th of November. They remained most steadily at their maximum during the frosty days which followed the damp relaxing weather. This connection, however, of weather with the epidemic was most marked on the 30th of November, the very day, be it recollected, when last year the mortality attained its utmost height under the influence of the epidemic influenza. The 29th of November was an unusually mild, damp, close day; the 30th was a bitter cold day, with a keen south easterly wind, excessive dampness, and a tendency to frost. The number of cases on the 29th of November was 6, which was the daily average for a whole week previous. On the 30th of November the cases rose suddenly to 18. These facts then show that atmospheric agencies have fully as much to do with the origin and progress of the disease as local miasms; and, instead of dogmatically asserting that either one or other is the most probable, it seems much more philosophical to conclude—indeed the facts allow no other conclusion to be drawn—that both are necessary for the production of the disease. It is right, however, to confess, that the causes of the disease seem still to be wrapped in inscrutable mystery.

With regard to the nature of the disease, or its treatment, it does not appear that we have advanced one step beyond the knowledge we acquired in 1832. Nothing could ever induce me to believe that the structural lesions of the bowels and other organs, on which such stress was laid in 1832, had any necessary connection with the disease. My own impression then was, and still is, that cholera consists essentially in a vitiated state of the blood, induced by the unknown poison which produces the disease. In 1832 it was ascertained by Dr Christison and others that the blood drawn in that disease contained a notable quantity of urea, less water than healthy blood, and consequently a larger proportion of albumen, colouring matter and salts. My own experiments on the blood of cholera patients in 1832 were performed with the simple view of ascertaining the proportional quantities of the different solid constituents to one another and to the whole blood. Urea or salts were not sought for; but in other respects my analyses corresponded generally with those of Dr Christison. It was, however, found, that during and before the stage of collapse, the proportion of fibrin relative both to the albumen and to the red globules, was notably less than in healthy blood, though the actual proportion to the volume of blood was nearly the same as in health, in consequence of the blood having lost a large proportion of its watery particles. Blood drawn, however, after the fever of reaction had set in, always exhibited a notable increase in the proportion of fibrine above the standard of healthy blood, whether as compared with that of the albumen and red globules, or of the whole mass of the blood. As it was found, by a long series of direct experiments and observations, that the proportional quantity of fibrin to the other solid constituents of the blood could be readily, almost instantaneously, increased by blood-letting, the conclusion was arrived at, that blood-letting, or any other agent which could increase the proportion of fibrin, would be found to be the most efficacious remedy in cholera; and nothing has occurred during the present epidemic which has induced me to alter my opinion. Nay, more, it is understood that blood-letting has proved the most efficacious of all the modes of cure yet attempted in the hospital here. Of 12 selected cases so treated, only 1 died.

As might be expected, relative to an epidemic disease which has shown such a strong tendency to localize itself, females have been attacked by cholera in much greater numbers than males. This result is

probably produced partly in consequence of their being more exposed to the local cause, whatever it be, from being more constantly at home; partly also because the natural changes incident to the female constitution during the whole middle period of life, render them more easily affected by the poison of cholera. Whatever be the cause, of 542 cases reported in Edinburgh during the months of October and November, 181 were males, 322 females, and of 21 the sex was not stated. The deaths registered in Edinburgh, Leith, and Newhaven during the same period shows the same fact. Thus, 116 males and 181 females died from cholera in Edinburgh during that period; while in Leith and Newhaven there died 73 males and 108 females. The following table, showing the sexes and ages of the persons dying of cholera during October and November, will illustrate these observations.

Ages.	Edinr.		Leith.		Ages.	Edinr.		Leith.	
	M.	F.	M.	F.		M.	F.	M.	F.
under 1 year	3	1	0	0	40 & under 50	16	26	11	19
1 & under 2	4	3	2	2	50 60	11	21	5	15
2 5	11	6	6	6	60 70	9	8	2	9
5 10	8	9	12	4	70 80	1	3	0	3
10 15	1	5	1	1	80 90	1	0	0	0
15 20	2	4	2	3	Age not stated	8	21	2	8
20 30	19	39	16	12					
30 40	22	35	14	26	Total,	116	181	73	108

This table, then, shows that cholera cuts off the chief portion of its victims at the same ages as typhus fever, viz. between the ages of 20 and 60 years. It also bears out the statement above made, that the monthly changes of the female constitution during the whole middle period of life, render them more liable to be attacked than males;—a circumstance rendered more apparent by the fact, that during the earlier stages of life, viz. from birth to 15 years of age, that disease proved more fatal to males than to females. Thus, during the above months, 48 boys under 15 years of age died of cholera in Edinburgh and Leith, but only 37 girls under the same age.

The mortality of diseases of the Brain during September, October, and November, was greatest during September, and least during November, the mortality from these diseases diminishing with the diminution of temperature; again illustrating what was remarked during the earlier months of the year, when the mortality of these diseases increased with the increase of temperature.

Diseases of the Respiratory Organs, on the other hand, increased with the diminution of temperature, the mortality therefrom being lowest in September and highest in November. The deaths from these diseases numbered 37 during September, 59 in October, but 69 in November.

The mortality of diseases of the Heart and Blood-vessels appeared to be under the same influences as diseases of the respiratory organs, being at a minimum during the mild month of September, and at a maximum during the ungenial month of November.

Diseases of the Organs of Digestion, excluding of course the epidemic bowel complaints, scarcely varied in their fatality during the above three months; the deaths therefrom amounting to 45 during both September and October, and 51 during November.

The deaths registered under the head of Old Age were most numerous during the month of November, the first setting in of the cold weather being always remarked to be pernicious to the aged.

Leith.—The above remarks, relative to the mortality of Edinburgh, apply nearly equally to that of Leith during the above months. There, however, in consequence of the much greater proportionate prevalence of cholera, the mortality during October and November rose to a much greater proportionate height. Thus the mortality of Leith during October and November 1848 was no less than 355 per cent. higher than the mortality of the corresponding months of 1845; 169 per cent, above the mortality of the corresponding months of 1846; and 158 per cent. above the mortality of October and November 1847.

The following is the abstract of the mortality tables of Edinburgh and Leith for the months of September, October, and November 1848, classified according to ages and diseases.

Table II.—TABLE OF AGES—1848.

Ages.	Edinburgh.						Leith.					
	Sept.		Oct.		Nov.		Sept.		Oct.		Nov.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
1 year and under,	23	30	37	26	32	30	6	4	8	10	15	6
2	19	22	22	30	20	27	4	4	8	5	8	3
5 ..... -	27	34	51	49	51	48	5	7	9	16	14	10
10	14	18	31	23	27	36	1	1	7	8	11	8
15 ..... -	3	7	5	9	6	5	1	2	3	2	2	2
20	4	2	5	5	4	13	1	1	2	2	3	2
30 ..... -	13	8	17	16	40	50	1	1	12	6	6	11
40	15	15	20	30	27	39	6	2	12	22	13	15
50 ..... -	22	3	16	23	26	36	2	2	9	12	10	14
60	10	16	19	22	23	35	4	3	8	12	5	11
70 ..... -	12	10	12	18	20	20	1	1	4	7	4	8
80	7	9	7	13	11	17	1	1	6	2	2	6
90 ..... -	2	2	3	3	6	4	0	0	1	0	0	1
100	0	1	0	0	0	0	0	0	0	0	0	0
Not stated -	1	1	2	2	9	26	0	2	3	2	1	7
Total deaths,	172	178	247	269	302	386	33	31	92	106	94	104
Still-born, -	10	12	5	4	12	11	4	2	6	5	6	2
Total, -	182	190	252	273	314	397	37	33	98	111	100	106
	372		525		711		70		209		206	

TABLE III.—CLASSIFIED TABLE OF DISEASES—1848.

Class.	Disease.	Edinburgh.			Leith.		
		Sept.	Oct.	Nov.	Sept.	Oct.	Nov.
I.	Small-pox,	8	8	15	0	0	0
	Measles,	5	0	9	1	1	0
	Scarlet fever,	78	130	105	16	18	22
	Hooping-cough,	5	12	14	4	5	0
	Croup,	2	3	4	0	6	0
	Diarrhœa,	15	10	7	0	6	1
	Dysentery,	3	4	1	0	1	1
	Cholera,	2	86	211	0	86	95
	Typhus fever,	24	31	26	7	17	10
	Erysipelas,	4	5	4	0	1	1
	Other zymotic diseases,	5	1	2	0	1	0
II.	Dropsy,	8	9	15	0	0	2
	Cancer,	2	2	2	0	2	0
	Debility,	5	8	10	1	2	5
	Other diseases of uncertain seat,	4	7	13	2	1	0
III.	Cephalitis,	1	0	3	1	0	0
	Hydrocephalus,	11	15	5	3	6	1
	Apoplexy,	6	7	3	3	0	0
	Paralysis,	14	8	8	2	2	2
	Other diseases of brain,	8	4	9	1	1	1
IV.	Pneumonia,	1	11	12	0	2	1
	Asthma,	0	4	8	0	0	1
	Consumption,	31	34	42	6	7	11
	Other diseases of respiratory organs,	5	6	7	0	0	2
V.	Diseases of heart and blood-vessels,	4	8	10	0	2	0
VI.	Teething,	14	14	3	2	3	1
	Inflammation of bowels,	17	10	30	2	2	5
	Tabes mesenterica,	10	12	15	2	5	3
	Other diseases of organs of digestion,	4	9	3	1	3	1
VII	Kidney and urinary diseases,	2	2	1	0	0	0
VIII	Child-birth,	5	6	9	0	2	2
	Diseases of uterus, ovaries, &c.,	0	0	2	0	0	0
IX.	Rheumatism & dis. spine, joints, &c.,	2	0	5	3	0	1
X.	Ulcer, carbuncle, &c.,	1	0	0	0	0	0
XI.	Old age,	21	22	40	1	8	6
XII.	Violent deaths and suicides,	14	14	13	4	4	4
	Causes not specified,	9	14	22	2	4	19
	Total deaths,	350	516	688	64	198	198
XIII	Still-born,	22	9	23	6	11	8
	Total,	372	525	711	70	209	206

22 NORTHUMBERLAND STREET,
December 1848.

EDINBURGH: PRINTED BY STARK AND COMPANY,
OLD ASSEMBLY CLOSE.

Dr Brown
Surgl Regt
with the
Authors
Compts

A

DESCRIPTION

OF A

NEW IMPROVED TRUSS,

WITH

A FEW REMARKS

ON

HERNIA,

AND THE USE AND APPLICATION OF TRUSSES IN GENERAL,

BY

GEO. R. DARTNELL, ESQ.

SURGEON TO THE FORCES.

Manufacturers for the Army, &c., Messrs. WIESS and SON, Strand; Messrs. PHILP and WHICKER (late Savigny) St. James's-Street; and Messrs. EVANS and Co., Old 'Change, St. Paul's, London; and for the General Hospital, Fort Pitt, the Medway Union, &c., E. A. PALMER, Rochester.

ROCHESTER:
CADDEL AND SON, GAZETTE-OFFICE.

MDCCCXLIX.

NEW IMPROVED TRUSS

FOR INGUINAL AND FEMORAL HERNIA.

The statistics of hernia, however differently calculated by medical authors, exhibit a frequency of this troublesome and dangerous infirmity that few are aware of. Mr. Teale, of Leeds, in his recent admirable "Treatise on Abdominal Hernia," says, "the relative frequency of hernia in the human race, or in the population of particular countries, has been very variously estimated. By Arnaud it has been calculated that one-eighth of mankind are the subjects of it." (*a*)

The disease does not appear to occur so frequently amongst the Asiatics generally as might be inferred from the relaxing nature of their climate; but in America, more particularly amongst the inhabitants of the United States, and the British Provinces, it is extremely prevalent; and in the South of Europe, and the adjoining shores of Africa, it is more common than in England. In Malta, especially, it is said few persons escape it; and in Egypt herniæ are extremely common, and often of unwieldy bulk. (*b*) This is also the case amongst the black population of the West India Islands.

In Switzerland, too, the disease is one of very common occurrence; (*c*) and in France M. Malgaigne estimates that there is one hernial subject in $21\frac{1}{2}$ of the entire male population. Mr. Turnbull, Surgeon of the London Truss Society, says that, after most diligent and general enquiry throughout the kingdom, he is induced to estimate the hernial subjects, of all ages, and both sexes, in England, as one to fifteen. (*d*)

(a) p. 31.
(b) Cooper on Hernia, Part I., p. 12.
(c) Lawrence on Ruptures, p. 42.
(d) Teale on Hernia, p. 32.

Another recent writer on this subject (*a*) states, "it has been said every third man among us is ruptured; and this, I believe, is not above the average if applied to a particular class—the agricultural labourers."

In the British Army, the soldiers of the Cavalry and Artillery are usually invalided as soon as they are found to be affected with hernia; but the soldiers of the Line, if ruptured, are not consodered to be incapacitated for the service unless the hernia be of large size or difficult of support. In this arm of the service the number of hernial subjects is very considerable, and, as I shall endeavour to shew hereafter, much more so than is generally supposed.

When we consider then, the extraordinary liability of the human race, especially throughout civilized Europe and Northern America, to become affected with this malady, the amount of misery it entails, and the danger occasioned by it to human life, it cannot be matter of surprise that many surgical operations should have been proposed, and numerous mechanical contrivances, from time to time, invented, for its permanent or palliative cure.

With regard to the surgical operations proposed for the radical cure of reducible hernia, many have been attended with fatal results, and the great majority have utterly failed. They have mostly had for their object the destruction or closure of the hernial sac, and some have succeeded in this object; "but it is necessary," adds Mr. Teale, "to repeat that the obliteration of the sac affords but a feeble barrier to a fresh hernial descent, and only a very slight advance is thereby made towards a radical cure of the disease." (*b*)

With regard to mechanical contrivances no efficient substitute has yet been found for the elastic or spring truss.

Sir A. Cooper, in his great work on Hernia, says, "the only instrument that can safely be relied on for the support of a hernia, is a truss of steel; all other

(a) Spong, Lancet, Vol. VI., p. 143. (b) p. 80.

bandages affording only a false security more dangerous even than the total omission of this kind of support." (*a*) Scarpa, writing on the same subject, says, "of all the benefits that modern surgery has conferred upon the human race, that of the invention and perfection of the truss is one of the most conspicuous." (*b*) And Mr. Lawrence, in his excellent "Treatise on Ruptures," adds, "considering the great number of ruptured persons, together with the essential relief which they derive from these bandages, we shall not fail to regard them as the most useful production of modern surgery." (*c*)

When the paramount importance of the hernial truss is thus advocated by the highest authorities in our profession, and its vast utility felt and acknowledged by so large a mass of the civilized population of the world, little excuse, I hope, need be offered for presenting to the public a new modification of this instrument. The hernial truss is still far from being a perfect instrument, and I believe it to be quite impossible to construct one that will answer in every case of inguinal hernia. Each improvement, however, on the original may be considered as a step gained; and although I make no pretence whatever to claim for mine any originality except as a combination, my object will be fully attained if it be found upon trial to possess any advantage over those commonly used; and especially if it be found useful to the soldier, with a view to whose benefit it was originally constructed. But before proceeding to the description, I shall take leave to premise a few very cursory remarks upon inguinal hernia, and chiefly as regards this disease in the soldier.

A recent writer before referred to, asserts that "hernia is never suddenly produced—in fact that it is a direct physical impossibility, and that the period of time required to produce that stage of the lesion when it is called a bubonocele occupies months and sometimes years, * * * that it steals on by slow

(a) p. 14. (b) p. 100.
(c) p. 91.

and insidious steps, * * * and that the whole process of hernial formation is one of degrees." (a)

However correct this assertion, so different from commonly received opinion, may be, certain, I think, it is, that the sudden production of an inguinal hernia from any violent exertion of the voluntary muscles, a jump, a fall, or other accidental cause, is an occurrence that very rarely happens, the hernial apertures and parts around being previously in a perfectly sound and healthy state, while inguinal hernia, in its incipient stage, is a complaint that very frequently exists without any knowledge whatever of the individual affected. A person, therefore, in this state, as Mr. Spong very justly remarks, may well suppose that he becomes ruptured for the first time when, in lifting a heavy weight, or from some accidental cause, the small portion of bowel previously protruded only into the inguinal canal, suddenly bursts through the external ring, and shews itself in an unmistakeable tumour in the groin, or in the scrotum, while in reality he was, to all intents and purposes, "ruptured months or perhaps years before."

The position I have held, for the last five years, at Chatham, where the whole of the invalid soldiers of the British army (with the exception of those serving in Ireland) are assembled annually, has afforded me very ample opportunities of observing hernial complaints, and practically studying the application and fitting of trusses upon ruptured soldiers and others; and having in my frequent inspection of invalids, detected very many cases of incipient hernia, which had escaped the knowledge or observation not only of the regimental Medical Officer, but of the affected individuals themselves, I am fully confirmed in the opinion expressed by the last named writer, that inguinal hernia is seldom, if ever, suddenly produced, but is a

(a) Spong. Lancet, Vol, VI., p. 142.
For a perusal of the Author's views on this interesting subject, I beg to refer to the article in question, which will be found under the head of "Contributions to Practical Surgery."

disease of slow and insidious formation. I have been induced to offer the foregoing remarks on the frequency, and unsuspected existence, of early hernia, with the hope of attracting the attention of regimental surgeons in the examinations of their men, to a stage of the disease that is in general as curable, if looked to in time, as it is full of danger if neglected.

It is not an unusual thing, however, (as the gentleman last quoted remarks) when a patient does complain of a feeling of weakness and relaxation of the hernial region on either side, with the appearance or sensation perhaps of a slight protrusion on coughing, for the surgeon to say—"You are not ruptured yet, and probably never may, and I see no necessity for your wearing a truss at present." But it is precisely at this time that a truss is of the greatest value; for if a well-fitting one, with a light spring, be now applied and steadily worn, not only is the patient with certainty secured from the greater evil—the full developed rupture—but is, with almost equal certainty, permanently and radically cured.

As regards the soldier, were this point more carefully attended to, many valuable men might be retained in the service, who must otherwise be discharged as ineffective from rupture.

It is acknowledged, then, by the highest medical authorities, that the only security for a ruptured person is the wearing of a truss of elastic steel; the object of which should be the application of a "constant pressure on the part where the hernia opens into the abdomen, to shut the mouth of the sac, and thus oppose an effective resistance to the protrusion of its contents."(a)

"Wearing an elastic truss," says Lawrence, "not only keeps the viscera within the abdominal cavity, and thereby protects the ruptured person from all the dangers to which the existence of his complaint would otherwise expose him; but if continued for a sufficient length of time, even affords a prospect of a radical cure. The constant pressure of the pad keeps the neck of

(a) Cooper on Hernia, p. 14.

the sac empty, and thus favours the commencement and progress of those natural processes which, after the replacement of the viscera, tend to prevent a recurrence of the complaint; viz. spontaneous reduction, or gradual contraction of the hernial sac, with obliteration of its neck or body, and agglutination of its sides." (a)

Several modifications and improvements have, especially of late years, been made in the original spring truss. Without, however, alluding to any of these instruments, all of which have their several merits, I shall proceed to a description of the one which it is the object of this paper to offer to the notice of the public.

The spring, which (though strong from being manufactured of wrought iron) is light, and elastic, is of the semicircular kind, the fulcrum being placed behind near the top of the sacrum, and the resistance in front. It has a graduated downward curve at its anterior extremity, which brings the pressure of the rupture pad directly upon the upper hernial opening and the inguinal canal. The spring has a casing of padded leather, continuous with which is a strap of the same materials, which, passing round the opposite hip, and buttoning to the pad in front, is intended to steady the fulcrum, and keep the instrument in its place.

The anterior or rupture pad is formed (like Dr. Chase's American truss) of hard wood, polished and of a rounded oval, and somewhat conical shape.

The back pad is flat, formed of strong leather, padded on the inner face, and furnished with two bridles on the outer one for connection with the spring. This pad rests in the hollow of the back, or a little below it, but if the patient be not emaciated, and that the spring required be not a strong one, the back pad may be slipped off altogether.

The advantages of this truss may be stated to be as follows:—

1. It is lighter than any other instrument of the kind with which I am acquainted; the average weight of the single truss being about four ounces, or without

(a) p. 103.

the back pad, which may often be dispensed with, 3½ ounces.

2. From its lightness, small size, and close fitting to the person, when properly adapted and applied, it is worn by the patient almost without his being aware that he has such an instrument on him; and it is imperceptible under any dress—a matter of some importance with Military Officers who wear the shell jacket.

3. It is simple in its construction, and therefore of comparatively low price, and easily altered or repaired by any ordinary mechanic. "A simple instrument," says Lawrence, "when well made, answers every end which can be accomplished by more complicated ones, and is therefore preferable for reasons that must be obvious." (a)

4. The rupture pad, being of hard wood (box-wood is the best) is imperishable, as it does not absorb the perspiration, and will not chafe or excoriate the skin, (as may be seen by a reference to testimonials No. 6 and 7, &c.); if preferred, however, this pad may be covered with a cap of chamois leather or flannel, renewable at pleasure.

5. A material advantage derivable from the wooden pad, is the facility with which it can be modelled, or altered, or a new one made, by any handy person, to the size or form required for any particular case; when the pressure, for instance, is to be made on any one particular spot, the pad may be more rounded; if the pressure is to be general, it should be flatter; when the hernia is old, and the protrusion takes place near the pubis, the pad should have something of a triangular shape; or if the hernia be what is called, "direct," the pad may be modelled with a rounded prominence or nipple on any required part of its face, in imitation of M. Malgaigne's mushroom pad. This nipple being applied exactly to the spot where the protrusion takes place, fills up the aperture like an operculum, and effectually prevents any protrusion of the bowel. (b)

(a) p. 100.

(b) A few months ago a soldier of the 30th Regiment was sent to Fort Pitt to be discharged the service on account of the largest

6. By the small size of the anterior or rupture pad, as compared with those of most other trusses, and the place it occupies when properly applied, the spermatic chord is effectually preserved from injury; and the pressure being made on the inguinal canal, and the upper hernial opening, instead of the lower, there is no pressure on the pubis, nor is there any danger of strangulation or injury of the gut within the inguinal canal.

7. The perineal strap is not required with this truss, unless in some rare case where the pubis is prominent, and the belly flat and receding, giving a tendency to the truss to slip upwards.

8. By a trifling modification of the anterior curve of the spring, and a slight alteration in the shape of the wooden pad, the truss is equally applicable to a femoral, as to an inguinal, hernia; and has been worn by many female patients with the greatest efficiency and comfort. (*a*)

Before detailing the directions for the application and fitting of the instrument, I must beg to prefix a few remarks in relation to the point of pressure. "Many Surgeons," says Sir A. Cooper," and almost every Surgeon's instrument maker, have thought proper to vary the form of the truss, and to prescribe different

scrotal hernia I had almost ever seen. The tumour descended nearly to the knee; and the volume of intestine it contained was so large, and the force with which it was protruded so great, that it was found almost impossible to return the contents of the sac to the abdomen; and, when up, it was thought by Staff-Surgeon Ford, and others who saw the rupture, impossible to retain by any mechanical contrivance. A truss, however, with a wooden pad, such as above described, having a nipple near the centre, which exactly fitted the hernial aperture, was applied, and the support afforded was so complete and effectual, that no exertion the patient could make, could disturb the instrument or bring down the rupture; and the patient has since declared himself as fit for any duty as he had ever been in his life. Another case somewhat similar has presented itself at Fort Pitt within the last few weeks. A soldier of the 12th Regiment, affected with a very large scrotal hernia of 14 years standing, which no truss could support, has obtained complete and effectual relief from the use of one of my trusses, having a pad modelled as above described.

(a) vide Testimonial, No. 32.

rules for the duration and force of the pressure, but almost all have agreed in determining that the pressure should be made on the abdominal ring.

"This is precisely the circumstance, however, in which they are all defective; and indeed it is the frequent failure of the purpose for which they are designed, when made according to this principle, that has led to such a variety in the mode of their construction. The object in applying a truss is to *close the mouth of the hernial sac*, and destroy its communication with the abdomen, and this object can never be perfectly fulfilled by any truss which is applied in the usual manner upon the abdominal ring, and extending from it upon the os pubis. In this case the cure must be incomplete, because a considerable portion of the hernial sac remains uncompressed towards the abdomen, which portion is that situated between the abdominal ring and the opening of the sac into the cavity of the belly." (*a*)

"The proper method," he says again, "of completely obliterating the mouth of the hernial sac is to apply the truss, not upon the abdominal ring, but upon the part at which the spermatic chord, and with it the hernia, first quit the abdomen; for in this way only can a descent of the hernia be entirely prevented." (*b*)

Mr. Lawrence, on the same subject, adds—"The pad of the truss should be placed over the opening at which the viscera have protruded; hence in a small or recently-formed inguinal rupture, the proper position for it is considerably exterior to the pubis, and rather above that bone." (*c*)

The foregoing quotations from the works of those distinguished Surgeons leave nothing for me to add on this important point, I shall therefore proceed at once with directions for the application of the truss in inguinal hernia.

If the hernia be recent and of small size, the erect position is the easiest for applying the instrument. When the hernia is large, or with difficulty reduced or

(a) p. 14. (b) p. 15. (c) p. 101.

sustained, let the patient be laid on his back, and the hernial sac with its contents be carefully returned. Now place the truss on the affected side, with the leather pad over the top of the sacrum and lower lumbar vertebra: feel for the upper opening through which the bowel protrudes, and on this spot lay the rupture pad. (*a*) Then draw the instrument close round the hip; pass the strap round the opposite side, and loop it on the button screw on the front pad; do not, however, draw it too tightly, else the pad will be dragged forward from its place (which should be close to the upper part of the fold of the groin, in the hollow above the ramus of the pubis and ischium) taking care that it does not press on the bone, or on the spermatic chord as it passes over it.

In measuring a patient for a truss, the girth of the body round the hips (about two inches below the anterior superior spinous process of the iluim) is to be given in inches. It should be stated whether the patient be stout or thin; and whether the spring should be a weak or a strong one; it must, however, be borne in mind that, even with the most careful directions, there must always be a doubt as to the fitting a patient accurately, with any description of truss, unless there be an opportunity of selecting from a number of instruments, or unless the patient be measured and seen by the maker himself.

The spring, anteriorly, may be lengthened or shortened half an inch, by removing the pad, and screwing it on one hole lower down or higher up; or the pad may be screwed on the spring the reverse way, that is, with the base or larger end up, and the apex down (like the pad of L'Estrange's truss) so as to bring the chief force of the pressure on the inner ring alone. In some cases this will be found to answer better, at all events if there be any difficulty the experiment may be tried.

(a) Mr. L'Estrange of Dublin, the patentee of a very ingenious truss, was, I believe, the first to bring to the notice of the public an instrument constructed specially with a view to the making of pressure on the internal ring. Dr. Tod, of London, has also a truss on this principle.

TESTIMONIALS.

It will be observed that the following are not theoretical opinions, but are the Certificates, for the most part, of persons who have had *practical experience* of the working of the truss:

No. 1. Fort Pitt, Chatham, 11 July, 1846.

Proceedings of a Board of Medical Officers held by order of the Director-General of the Army Medical Department, to report upon a truss for inguinal hernia invented by Staff-Surgeon Dartnell, as to its claims as compared with the trusses hitherto in use.

PRESIDENT:
Dr. FRENCH, Deputy Inspector-General of Hospitals.
MEMBERS:
Staff-Surgeon FORD.
Surgeon PIPER, Provisional Battalion.

The Board have seen satisfactory trials of the truss, made in this and the Detachment Hospitals, and are satisfied that it is the most efficient instrument of the kind they have seen; and in their opinion is peculiarly adapted for general use in the Army. The truss is strong and durable, and so simple in its construction that it may without difficulty be made or repaired by an armourer-sergeant; and is, in the opinion of the Board, calculated to give the most perfect security, as well as greater comfort than others, to the wearer,

(Signed) J. FRENCH, M.D.
Principal Medical Officer, President.
WM. M. FORD,
Staff-Surgeon, 1st Class.
SAML. PIPER, M.D.
Surgeon, Provisional Battalion.

No. 2. Fort Clarence, Military Prison, 18 March, 1846.

My dear D—,

I have tried your newly invented truss upon a case in Fort Clarence, and I am happy to say with the most marked success.

The patient has an old standing double rupture; that on the left side being very large, and so unmanageable that all trusses hitherto tried by him have failed in keeping it reduced under the most trifling exercise. With your truss, however, the hernia is com-

pletely prevented from protruding, and he feels a degree of security that he never experienced before from any other truss.

Believe me, yours, sincerely,
H. PILLEAU,
Assist.-Surgeon to the Forces,
in Medical charge of the District Military Prison.

No. 3. Plymouth,
21 May, 1846.

My dear D—,

To-day I examined Hancock, and find that he has continued to wear your truss ever since he rejoined from Chatham, and the improvement, since he left this to be invalided some months ago, is most marked. He says that the truss retains its place under all circumstances, and fits easily, but after being on duty all day, he sometimes finds it necessary to take it off for a short time at night, as the continued firm pressure becomes uncomfortable; this is owing to the spring being strong, but its strength is not greater than is necessary in his case.

The common truss, with its spring passing all round the body, is very unfitted for the soldier, because when he lies down on a guard bed, the instrument is pressed from its place and the rupture descends.

The duty of this Garrison is more severe perhaps than that of any other in England, the guard posts being at considerable distances, and the men having barely two nights in bed: if Hancock therefore continues effective, as he has done, for a few months longer, your truss will have undergone as severe a trial of its fitness and efficiency as can well be required.

Believe me, yours, very sincerely,
WILLIAM WALLACE,
Surgeon, 14th Regiment.

No. 4. Parkhurst Barracks, Isle of Wight,
11 June, 1846.

Sir,

In reply to your letter of the 1st instant, relative to Private Benjamin Gooch, of the 12th Regiment, who was fitted with a truss of a particular description some months since by you at Chatham, I beg to say that the truss in every respect answers the purpose effectually, the hernia, as he states, never having protruded in the least since he began to wear it.

The hydrocele with which the hernia was complicated, and which was relieved by you, is now returning, and will no doubt in a little time require operation again: the man is, in every other respect, an efficient soldier.

I have the honor to be, Sir,
Your obedient servant,
R. DOWSE,
Staff-Surgeon in charge of Depot Batt.

No. 5. 7, Ordnance Terrace, Chatham,
14th July, 1846.

My dear Sir,

I have much pleasure in acquainting you that the truss has been altered as you suggested, it now fits beautifully, and is everything I could possibly wish, being a great relief from the heavy instrument I had been in the habit of wearing. I think the box-wood pad (in place of that made of beech) an improvement, particularly for those whose skin is tender.

Those afflicted with hernia owe you a lasting obligation for the trouble you have taken to bring the truss to such perfection.

I have had the curiosity to weigh the two instruments, and I find there is a difference of three ounces (being nearly double), yours weighing five and a quarter ounces, and that which I have discarded eight and a quarter. I could never bear this on the whole day from the great pressure upon the bone; with yours I have no difficulty of this sort, and at the same time feel perfect security. I shall be most happy at any time to bear testimony to the efficiency of the instrument to any person who may wish for a reference to one who has worn the truss for some time.

Believe me,
My dear Sir,
Yours, truly obliged,
H. JAMES.

No. 6. Gravesend,
21 July, 1846.

My dear Sir,

I had not lost sight of your request to look after Private Knuckle (with large scrotal hernia of left side). I have examined his truss several times, and find that it fits well and easily, without undue pressure anywhere, and has perfectly retained its position.

Yours, my dear Sir,
Very truly,
J. NEWTON,
Staff Assistant Surgeon.

No. 7. 7, Ordnance Terrace,
10 August, 1846.

My dear Sir,

I think I have now given the box-wood pad to your admirable truss a good trial, and in my humble opinion it is perfection. I have not found the slightest rising of the fibres of the wood from the heat of the body or perspiration, and consider that the most delicately skinned person could not feel inconvenience from wearing the truss with a box-wood pad.

Believe me,
My dear Sir,
Yours most truly,
H. JAMES.

No. 8. Fort Pitt,
24th May, 1847.

I hereby certify that I have inspected Private Pearman, 63d Regt. who was furnished with a double solid-pad truss at Fort Clarence above a year ago, and find that the truss still fits well and comfortably: that the rupture has never descended, and that he has continued to perform all the duties of a soldier in this Garrison ever since the truss was applied.

(Signed) J. FRENCH, M.D.
Principal Medical Officer.

N.B.—This is the case alluded to in Testimonial No. 2.

No. 9. Keppel Street, London,
17 June, 1847.

My dear Sir,

The poor man who had been suffering so much from the inefficiency of his truss called on me yesterday. He has been using your truss since it was put on him at Chatham, and I am happy to say with the best result. He says he has begun to work, which he was unable to do since I operated on him some months ago for strangulation of the rupture. He feels no pain or uneasiness from the instrument.

I hope you will make an arrangement with some instrument maker here respecting the truss; and that you will turn your attention to one for females.

I am,
My dear Sir,
Faithfully yours,
(Signed) R. QUAIN.

No. 10. Cavalry Depot, Maidstone,
20 Oct. 1840.

My dear Dartnell,

I send to you Corporal Batty, 15th Hussars, an intelligent, steady, and good soldier, who has worn one of your trusses for inguinal hernia during the year, perhaps with more attention than is always given to such matters in the Army, as he is anxious to remain in the service. He is therefore a fair specimen of what a good principle, even although but indifferently worked out by the mechanist, is capable of producing.

It has not interfered with his duties during the year: he has been often mounted, always employed, and I take him from that most trying muscular work, the sword exercise, to send him to you.

I think adhesion has taken place at the internal ring, but lest I should influence your opinion on the case, I shall only add that, if you think there is a chance of the hernia descending again, I have

to request that you will obtain for him another truss on the same principle, but with a lighter spring than the one he now wears. *

Believe me,
My dear Dartnell,
Yours very truly,
(Signed) ALEXANDER SMITH,
Staff-Surgeon, 2d Class.

* This man was supplied with another truss having a very light spring: was soon after considered to be radically cured of his rupture, and sent out in the Spring of 1848 to join his Regiment in India, as a perfectly effective Dragoon.

No. 11. (Extract from the MEDICAL TIMES.)

"This simple and economical instrument has for nearly two years been extensively employed in the Army, and has been spoken very favourably of by many Military Surgeons who have used it. It seems particularly adapted for general use in the Army, and will, we think, be found by civilians afflicted with hernia, an instrument superior to those commonly used."

No. 12. Rochester,
6 June, 1848.

My dear Sir,

Several of my patients have now made trial of your truss; and all of them speak strongly of the comfort and effectual support afforded by them. Their good qualities, and the great diminution of price, have determined me always to recommend them in preference to any others.

I am,
My dear Sir,
Yours truly,
(Signed) GEO. E. ELY, M.D.,
Surgeon Medway Union.

No. 13. Edinburgh,
24 August, 1848.

My dear Sir,

I have to thank you very much for the truss, the merits of which I shall have much pleasure in making known to my colleagues in Edinburgh, and to my pupils during the ensuing Winter session. The truss I propose to deposit in the little Museum attached to the class of Military Surgery in our University, which contains many valuable contributions from the Medical Officers of the Army.

I have now little or no opportunity of testing the merits of your invention personally, but I like the common-sense principles of its

construction, and am quite satisfied with the favourable opinion expressed of it by my excellent friend, French, whom I hope to see before he leaves Scotland.

Believe me,
My dear Sir,
Very truly yours,
(Signed) GEO. BALLINGALL,
Professor of Military Surgery.

To Staff-Surgeon Dartnell.

No. 14. Detachment Hospital,
Brompton Barracks,
2 Sept. 1848.

My dear Dartnell,

It is but justice to you to state that, being much pleased with the principles and construction of your truss, we felt it our duty to express the same to the Principal Medical Officer, Dr. French. We have now great pleasure in again recording our opinion, and have no hesitation in saying that the truss invented by you far surpasses everything of the kind we have ever seen, in utility, lightness, durability, and comfort to the wearer.

We have had it tried here upon a large scale, and all the men to whom it has been supplied have uniformly expressed the greatest satisfaction in its use, and the easy and comfortable support it has afforded them.

Believe us to be,
Yours very truly,
(Signed) J. F. PINK,
Surgeon Provisional Battalion.
A. MACLEAN, M.D.,
Staff-Surgeon 2d Class.

No. 15. Aberdeen,
24 October, 1848.

My dear Sir,

I have great pleasure in informing you that I am much pleased with the principles and construction of the truss invented by you, and that I have determined on recommending the use of it by my patients. It has the excellent qualities of lightness, durability, and admirable adaptation for affording effectual support.

I beg your acceptance of the accompanying copy of my paper on Herniotomy.

Believe me,
My dear Sir,
Yours very sincerely,
(Signed) WILLIAM PIRRIE,
Regius Professor of Surgery,
Aberdeen.

To G. R. Dartnell, Esq.,
Staff-Surgeon.

No. 16. General Hospital, Fort Pitt,
1 Nov. 1848.

While stationed at Fort Pitt, for a period of twenty months, I have had many opportunities of applying the truss invented by Staff-Surgeon Dartnell, as well as of observing its effects in numerous cases of inguinal rupture; and in every instance its application was successful, and gave the utmost satisfaction to the wearer.

I have also had opportunities of employing it in children with the most favourable result, where common trusses utterly failed.

From its small and convenient size, trifling weight, and durable material of the rupture pad, its merits in tropical climates cannot be over rated.

(Signed) W. DENNY,
Staff-Surgeon 2d Class,
In charge of Government and Compassionate Female Hospital.

No. 17. Chatham,
3d November, 1848.

My dear Sir,

I have much pleasure in reporting to you that my opinion of your solid-pad truss continues unaltered. It is the most perfect instrument for enabling a patient to sustain the evils of hernia with which I am acquainted. I have used it both in old and young persons with the very best results.

Believe me,
My dear Sir,
Yours sincerely,
(Signed) ARCH. ROBERTSON,
Surgeon.

To G. R. Dartnell, Esq.,
Staff-Surgeon.

No. 18. Chatham,
4 Nov. 1848.

Sir,

Having unfortunately ruptured myself about ten months ago by a trial of strength, I was fitted within two months with patent and other trusses by different makers, but the rupture being unsupported by any of these, I was recommended to try one of your improved trusses. I did so, and am happy to say that I have not only experienced from this instrument the greatest possible ease and comfort, but believe it has already effected a permanent cure. I have continued to wear the truss night and day, and the rupture has never descended since it was first put on in March last.

Within the last few weeks I have joined Earl Darnley's Troop of

Yeomanry Cavalry, and believe myself now to be as sound and efficient a horseman as I was before the accident occurred to me.

I remain,
Sir,
Yours respectfully,
(Signed) SAML. MORRIS.

To G. R. Dartnell, Esq.,
Surgeon to the Forces.

No. 19.

Chatham,
5th Nov. 1848.

My dear Sir,

I have much pleasure in testifying to the fact that your truss in my opinion far surpasses in simplicity, lightness, and efficiency any instrument of the kind I have ever seen.

Several of my patients have now been wearing your trusses for a considerable time, and all acknowledge the great comfort and relief they have experienced from the very first day of their application, and being since enabled, with perfect ease and security, to pursue their ordinary avocations, which in many instances are of the most laborious description.

I remain,
Faithfully yours,
(Signed) E. A. STEDDY,
Surgeon.

To G. R. Dartnell, Esq.,
Staff-Surgeon.

No. 20.

Chatham,
11 November, 1848.

Dear Sir,

It is with much pleasure I have to inform you of the benefit my son has derived from wearing your truss.

He became ruptured about twelve months since, and finding after a time that the truss we procured for him caused considerable uneasiness, we applied one of yours ; and from that time to this he has worn it night and day ; and is able to take any amount of exercise without appearing to be in the slightest degree uncomfortable. The ruptnre has never descended, and I have every reason to believe that it is a permanent cure. The child is now nearly seven years of age.

I am,
Dear Sir,
Yours much obliged,
(Signed) THOS. HOLLICK,
To G. R. Dartnell, Esq. Druggist.

No. 21.

Military Prison, Fort Clarence,
30 Nov. 1848.

My dear Sir,

I have taken every opportunity this Prison affords of testing the merits of your truss, and I have much pleasure in informing you that, when well fitted, I consider it far superior to those in common use in the army, and much preferred by the soldier from its lightness, efficiency, and the freedom of motion it allows the wearer.

I am also happy to inform you that, in one case, where a young Artilleryman in this Prison ruptured himself in hastily and carelessly lifting a 32lb. shot, your truss succeeded in effecting a radical cure.

The truss was applied on the 5th of August, and the prisoner was released and discharged to his duty on the 10th of October, with every indication of a permanent cure. I again saw him on the morning of the 11th instant, and found my former opinion completely confirmed.

I remain,
Very truly yours,
(Signed) E. KELAART, M.D.
(Vide No. 22.) Surgeon Military Prison.

No. 22.

Royal Ordnance Hospital,
Chatham,
5 January, 1849.

My dear Sir,

I have to inform you that gunner and driver Charles Snook, of the 10th Batt. Rl. Artillery, who was ruptured while at shot drill in Fort Clarence Prison, in the beginning of August last, is at present cured. He continued to wear your truss for three months, but for the last six weeks has performed all duty without it, and there is no protrusion of the intestine whatever.

I remain, my dear Sir,
Yours very truly,
(Signed) T. H. QUIGLEY,
G. R. Dartnell, Esq., Senior Surgeon,
Staff-Surgeon. (Vide No. 21.) O.M.D.

No. 23.

14, Saville Row, London,
31 March, 1849.

My dear Sir,

I am very much obliged by your kindness in sending me a specimen of your new truss. It certainly seems very probable that there may be much advantage in having the power to alter the figure of the pad so as to adapt it to the various kinds of hernia.

I shall be very glad to avail myself of an opportunity of trying the truss,

And am, dear Sir,
Your faithful servant,
(Signed) B. C. BRODIE.

(No. 24) 16 August, 1849.

My dear Dartnell,

I am very happy to state that I highly approve of your truss, and consider it to be the best I have yet met with ; its neatness, compactness, and efficiency, rendering it invaluable.

In all cases in which I have used your truss I have found it to answer remarkably well, and to give the patient great comfort.

A friend of mine, for whom I procured one of your trusses, assures me that he likes the truss very much and derives great comfort from it. He is enabled since he got it to ride a good deal, also to play at cricket, and other athletic exercises, and finds no inconvenience whatever from the truss when it is properly applied and secured.

Believe me,
Yours sincerely,
(Signed) JOHN DAVIES,
Surgeon 49th Regt.

No. 25. Chatham Barracks,
8th October, 1849.

My dear Sir,

I have had repeated opportunities of seeing your new truss in use on soldiers in this Garrrison, and have no hesitation in declaring that for comfort, portability, and the rendering of efficient support in cases of hernia, it is far superior to any instrument of the kind I have seen ; and is infinitely preferred, by all who wear it, to any other.

I remain,
Dear Sir,
Ever faithfully yours,
(Signed) G. H. BLAKENEY,
Staff-Surgeon, 2d Class,
attached to Pro. Batt.

To Staff-Surgeon
Dartnell.

No. 26. General Hospital, Fort Pitt,
17th October, 1849.

My dear Sir,

I have much pleasure in bearing my humble testimony to the superior merits of your improved truss, which my position in this establishment has given me such ample means of judging of during the last three years.

I may also add that, an old and intimate friend, who has been afflicted with a double hernia for upwards of 30 years, and for whom I obtained one of your trusses about a year ago, authorises me to express to you, in the most unqualified terms, the great comfort he has experienced from it, especially in contrast to the heavy and inefficient one he had been wearing before. I have reason to believe that he is now permanently cured on one side by the use of your

truss, and from the rupture on the other side, which was large and troublesome, he now feels no inconvenience whatever.

Believe me, my dear Sir,
Yours very truly,
(Signed) J. LEWIS,
Surgeon, H.P.
In charge of Medical Stores.

G. R. Dartnell, Esq.,
Staff-Surgeon.

No 27.

Mem.—Surgeon Power, 91st Regiment, since dead, in speaking of my truss, soon after his arrival from the Cape some months ago, told me that he had used it with some of his men when employed on active service in the field, and that he had found it to " answer admirably."

GEO. R. DARTNELL.

No. 28. Fort Pitt, Chatham,
21st Nov. 1849.

My dear Sir,

I have had numerous opportunities of testing the merits of your truss whilst doing duty in this hospital. It appears to me to answer the purposes for which it is intended most admirably.

It is in itself light, and of durable material. It affords most efficient support; indeed in this respect, I have known it succeed in cases where those constructed on different principles had totally failed. I would recommend it also on the score of comfort; and soldiers who have worn your truss, after trying those made by others, invariably give yours the preference.

I remain, my dear Sir,
Yours truly,
(Signed) J. ROSS JAMESON, M.D.
Staff-Surgeon, 2d Class.

To Staff-Surgeon Dartnell.

No. 29. Nov. 22, 1849.

I have great pleasure in bearing testimony to the value of Staff-Surgeon Dartnell's modification of the truss for the relief of hernia. I have witnessed its application in many instances wherein it was productive of great comfort to the patient, who had, without relief, been previously using instruments less adapted to effect the purpose designed.

Further, I have seen this truss effective in retaining a rupture within the abdomen, which had been considered incurable by more than one Surgical Practitioner, and which had consequently been permitted to remain in the scrotum until it had attained a very great size.

(Signed) THOMAS SPENCE, M.D.,
Staff Surgeon
in charge of Medical Division,
General Hospital, Fort Pitt.

No. 30. Fort Pitt,
Dec. 5, 1849.

My dear Sir,

I have great pleasure in stating that while in charge of the Medical Stores at Quebec, I issued your truss very generally throughout the Command, and have every reason to believe that it everywhere gave satisfaction.

Of the cases which have come under my own observation, I can say the same ; and only a few months since I applied it in the case of a soldier's wife, an elderly woman, very stout, and with a large inguinal hernia, which has given her no trouble since.

Very truly yours,
(Signed) J. D. MACDIARMED, M.D.,
Staff Surgeon, 2d Class,
in charge of the
Female Hospital.

G. R. Dartnell, Esq.,
Staff Surgeon.

No. 31.

I have been in the habit for this last twelve months of using Staff-Surgeon Dartnell's trusses for hernia, and in all cases my patients have expressed their comfort and ease in the wear of them, and the facility with which they keep their position ; and so far as my experience goes, I do believe them superior to all other trusses now in use.

(Signed) E. EDWARDS,
Surgeon.

Strood,
Dec 6, 1849.

No. 32. Fort Pitt, Chatham,
Nov. 22d, 1849.

Since my arrival here in Oct. 1848 I have had many opportunities of testing the qualities of Staff-Surgeon Dartnell's Rupture Truss amongst the numerous invalids sent from Home and Foreign Stations to this establishment. No other truss is now used by the Military at this station ; and I am of opinion that it is as near an approximation to a perfect truss as can be made.

With a slight modification I have seen Mr. Dartnell's truss used in a case of femoral hernia with great comfort and advantage.

(Signed) W. HENRY,
Deputy Inspector General,
Principal Medical Officer.

CADDELL AND SON, PRINTERS, GAZETTE-OFFICE, ROCHESTER.

sometimes anatomy, sometimes pathology, being first in their turn, but therapeutics was always to be found lagging behind. Professor Simpson concluded by expressing how much the Society was indebted to Dr Begbie for his valuable observations.

Drs Seller, Gairdner, and Alexander Wood, expressed their concurrence with the remarks of Professor Simpson, in reference to Dr Begbie's communication ; regarding it as one of the most interesting and instructive which had ever come before the Society.

ROYAL COLLEGE OF SURGEONS—CONVERSAZIONE.

At a Conversazione held in the Hall of the Royal College of Surgeons, on Friday, the 26th of February, Dr P. H. Watson, F.R.C.S., delivered a most interesting lecture, narrating his experiences in the hospitals in the East during the Crimean campaign. The lecturer was introduced by Dr Omond, the President, as having undertaken the narrative at the request of the College.

Dr Watson, in the course of his lecture, described the hospitals of Smyrna, Scutari, Kululi Therapea, the Sanatarium above Balaclava, and at Karani. He dwelt particularly upon the incidents occuring in these hospitals which came under his own observation. He maintained that the medical department of the army had been subjected to most unjust censure, through unprofessional criticism. He warmly eulogised the conduct of the lady nurses, who, in the discharge of their duties, had exerted themselves beyond all praise.

The lecture was admirably illustrated by a series of large paintings of the more important places described in the narrative. At the conclusion of the address, Dr Maclagan, President of the College of Physicians, moved that a vote of thanks should be accorded to the lecturer. This was most heartily seconded by Colonel Anderson, R.H.A., and agreed to by general acclamation.

Among the guests of the evening were several of the magistrates, the office-bearers of the Merchant Company and of the Chamber of Commerce, the President and Council of the Pharmaceutical Society, the Staff Surgeon of the district, the Regimental Surgeons, and a number of physicians and surgeons of Edinburgh and the neighbourhood. The very numerous company were received by the President of the College.

THE LATE SIR JAMES M'GRIGOR, BART., K.C.B.

We have to announce the death of Sir James M'Grigor, which occurred at his residence in Harley Street, Cavendish Square, London, on the 2d April.

This distinguished officer, who formerly occupied the position of Director General of the Army Medical Department, was born at Strathspey in 1771. He was the eldest son of Mr Colquhon M'Grigor, merchant, Aberdeen, at Marischal College, in which city, he received his education. He afterwards pursued his studies at Edinburgh, under Black, Munro, and Gregory. He entered the army in September 1793, as surgeon of the 88th or Connaught Rangers, accompanied this regiment abroad the following year, and served with it throughout the Duke of York's campaign in Holland and Flanders. In 1796 he proceeded with the same regiment to the West Indies, to serve under Sir Ralph Abercromby. Soon after his arrival there the 88th were ordered to form part of a force against the island of Grenada, and Sir James M'Grigor was appointed Medical Superintendent of the expedition. Here he was shipwrecked. His next tour of foreign service was with the 88th Regiment to Ceylon and the East Indies. From Bombay he proceeded to Egypt as Superintending Surgeon of the Anglo-Indian army under Sir David Baird. This force was composed of Europeans and Sepoys. Shortly after landing at Kossier, and in crossing the Great Desert, they suffered severely from ophthalmia. General Baird's army suffered also from the plague ; and perhaps the first who came

nearly in contact with this terrible disease was Sir James M'Grigor. One morning on going into the hospital he observed a Sergeant of the 88th Regiment with a swelling under his arm-pit. Other cases of swelling in the arm-pit or groin quickly followed the first, most of them ending in death, and all of them exhibiting symptoms which left in Sir James' mind no doubt of the outbreak of the plague. He immediately established quarantine and a plague hospital. The expeditionary force under Sir David Baird was subject to fever, small-pox, and other diseases; accounts of which may be found in a work published by Sir James M'Grigor in 1804, entitled *Medical Sketches of the Expedition to Egypt from India.*

After the return of the 88th Regiment to England, Sir James M'Grigor was appointed Surgeon to the Blues. He was next appointed Inspector of Hospitals of the south-western district of England, and quartered at Portsmouth. An immense number of wounded men were at this time being sent home from Sir John Moore's retreating army, and it was part of Sir James M'Grigor's duty at Portsmouth to superintend the landing and treatment of these men, who were in a very lamentable condition.

The next field of his labours was Walcheren, where he was appointed to succeed Mr Webb (afterwards Sir John Webb), as chief of the Medical Department. He reached Walcheren on the 29th September, at a time when the number of sick, according to the official returns, was 9000. Sir Eyre Coote, who succeeded Lord Chatham, bore warm testimony to his exertions in various despatches. Sir James continued his onerous duties under Sir George Don, who succeeded Sir Eyre Coote, and made numerous suggestions for preventing the sick, who at length became the greater part of the army, from falling into the hands of the French, who were fast approaching Walcheren in overwhelming numbers. At the end of December the remnant of a fine army had evacuated the island, and Sir James M'Grigor was again appointed chief of the Medical Staff at Portsmouth. The interesting papers on Fevers, etc., the fruit of his careful observations abroad, were given to the public at this time.

As the reinforcements for the Duke of Wellington's army in Spain were sent from this place, it was part of Sir James M'Grigor's duty to go on board every vessel for the purpose of inspecting the health of the soldiers who were destined for active service. On the 30th October 1811, the late Duke of Wellington wrote from Portugal, that the Inspector of Hospitals was so unwell as to be obliged to go home, and that the department under him was so important that it would be necessary to have the most active and intelligent person that could be found to fill his station. Sir James M'Grigor was nominated his successor, and was enabled in December 1811 to assume the duties of the Medical Department in the Duke of Wellington's Army. His subsequent exertions on the burning plains of Castile and the snowy ridges of the Pyrenees, in the retreat from Burgos, at the sieges or battles of Ciudad Rodrigo, Badajoz, Salamanca, Vittoria, and all the engagements down to the final one of Toulouse, fully gained him the confidence of his great commander. It is a circumstance worthy of note, and reflects equal credit on the liberality of the Commander-in-Chief, and on the zeal and ability of the medical officers of the army, that for the first time the service and merits of the professional men were noticed at this period in the public despatches of the Duke in the same manner as those of their companions in arms, the military officers, and were published in the *Gazette*. Several of the despatches edited by Colonel Gurwood abound with praises of Sir James M'Grigor and his department; but perhaps the best comment on his exertions may be found in that despatch of the Duke of Wellington, written soon after the end of the Peninsular War, dated 26th July 1814, in which he states:—"I have every reason to be satisfied with the manner in which Mr M'Grigor conducted the department under his directions; and I consider him one of the most industrious, able and, successful public servants I have ever met with." As proofs of the esteem in which he was held by the medical officers of the army, it may be mentioned that a service of plate of the value of 1000 guineas was presented

to him, and his portrait by the late J. Jackson, R.A., was presented to Lady M'Grigor.

Sir James M'Grigor was, on the return of the Army in 1815, knighted and appointed Director-General of the Medical department of the Army. Fortunately, while the events of the Peninsular War were still fresh in his recollection, he found leisure to write a narrative entitled, *Sketch of the Medical History of the British Army in the Peninsula of Spain and Portugal during the late Campaign.* For upwards of thirty years he remained at the head of this department. During this period he was made a Knight Commander of the Bath, raised to the dignity of a Baronet, and honoured with other marks of favour. He was, moreover, thrice elected Lord Rector of Marischal College, Aberdeen; presented with the freedom of the city of Edinburgh; elected a Fellow of the Royal Society of London, and honorary Fellow of the Royal College of Surgeons of Edinburgh; and chosen a member of various societies in London, Edinburgh, Glasgow, Dublin, Paris, Montpelier, New York, Quebec, etc. He was also Physician Extraordinary to Her Majesty. It may be added that Sir James M'Grigor received a large share of medals for battles and sieges at which he was present, and that he was a Knight of the Cresent and of the Tower and Sword for services in Egypt and in the Peninsula of Spain and Portugal.

Any notice of Sir James M'Grigor would be incomplete which failed to record the untiring interest which he took in all that concerned the scientific status and social position and comforts of the medical department of the army. To Sir James the country owes the institution of the admirable Museum and Library at Fort Pitt, Chatham, which, in connection with the Hospital, form such an important school of instruction for young men, who, under the guidance of the principal medical officer there, enjoy the most favourable opportunities of acquiring a knowledge of their profession. To him also the medical department of the army owes the establishment of the Widows' Fund and the Benevolent Fund, which have contributed so largely to the relief of the suffering and unfortunate. We trust that, at no distant period, a memoir of the services and character of Sir James M'Grigor will be prepared; and it may be borne in mind by his biographer, that, besides the portrait by Jackson mentioned in this short notice, another from the brush of Sir David Wilkie, an intimate and valued friend of Sir James, is to be found at Fort Pitt.

Sir James M'Grigor had attained the great age of eighty-seven years, fifty-five of which were spent by him in active service at home or abroad.

He retired some years ago from the honourable and important position which he had held to the great advantage of the public service for so long a period, and spent his declining years in the privacy and happiness of that domestic circle in which he had so much true enjoyment. He was at times an acute sufferer; but this never prevented him receiving the visits of his old friends with that cordiality which was peculiarly his own; and during his last years, when he laboured under considerable failure of vision, his correspondence was kept up with those residing at a distance by an amanuensis.

The last illness of Sir James M'Grigor was only of a few days' duration, and a fatal termination was not anticipated till within a day of his death.

Surrounded by his attached family, consisting of Lady M'Grigor, whose watchful care was incessant, his only and much-loved daughter Mrs Phillips, and his two sons, the venerable man gently fell asleep, whispering with emphasis and clearness, "I am happy."

A letter addressed to Dr Maclagan, one of Sir James' oldest friends, says, "Sir James was remarkably tranquil and composed, and knew all his friends till nearly the very last. He had a firm reliance on his Saviour, and looked forward with joy to entering into his everlasting rest."

So peaceful and calm a close to a life singularly stirring and eventful was characteristic of the man, who combined intense application and industry in public matters, decision of character and energy in action, with the liveliest enjoyment of the charities and affections of domestic life.

VARIETIES.

APPOINTMENTS.

The vacancy made by the death of Mr Travers has been filled up. Mr Lawrence has been appointed Serjeant-Surgeon to the Queen, and Messrs Stanley and Paget, Surgeons Extraordinary. It will be observed that one hospital, viz., St Bartholomew's, has supplied all the appointments.

James Moncrieff Arnott, Esq., F.R.S., has been appointed Surgeon in Ordinary to Prince Albert, in the room of the late Benjamin Travers, Esq.

Dr Alfred Taylor has been elected Examiner in Chemistry for the Medical Faculty of the University of London. The other candidates were Professor Miller, M.D., of King's College, and Mr Frankland.

Dr Matthews Duncan, Lecturer on Midwifery, Edinburgh, has just been elected a corresponding member of the Imperial-Royal Society of Physicians of Vienna.

Dr P. H. Watson, Lecturer on Surgery, Edinburgh, late Assistant-Surgeon Royal Artillery, has been appointed Surgeon to the Edinburgh Eye Infirmary.

DEATHS.

M. Chomel, the eminent physician of the Paris Hotel Dieu, died on 9th April, at his country seat, after a long and severe illness.

We also notice the death recorded of Baron Philippe Boyer, aged 57, Surgeon to the Hotel Dieu, and son of the celebrated French surgeon Boyer.

THE SERGEANT-SURGEON.—The stipend of this office used to be 595 marks, which is equivalent to L.396, 13s. 4d. per annum. The following is a list of those surgeons who have held the appointment during the last eighty years:—Sir Cæsar Hawkins, Dr Middleton, Mr Samuel Hawkins, Mr Charles Hawkins, Sir David Dundas, Bart., Sir Everard Home, Bart., Mr Patrick M'Gregor, Sir Astley Cooper, Bart., Sir B. C. Brodie, Bart., Mr Robert Keate, and Mr B. Travers. Of the above twelve, Sir D. Dundas filled it for the longest period (34 years), viz., 1772–1826, and Mr Travers the shortest time. The Sergeant-Surgeon has L.400 a-year for accompanying the Queen to the field of battle, when Her Majesty shall find herself opposed to the enemies of her country, and may require the veteran Lawrence's services.—*Lancet*, April 17.

DEMISE OF GERMAN CELEBRITIES.—The literary world of Germany has to lament some fresh losses. Professor Franz Kuglar, known by his many excellent works on the history of art, died suddenly on the 18th March, at Berlin, where he had filled for some years an important position in the Ministry of Public Instruction. Kugler was born on the 19th January 1808, thus reaching an age of only fifty years. A few days before, on the 16th March, the natural philosopher, Gottfried Nees von Esenbeck, died at Breslau, at the age of eighty-two years. In 1817, he was named Professor of Botany at the University of Erlangen; was chosen, in the same year, President of the Imperial and Royal Academy of Natural Philosophers, at Vienna; lived, from 1818 to 1830, as a public lecturer at the University of Bonn, and was then called in the same capacity to the University at Breslau. In 1848 and 1849 a partisan of the revolutionary movement, he, in 1852, was dismissed without a pension from public service. In consequence of this the last years of the veteran were passed in indigence and want. He parted with his valuable library and scientific collections, and had, besides, to recur to the assistance of friends and former pupils for the modest maintenance of a rapidly declining life.—*Athenæum*.

THE LAW OF EVIDENCE.—A Bill presented by Lord Brougham proposes further to amend the law of evidence, as well in criminal as in civil proceedings. Any person on trial for treason, felony, or misdemeanour may offer himself as a witness in his own behalf, such person to be sworn and subject to cross-examination. No writing of such person will be receivable in evidence unless called for by the prosecutor. Such witnesses will not be protected from answer-

ON SPIRAL

ELASTIC COMPRESSION

IN THE PRACTICE OF

Medicine, Surgery, and Midwifery.

BY

PHILIP BOURJEAURD,

Late Surgeon in the Navy.

11, DAVIES STREET, BERKLEY SQUARE, LONDON,

AND 11, RUE DES BEAUX ARTS, PARIS

1858.

G. HILL, PRINTER, WESTMINSTER ROAD.

LONDON:
G. HILL, PRINTER, WESTMINSTER ROAD.

PREFACE.

I beg to offer, in the following pages, a few observations on Elastic Compression, in the practice of the healing art, feeling assured that the many years' experience I have had in this ancilliary branch of Medical Science, will give weight to my remarks. I hope and trust that every professional man in the United Kingdom will become as fully convinced as I am of the great value of properly managed Elastic Compression.

PHILIP BOURJEAURD,
LATE SURGEON IN THE NAVY.

11, *Davies Street, Berkeley Square, London,*
and 11, *Rue Des Beaux Arts, Paris.*

April, 1858.

ON

SPIRAL ELASTIC COMPRESSION.

Section I.

General advantages of compression and extensive use of it in the practice of Medicine, Surgery, and Midwifery.

When we cast a general glance over all the ailments "flesh is heir to," we cannot help remarking that well-regulated pressure plays an important part in therapeutics. In various morbid states, the fluids of the economy have a tendency to escape, or they may, on the contrary, accumulate in some of the cavities; whilst the solids, on the other hand, may, from injury or disease, gape into wounds or fall into ulceration or gangrene.

The escape of blood, this valuable fluid, this "chair coulante," as it has graphically been called, was probably the first circumstance which, among the earlier inhabitants of the globe, called forth the aid of pressure. Then it was probably found, after the command of hœmorrhage, that the union of parts was greatly favoured by complete apposition of the lips of the wounds and gentle pressure to keep up such apposition. So that the pressure of the finger and the use of rollers and compresses have apparently been the first steps in the healing art, which latter was of course originally called into existence by the occurrence of wounds and the different forms of ulceration. Means of effecting compression, simple and rude at first, were gradually improved; and such improved means applied to the treatment of fractures and to the prevention of renewed displacements after the reduction of luxations. Nor were the Physicians of old long in discovering that, in œdema and dropsy, compression favoured the action of the absorbents; and well regulated pressure was, therefore, used, along with other appropriate remedies, to dispel ascites and œdema in the lower extremities.

If we descend through ages and finally come to the practice of the art in our days, we meet, at every step, with complaints in the treatment of which pressure forms no inconsiderable part. In walking through the wards of a hospital we find the beneficent action of pressure taken advantage of in the medical, surgical, and obstetrical wards, the number of cases being the greater in the two former. What are, after all, our numerous kinds of apparatus for fracture, for the rectification

of deformities, our ways of dressing wounds and ulcers? but different, very effective and ingenious applications of the same principle, viz. that of methodical pressure. How do we attempt to excite absorption of the contents of an ovarian cyst? of giving support to a displaced or prolapsed uterus in the obstetrical wards? plainly by the means just alluded to, but managed and modified in such a manner as to suit the anatomical disposition of the parts affected. What is to be done with œdema of the legs, with ascites, &c. &c., in the medical wards? We must, principally, of course, endeavour to remove or modify the *cause* which has given rise to the dropsy; but we also should try to afford relief by diminishing the tension of parts, this being again done by pressure.

Even in diagnostic investigations we have recourse to slight, short, but often repeated pressure, to ascertain the state of parts beneath and the degree of inflammation or disorganization, our opinion being formed by the amount of pain which pressure gives rise to. How many cold abscesses have been dispersed by pressure! How many enlarged lymphatic glands have been reduced in size by the same means! How many displaced knuckles of intestines have been kept within the abdomen by well directed pressure! Orthopedic practice illustrates, with its pads, rods, and screws, the advantages of pressure in counteracting certain deviations; and we find pressure, used under these circumstances, to act in concert with the process of nutrition and growth. Pressure, in orthopœdic practice, gives a proper direction to these two forces; and will sometimes, if well managed and applied sufficiently long, lead to the most wonderful results. It is plain, from the foregoing statements, that pressure is a valuable therapeutic resource, and that it is highly advantageous for the community that competent men should be endeavouring to find out the most effective and at the same time safe means of using it.

Section II.

Difficulty, on the one hand, of regulating compression; and importance, on the other, of applying it with accuracy.

We saw, in the preceding section, how universal is the use of compression in the practice of the healing art; but we should not conceal from ourselves that such compression, to attain its object, must be carefully regulated. I need hardly allude to the consequences of arrest of circulation in any part of the frame, consequences which are known to all medical men, and which will vary in importance according to the portion of the frame subjected to pressure.

It would, *primâ facie*, appear that the difficulty alluded to hardly exists, as we always have the sensations of the patient to guide us; but it is not so: for it may occur that a patient experience no pain whatever, when nevertheless the pressure is either too powerful or applied in the wrong place. Œdema, perverted sensation, or even incipient sphacelus will, however, soon tell their dismal tale, and show that some circumstance has been overlooked in the application of pressure.

But suppose that all anatomical and physiological facts bearing on the question have been duly weighed and considered, we have still to think of the peculiarities of individual patients, and of the pathological changes, as œdema, &c., which may occur in a given case. Pressure about the abdomen or chest offers a very important problem; for the difficulty here lies in preventing protrusion, and in so regulating the pressure as to do no injury to the viscera, the displacement of which we desire to counteract. A like caution is to be observed when mechanical pressure is applied about the spinal column and chest, with the intention of rectifying deviations and curvatures. Difficulties are no less in number when we are expected to apply compression to the testes, perinæum, anal region, &c.; and yet it is perfectly clear that no favourable results can be obtained, except accuracy, as to the amount of pressure, be obtained. If compression is too weak, our hopes as to any favourable results are idle; if it be too powerful, we are doing mischief; hence it stands to reason that accuracy as to the proper quantum of force to be used, and nicety as to actual application, are matters of sufficient importance to induce the surgeon, and those he calls to his aid, to bestow the utmost attention on the theory and practice of artificial compression in the treatment of disease.

Section III.

On elastic compression, in general, and spiral *compression in particular.*

Having now passed in review the numerous instances in which compression is used, and shown how difficult and important is its application, I come to speak of pressure exerted, not by unyielding rollers, bandages, splints, rods and screws, but by apparatuses mainly composed of elastic tissues. The introduction of these tissues in medical practice is to be looked upon as an event of much importance to the community at large; for it cannot be doubted but that the use of elastic bandages and apparatuses have been of immense benefit to patients.

It is hardly necessary to remark how much *rigid* means of pressure and support differ from *elastic* appliances; and how much more congenial to the living organism is that kind of compression which, in some degree, fashions itself according to the exigencies of the portion of the frame on which it acts. The various parts of the body subjected to *unyielding* pressure offer resistance to the compressing agent; and hence arises a kind of contention between the latter and the former. If the animal tissues have the worst of it, they may suffer very materially in the manner I have described above; and if the resistance alluded to overcomes the compressing agent, the benefits expected from pressure are nugatory. It is hence abundantly clear that an enormous advantage is gained by using *elastic* tissues, as they will yield just enough to prevent mischief; and sufficiently re-act afterwards to effect compression to the desired degree.

I need not here enter into a description of the stages by which elastic appliances passed until they reached the highly improved condition they have attained in my hands; suffice it to say, that the lacing, ordinary webbing, &c., presented so many defects, that I set my mind to discover means of remedying them, and allow the community to reap the advantages of elastic compression free from the drawbacks with which practice has shown it to be connected. After trials of various kinds, after the sacrifice of much time and labour, I had a webbing manufactured which presented all the necessary guarantees; and I introduced into practice my spiral or circular system, which has now for many years held the foremost rank in elastic appliances. By this system, *unyielding* pressure was obtained from below upwards, and a yielding compression circularly; the return of the venous blood was thus favoured, and the arterial action greatly assisted.

To these important advantages, another and no less important one was added, by further attention to the subject. It consists in varying and nicely adapting the elastic compressing force of the circular bands, so as to effect, according to the wishes of the medical man, more or less pressure upon a given spot or part. By this means, a very high state of perfection was attained; and my expectations have been fully answered by the many practical illustrations which have come before me, through the instrumentality of the profession. I have applied the principle just mentioned in the numerous kinds of appliances which patients require: such as stockings, abdominal belts, &c., and have invariably found that both the patients and their

medical attendants congratulated themselves on having made use of my inventions.

Section IV.

Danger of using apparatuses ready made and applied by unskilled persons.

I now come to a very interesting point, and one which should especially be taken into consideration by the profession at large: viz. the dangers attending the use of *ready made* bandages. From the remarks contained in the foregoing section, it is evident that my efforts were principally directed to *individual* adaptation, well knowing that no good results could be expected if that aim were not held in view. The fact is that there are no two cases alike, and that if pressure is to do any good, it should be of such energy as is required by the case in hand, neither more nor less. The great point is that the intentions of the medical man in attendance should be properly understood, and then accurately acted upon. But this cannot be done except the elastic appliance be constructed exactly to suit the exigencies of the particular case; and I need not say how much these exigencies will vary.

The elastic force of the bands which I use is calculated to a nicety, by a peculiar system, and so classed that I can fortell to what extent the compression will be carried by a given set. I then have to arrange the sets of individual bands of different forces, so as effectually to carry out the wishes of the professional attendant. From these observations it may easily be imagined what mischief may unwillingly be done, by persons who place upon patients appliances taken from a ready-made stock. These persons, being thoroughly ignorant of the principles which should preside over such applications, cannot, with the best will in the world, do much good, and are daily exposed to do infinite mischief. It will therefore be very evident to every practitioner, that no such persons should be trusted, out of regard both to the well being of patients and the character of the medical advisers.

I am firmly of opinion that those who undertake the construction of elastic contrivances, should be entirely guided by medical men; and that the former should direct their whole attention to the carrying out of the views of the profession; but I also think that some anatomical and physiological knowledge is indispensable to those who are expected to prepare elastic bandages. No accurate adaptations, no improvements in the webbing or shape of the apparatuses can be expected, when the structure of the human body is a sealed book to the very men who are

to act upon it. It is far from my mind to encourage an improper encroachment on the rights and privileges of professional men; but I venture to express the opinion that the latter would be much better served, if those, whom they honour with their confidence, were more fully competent, by the knowledge of the structures they are expected to compress, to carry out, in a satisfactory manner, the views of the medical attendant. It can hardly be expected that *surgical instrument makers, bandage makers, stay makers, hosiers, shirt makers, &c., &c.*, should be sufficiently acquainted with anatomy and physiology to offer any guarantees as to the construction of elastic appliances; this ancillary branch of medicine stands alone, and should be especially cultivated with the aid of the knowledge to which I have just alluded; and I may be allowed to add that I feel extremely proud at having been instrumental in raising the calling to which I have devoted myself, to the proper standard of usefulness.

Section V.

A glance at some of the ailments relieved and often cured by elastic compression: as 1, *Varicose Veins;* 2, *Œdema of Legs;* 3, *Affections of the Testes;* 4, *Ovarian and other Dropsies;* 5, *Enlargement of Joints;* 6, *Inconvenient Development of Abdomen during Gestation;* 7, *Pendulous Abdomen after Parturition;* 8, *Obesity;* 9, *various kinds of Hypertrophy;* 10, *Glandular enlargement;* 11, *Prolapsus Uteri, Ani, &c., &c.;* 12, *Hernia.*

The above mentioned ailments are but a few of those in which elastic compression and especially spiral pressure have been found serviceable, but they illustrate, in a striking manner, how valuable are the therapeutic means to which I am directing attention.

Varicose veins about the lower extremity are never so effectually relieved as by elastic circular compression, and the support the latter affords to the weakened coats of the vessels may well be looked upon as an additional fascia which acts in a regular and gentle manner.

In serous œdema of the legs, the absorption of the fluids is favoured; and as this process takes place, the vessels regain their tone, circulation is stimulated, and, if there be no organic mischief, the œdema may entirely disappear. Even in liver, heart, or kidney disease, great relief is afforded by elastic compression of the legs, and the sufferings of the patient are greatly diminished.

In orchitis, incipient hydrocele, varicocele, &c., &c., we may

expect excellent effects from elastic pressure, or simply from well managed support, by means of bags made of elastic webbing kept *in situ* and exerting gentle compression by means of elastic bands running round the thighs and towards the chest. Indeed I hold that the strapping with adhesive plaster, which is sometimes employed to effect compression in subacute orchitis, would advantageously be replaced by an elastic bag embracing the affected organ.

In ovarian dropsy and ascites, the abdominal belt, on the spiral principle, effects a compression which at once favours absorption and takes off the weight of the accumulated fluid.* In ovarian dropsy, the belt, in some cases tapped at Paris, was applied before the operation, and made to compress powerfully; the trochar was then passed through a small hole made in the belt, and as the fluid escaped the elastic apparatus contracted upon the abdomen and gave it support. I conceive that methodical elastic pressure would hold out some hope of dispersing ovarian dropsies without operation.

Enlargement of joints depending on fibrinous deposits, after acute inflammation, cannot be treated more rationally and effectually than by elastic compression; it is truly wonderful how the swellings in such cases, as also in hydrarthrosis, will gradually diminish and finally disappear, simply by means of absorption excited by pressure. With joints, however, the greatest nicety is necessary, as compression should not go beyond certain limits for fear of mischief.

The old method of supporting an inconveniently large abdomen in gestation by a towel running from the hypogastrium to the neck, may fairly be abandoned and replaced with great advantage by my abdominal belt on spiral principles, which may be made more or less compressing either all over the abdomen or in any given part. The comfort thus given to pregnant women is very great, and it is to be hoped that obstetricians will advise their patients to make use of the abdominal belt both during gestation and after parturition. In the latter instance, the belt is especially useful as it counteracts the tendency to pendulous abdomen and thickness of waist, both of which the fair sex are extremely anxious to guard against.

Nor should I omit to state that the belt acts very satisfactorily in cases of obesity; indeed it is surprising that the belt is not

* See Dr. Todd's Clinical lectures on certain diseases of the urinary organs and on dropsies.—London, 1857. Page 252. "With these remedies (mercurials and diuretics in a case of ascites) was combined pressure on the abdomen by means of a bandage."

more generally employed, seeing the amount of comfort to be derived from it when the abdomen has taken a large proportion in consequence of adipose deposit. Such practitioners who shall advise its use, will bring upon themselves the warmest thanks of their clients, because the weight of the abdomen is hardly felt when the apparatus is well made, and takes a proper fulcrum on the spine.

Various kinds of hypertrophy may be favourably modified by circular elastic pressure; and I may add that I have constructed appliances of the elastic kind, to relieve prolapsus, uteri, and ani. The apparatuses will be found infinitely superior to pessaries, the use of which is now almost abandoned.

Nor will steel trusses for hernia bear comparison for a moment with the very effective elastic hernia belt which I have invented; and which, within the last few years, has received such numerous practical applications. The rings are pressed upon by pads filled with air, and the viscera of the abdomen are supported by a broad belt, the latter, by keeping up the internal mass, evidently diminishing the tendency to protrusion.

Section VI.

Conclusion.

It will be perceived by the rapid sketch which I have just offered of the advantages of compression in general, of the difficulties surrounding its use, of the superiority of elastic and especially spiral compression, of the dangers of apparatuses "in stock," and applied by unskilful persons, and of the principal ailments relieved and often cured by properly managed elastic compression, that I have by no means exaggerated the importance of the subject; and that the latter is full worthy the attention of the profession. My endeavours have been directed to the improvement of elastic appliances, and so highly approved has been the method which I have introduced, that I receive almost every day unmistakeable marks of confidence from professional men. The use of elastic appliances will become more and more extensive, and they will, at no distant period, be employed in cases which hitherto have been treated by other means. In these I include fractures, dislocations, contusions, &c., &c.; and it may confidently be asserted that the time is not far off when the construction and application of elastic appliances will become an important branch of medical science.

The annexed engraving is intended to give an idea of

Mr. Bourjeaurd's Abdominal Belt for Paracentesis, which is becoming extensively used, and with highly satisfactory results.

The apparatus consists of a belt of Silk or Lisle thread and caoutchouc, without seams; elastic laterally; large enough to reach from the sternum to the pubis; and capable of pressing powerfully, when once in place, on the entire surface of the parts to which it is applied. The circumference of the belt must be regulated by that of the abdomen, measured at the most prominent part. It ought to be tighter, the more the abdomen is distended with fluid, so that its compressing action may continue after complete evacuation. The difference between the dimension of the belt and that of the parts to be compressed can scarcely be determined precisely. It may be, according to the case, 8, 12, or 15 inches.

The belt is passed over the feet up to the body. When once in place, it exercises on the whole abdomen a pressure which is equal, constant, powerful and plainly felt by the patient. The sensation produced by it, more inconvenient than painful, diminishes as soon as the fluid, an opening being being made by the trocar, begins to escape, which it does in a full and continued stream until entirely evacuated. When the fluid is all evacuated, the retractile force of the belt is sufficient to compress the abdominal walls, thus obviating the necessity of any other bandage. [See *British Medical Journal*, February 6th, 1858.]

The next page contains a description of some of the applications of the elastic spiral method, which has presided over most of Mr. Bourjeaurd's inventions.

ELASTIC APPLIANCES,

BY PHILIP BOURJEAURD.

11, *Rue de Beaux Arts, at Paris.* 11, *Davies Street, Berkley Square, in London.*

Fig. 1.

Fig. 2.

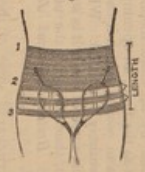


Fig. 3.

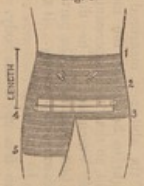


Fig. 4.

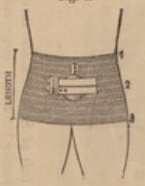


Fig. 5.

Fig. 6.

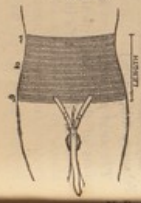


Fig. 7.

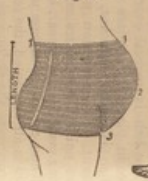


Fig. 8.

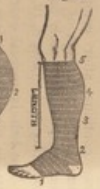


Fig. 9.

Fig. 10.

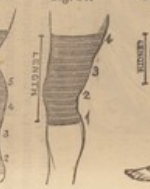


Fig. 11.

Fig. 12.

EXPLANATION OF THE ENGRAVINGS.

Fig. 1. Single Elastic Band, forming the basis of all the bandages on spiral or circular principles.
Fig. 2. Elastic Belt, with air pad for inguinal hernia. (*Front view.*)
Fig. 3. Elastic Belt for crural hernia, with a thigh piece.
Fig. 4. Apparatus for umbilical hernia.
Fig. 5. Hypogastric belt for displacement of the uterus.
Fig. 6. Apparatus with air pad, for prolapsus uteri or ani.
Fig. 7. Abdominal Supporter for ascites, gestation, obesity, &c.
Fig. 8. Complete Elastic Stocking for varicose veins, Œdema, &c.
Fig. 9. Elastic Stocking and knee-piece, for ditto.
Fig. 10. Thigh-piece and knee-piece.
Fig. 11. Knee-piece and Ancle-piece.
Fig. 12. Suspensory Bandage, with elastic bag, and central elastic straps.

CAUTION.

The disgraceful manner in which unprincipled parties are committing the most flagrant and barefaced piracies upon the inventions, drawings, and very words of Mr. BOURJEAURD, makes it incumbent upon him to denounce the nefarious practices of persons, who, incapable of devising or inventing any thing useful themselves, do not scruple to put before the medical profession, woodcuts and advertisements, calculated to rob Mr. BOURJEAURD of the well-earned reputation he has acquired, respecting originality of design, skill in execution, scientific and practical knowledge of correct adjustment. These shameless imitators, in spite of watching and copying, cannot approach the efficacy of Mr. BOURJEAURD'S simplest appliances; they bring misery and pain upon the patient and disappointment upon the few members of the medical profession, who are, unthinkingly, cheated into recommending them; and who, after one trial, and consequent failure, uniformly remove their patronage so surreptitiously obtained. Satisfied with the discovery that, to these pilferers, the nature, cause and effects of hernia—the nature, cause and effects of œdema, are a sealed book—that they either allow the evil to increase by want of support, or excite gangrene by over compression, and being totally unacquainted with anatomical and physiological laws, grope about in the dark, and commit blunders of the most foolish, but sometimes most dangerous kind.

The elastic spiral compressional appliances, are constructed solely by, and can be obtained only of, the Inventor and Patentee, Mr. PHILIP BOURJEAURD, No. 11, Davies Street, Berkeley Square, London, and No. 11, Rue des Beaux Arts, Paris; all others being spurious imitations.

NOTE.—*Patients of limited means and the poor are supplied at charges not exceeding the cost of Articles made of the common elastic fabric. At home from* 11 *to* 6 *o'clock.*

TABLE OF CONTENTS

SECTION.

1.—General advantages of Compression, and extensive use of it in the practice of Medicine, Surgery, and Midwifery. Page 5.

2.—Difficulty, on the one hand, of regulating Compression; and importance, on the other, of applying it with accuracy. Page 6.

3.—On Elastic Compression in general, and *Spiral* Compression in particular. Page 7.

4.—Dangers of using apparatuses ready made, and applied by unskilled persons. Page 9.

5.—A glance at some of the ailments relieved and often cured by Elastic Compression. 1st, Varicose veins; 2nd, Œdema of Legs; 3rd, Affections of the Testes; 4th, Ovarian and other Dropsies; 5th, Enlargement of Joints; 6th, Inconvenient developement of Abdomen during gestation; 7th, Pendulous Abdomen after parturition; 8th. Obesity; 9th, Various kinds of Hypertrophy; 10th, Glandular Enlargement; 11, Prolapsus uteri, ani, &c., 12th, Hernia. Page 10;

6.—Conclusion. Page 13,

PAMPHLETS

2

2