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Sir Thomas Longmore.

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vol. 1

Contents. 834.

1.	Ballingal, Sir J.	Letter to the Secy at War on the Medical Department of the Army	1854	Edinb.
2.	"Chiro-Medicus"	Letter to Lord Panmure on the Reorganization of the Army Med. Dep	1855	Lond.
3.	Inffnell, J.	Introductory Lecture on the Inauguration of the Milit. Surgery Chair	1855	Dublin.
4.	"	On Naval & Military Medical Educat.	1859	"
5.	Herbert, Hon. S.	The Sanitary Condition of the Army	1859.	Lond.
6.	—	Organization of the Purch. Army Med. School	1860	Lond.
7.		Lecture on Medical Education		Colombo
8.	"Med. Officer of Indian Army"	Army Medical Reform	1855.	Inverness
9.	Granville ad.	Medical Reform	1838	London
10.	Hall, Sir John	Rejoinder to Dr. Sutherland's Reply	1858	Lond.
11		Guy's Hospital School Prospectus	1859	Lond.
12	Inlloh & Guthrie	Hospital Conveyance Carts	1854	Lond.
13.	W. O.	Instructions to Surveyor in Chief, in the East	1854	Lond.
14.	W. O.	Officers' Servants	1854	"
15.	W. O.	Statistical Nomenclature	1859	"
16.	Aitken, W.	Twelve Weeks' Residence in Bulgaria	1857	Lond.
17.	King, J. W.	General Laws of Medicine & Surgery	1840	Lond.
18.	"Octogenarian"	Infanticides – Suicides	1860	

Turn over

19	Inshell, J.	Influence of Vegetations on Valves of Heart	1853	Dublin
20.	Bartnell, G.R.	Description of an improved Truss	1849	Rochester
21.	Lawson, Rob.	yellow Fever in Jamaica in '56		
22.	Barclay, Alex	Natural History of Enteralis	1860	Madras
23.	Longmore Thos	Remarks on 16 Cases of Apoplexy, in H.M.'s 19th Regt, at Barrackpore, in '58		
24.	Searle, C.	Nature & Treatment of Diarrhoea, Dysent. &c	1855	Lond.
25.	Gillkrest, Dr	Notes on Cholera	1852	Lond.
26.	Tuffe Dr	Review of Hamilton's Milit. Surg.	1862	
27.	Wilmot, J.B.	Creosote in Scorbutic Camp Dysentery	1855	Lond.
28.	Larrey, H. Bon	Amputations consecut. à l'Orthomyélite	1860	Paris

LETTER

TO

THE RIGHT HONOURABLE

THE SECRETARY AT WAR

ON THE

MEDICAL DEPARTMENT OF THE ARMY.

FROM

SIR GEORGE BALLINGALL,

REGIUS PROFESSOR OF MILITARY SURGERY
IN THE UNIVERSITY OF EDINBURGH.

EDINBURGH:

PRINTED BY R. AND R. CLARK.

LETTER.

University of Edinburgh, Dec. 30, 1854.

Sir—The attentive ear which you have readily given to many suggestions tending to the comfort, the health, and efficiency of the soldier, encourages me to submit to your consideration the following observations on the Medical Department of the Army. If any apology is necessary for this intrusion, I trust it will be found in the interest which I naturally take in my old pupils, of whom some sixteen hundred have entered the class of Military Surgery during the thirty years that it has been under my tuition; and in a vivid recollection of what took place at the commencement, and particularly at the termination of the last war. There are few, if any, Medical Officers now in the Army who can speak from experience of the sanguine expectations which were formed, and of the disappointment which subsequently ensued; and it is in the hope of suggesting a timely provision against the recurrence of such disappointment that I am induced to offer the following remarks.

In 1804, a Warrant or Order in Council was issued, "with the view of encouraging able and well-educated persons to enter into our service," and certain rates of full pay were specified as applicable to the several ranks of the Medical Department, with certain rates also of half pay *when reduced.* Here, so far as I recollect, was no condition as to the circumstances under which a Staff or Regimental Surgeon might fall to be reduced, no specification of the length of service which should entitle a man to be continued on the half-pay list, nor was any mention made of a commuted allowance for the half-pay. The terms of that Warrant were, at the time,

considered fair, or even liberal, and were looked upon as holding out something like a permanent provision for young men entering the public service. Whether there was any ambiguity in the terms of the Warrant, or whether its provisions were altogether misinterpreted, I do not stop to inquire, but proceed to state what were the harassing anxieties to individuals, and what the injuries to the public service which followed.

Many half-pay Medical Officers, when called upon to resume their duties, or to accept a commuted allowance for their half-pay, did not hesitate to consider, and to complain of this as something like a breach of faith, on the part of the public. Hundreds had entered the service under the misapprehension alluded to; many of them, after the termination of the war, had made great and laborious exertions to establish themselves in private practice; some had paid money for this; some had entered into partnerships; some had formed engagements with pupils or apprentices; and others had accepted offices of public trust and responsibility—all of which considerations fell to be sacrificed if they were to return to the service. The alternative was considered hard, and particularly so in cases where gentlemen's health, although not so far impaired as to exempt them from duty, had been so far shaken as to induce them to seek a retirement on half-pay, and to dread the vicissitudes of climate necessarily implied in a return to full-pay.

Military and Naval Surgeons were thus placed in a very tantalizing position—one man sat down upon his half-pay, anxious to receive, and impatiently expecting, a call which might not come for years, perhaps never; another devoted himself to private practice, zealously using every effort to strengthen his connexions; and when he had so far succeeded, was called upon to resume his duties, or to make a sacrifice for which he was ill prepared. Instances were not wanting, particularly amongst those who had been employed

on the General Medical Staff during the War, in which officers were, more than once, replaced upon full-pay, and after a very short service, were again reduced to half-pay. In one case, within my own knowledge, this happened not less than three times in a period of ten years.

Such were the consequences to individuals. What, again, were the consequences to the public service? The best qualified, the most energetic, and the most talented men, were often the most reluctant to move; and it may be inferred that many of the best of them did not return to the service. But this was not the only bad consequence. The extensive reduction, particularly of staff officers, which necessarily took place after the termination of the war, rendered the appointment of a Regimental Surgeon to be courted as one of the most secure and desirable positions, and this even by those who had previously served as Staff Surgeons. This was in some instances acceded to, and thus the usual routine of promotion inverted. In other instances, the surgeoncies of regiments, particularly those of the heavy dragoons, where the duty was light, the quarters good, and foreign or colonial service rare, were in several instances given to old and meritorious officers, as the best thing which could possibly be done for them, and in which there was every inducement to remain, and none to retire. While there were some remarkable exceptions, it is undeniable that there were many excellent men induced to hang on in the position of Regimental Surgeons, until the infirmities of age had made great encroachments, the eyes had become dim, the ears torpid, and the hands tremulous. In short, the extensive reduction of Medical Officers, the number liable to be called upon, and the number eventually replaced upon full-pay, retarded the promotion of the Medical Department to a most injurious extent, and constituted an evil of no common magnitude. Nor was this a passing evil. Within a few years, in the small garrison of Edinburgh, consisting of a regiment of infantry in the

Castle and a regiment of cavalry in Piershill Barracks, we had several Assistant-Surgeons, each of them upwards of twenty years' standing; and so late as the year 1838, I attended an Assistant-Surgeon in the Dragoon Barracks who died upwards of forty-three years of age, and after twenty-three years' service. At that time the late Director-General told me that one of the last Assistant-Surgeons whom he had recommended for promotion had been twenty-six or twenty-seven years in the service. With what spirit or energy, I would ask, can men of this standing discharge their duties in the subordinate rank of an Assistant-Surgeon?

An extensive reduction of the Medical Staff, as well as the other departments of the Army, is a measure which the public would no doubt most willingly contemplate. The great and praiseworthy anxiety which at present prevails in the public mind for the relief of our wounded soldiers and seamen, and the natural desire that those brave men who have so freely shed their blood in the service of the country, should meet with the most efficient medical treatment, seems to render this an opportune moment for entering upon the whole question; and I would desire to consider it in the following points of view,—the description of young men whom it is desirable to attract to the service—the objections, real or imaginary, which some of the most considerate and eligible students make to it—and the means of obviating these.

It is certainly not a wise policy to encourage young men to enter the army who do not intend to make a profession of it, but only look to spending a few years in a red coat, in the society of gentlemen, and then retiring into private life, not only without loss of time, but claiming credit for experience in their profession. That views of this nature are occasionally entertained, both by young men themselves and by their parents, I have reason to know, and have taken every opportunity of discouraging them. It is not for such men that I am going to plead. But there are others who have

come forward on the present emergency in the most commendable spirit, prepared to devote themselves to the most perilous duties of the service, and ready to take their places in the field and in the trenches. These young men have made themselves the children of the country, and I am well convinced that the public will be disposed to treat them liberally.

My position has given me perhaps more than common opportunities of observing the difficulties or objections which young men and their parents anticipate when about to embark in the medical service of the state. These I find to be—the extended course of education beyond that required by the colleges—the expense of their outfit—and the chance of being reduced, after a short service, without any compensation for all this—the arduous service, and impaired health, by which the half-pay is sometimes earned, and the uncertain tenure by which this is held, until after a prolonged period of service.

As regards the subject of education, I consider the public, the profession, and the Queen's service, greatly indebted to the heads of the Army and Navy Medical Departments, for the impulse they have given, and the improvements they have been the means of effecting in this direction. To them I consider that the present improved code of Medical Education, compared with what it was some thirty years ago, is in a great measure due ; but while, as an example, their regulations have been extensively useful, and have served a most praiseworthy purpose, they have been carried further, both in the collateral and strictly professional branches of study, than the Universities, the Colleges of Physicians and Surgeons, or the Apothecaries Company, have considered it necessary or expedient to follow. There may be some good things of which we may possibly have more than enough, and if anything superfluous is enjoined upon candidates for the public service, I make bold to say that it becomes not merely unnecessary,

but injurious, by circumscribing the field of selection, and by consuming time and money which might be advantageously employed in concentrating their attention on those special duties incident to their department, on those diseases which the peculiarities of our service constantly present to their observation, and for the study of which this country and its colonies offer a field unknown to any other nation upon earth. If anything beyond the most extended course of education enjoined by the colleges is to be enforced upon the candidates for the public service, it should be that kind of instruction so eloquently and forcibly pointed at by yourself and Sir De Lacy Evans, in the last and preceding sessions of Parliament. A course of lectures on Military Surgery, Military Hygiene, and Tropical Disease, would imply no heavy burden, and no sacrifice of time, even upon those who might not be successful in obtaining employment in the public service. "Such a course of instruction would not be thrown away either upon themselves or the public. Let gentlemen who may have so qualified themselves, have a preference in the intermediate approval of recruits, and in those numerous cases where troops are dispersed in small parties over the country, apart from their own surgeons. The soldiers would then meet with prompt and efficient treatment, while the public would have always at command a body of men who, without prejudice to their qualifications as general practitioners, would be conversant with the duties of Military Surgeons, and thus competent to act on every emergency."

God forbid that I should be found to discourage the cultivation of literature and science amongst the medical officers of the army. I should indeed be glad to see this elevated *as a preliminary study* amongst young men educating for all departments of the profession, civil or military. I am prepared to go as far in this direction as we can carry the public along with us; but parents, when investing their capital in the education of their sons, will inevitably look to the

return they may expect from it; and I do not see why we should be laid open to the irony directed against some of the Utopian schemes of education proposed—that "there is such an effort in the present day to make all the young men philosophers, then there is some risk of our failing to make them surgeons." This is not the place, nor the occasion to enter into farther detail; but I cannot deny myself the opportunity of soliciting attention to the following sentiments expressed in an introductory lecture delivered to my class in 1846. "I do not undervalue those desirable, those necessary accomplishments which are creditable to the individual, and honourable to the profession. All I desire is to see the period generally allotted to professional study more judiciously adapted to the objects of the student. There are certain fundamental branches indispensable to all; but I must think that, in many instances, the nature and extent of compulsory study is ill proportioned to the probable wants of the individual, and what is necessary for the temporary purpose of an examination, takes the place of what would be permanently useful. Is it right that every medical student should be forced, whether by a compulsory law or by the terror of an examination, to consume his limited time in pursuits, to him it may be, of little importance, to the exclusion of those which are to constitute the business of his life? I have always advocated a high standard of literary and scientific attainment in gentlemen aspiring to a doctor's degree; but is it necessary that the studies requisite for this purpose should be so mixed with his professional course as to preclude a candidate for the army from giving his attention to military hygiene? or the expectant of a naval appointment from studying the causes and prevention of disease in the fleet?"

I come now, Sir, to the object which I more particularly proposed to myself in this letter, and which falls more especially within your province as the finance minister of the army —the half-pay and retiring allowance to Medical Officers. I

have long considered the want of an adequate retiring allowance after a reasonable length of service, and before the infirmities of age have crept on, as not only a hardship on individuals, but what is of more importance, one of the most serious drawbacks on the efficiency of the medical department of Her Majesty's service. This drawback becomes more remarkable when contrasted with the liberal provision upon which the Medical Officers of the Honourable East India Company are enabled to retire after a service comparatively short, and to this I would briefly advert. In either case, the medical officer must have attained the age of 21 before he can enter the service, and the Company's Surgeon may retire after seventeen years' service in India, upon the full pay of a captain, which, with an allowance from the medical funds at the several presidencies (to which his more liberal pay has enabled him to contribute) makes up a retirement of some £500 a year, at a period when he has not necessarily attained more than 39 years of age. What, again, is the case of the Queen's Surgeon? He cannot retire until after twenty-five years' service, on full-pay—the greater part of this time spent, perhaps, in the most unhealthy parts of India, or even in some worse climates—upon fifteen shillings a-day, and when he must necessarily be at least 46 years of age, seven years older than the Company's Surgeon. Be it observed also, that the former service is continuous, not necessarily interrupted by anything except bad health, or the will of the individual in taking advantage of an optional furlough, while the time of a Surgeon in the Queen's service may be broken in upon by alternate periods of full and of half pay, dependent, not upon the will of the individual, but upon the exigencies of the service. I am aware that the Company's Surgeons have their grievances, and complain of something very like an *ex post facto law*, depriving them of the relative retirements, compared with their military comrades which they expected on entering the service; and this leads me to say a word on the comparative position,

generally, of Military and Medical Officers, and this in a spirit of equity, most assuredly not in a spirit of detraction.

The comparative exposure of military and Medical Officers when in actual contact with the enemy, has not, I think, been much dwelt upon of late, particularly since the liberal sentiments towards the latter expressed in the House of Commons, by Sir Howard Douglas, Sir De Lacy Evans, Colonel Boldero, and others, and particularly since the publication of an admirable pamphlet by Mr. Martin, on the "Claims of Medical Officers to Military Honours,"—claims not impaired by the conduct of Mr. Wilson, Mr. Thomson, and others in the present campaign. But there are two points in which I think their comparative position has scarcely yet been done justice to—the excess of work to which Medical Officers are subjected in both extremes to an army, whether of labour or of rest. If the active operations of a campaign are suspended by sickness, upon whom does the increase of duty fall? Who were the hardest worked men at Devna and at Varna? Again, all honour to their military comrades! But I would ask, who have worked harder or more continuously than the Medical Officers in the Crimea, and in the hospital at Scutari? While I readily admit that the military officer has the greatest risk and the hardest work in the day of battle, I would respectfully ask, who has the hardest work on the day following, and for many days after? The other point in which Medical Officers are sometimes looked upon as having inferior claims, is in comparison with those officers who have paid money for their commissions. Considering the expensive and protracted education which he must necessarily go through, an Assistant-Surgeon may now be said to purchase his commission at a much higher rate than an ensign, and with this material disadvantage, that he necessarily purchases it from six to ten years later in life; the purchase, moreover, as involved in the expense of education, is imperative on all Medical Officers; and while their military comrades are permitted to sell,

even in some cases where the commission has not been purchased, the Medical Officer is in no case allowed to do so. Looking again to the comparative rates of retirement, we see provision made for the retirement of military officers on full-pay, after periods of service not very protracted, while no such thing is known in the medical department as a retirement on full-pay after any length of service.

Many years have not gone by since I could point to several of my class-fellows and cotemporaries who entered the service some eight-and-forty years ago, and who were still serving as surgeons of regiments. I grieve to think how unequal such men would have been to the duties devolving on Regimental Surgeons after the battles of Alma, of Balaklava, and of Inkermann; and it is with a view particularly to the rank of Regimental Surgeon that I would advocate a retirement on full-pay, or something approaching to it, to prevent the recurrence of cases such as I point at, where men were upwards of forty years in the discharge of regimental duties. The principle which I would urge is, that after a prolonged period of service a man's full-pay and his half-pay should approximate in amount to each other, and that ultimately the difference between the two should be so little, that a man would have every inducement to retire, and none to remain. A Surgeon is, by the existing regulations, entitled to retire on half-pay after *twenty-five* years' service, and it would not, I think, be considered unreasonable that he should then have a retirement equal to the full-pay of a Surgeon of *twenty* years standing—a little more than the half-pay upon which a Staff-Surgeon is at present entitled to retire. If a Medical Officer has served thirty years, without being promoted to a higher rank than that of a Regimental Surgeon, it is a misfortune to himself, and often a greater misfortune to the service. Such a man, generally speaking, becomes very unequal to any position in which the duties of an operating Surgeon are involved. Every facility should be given to his retirement. He should be placed at the *maximum*

of his expectations in this respect, and it would not be unreasonable that he should have a guinea a-day to retire upon—a trifle less than the full pay of his rank. All this is without reference to the full or half pay of the higher ranks in the department, and proceeds upon the equitable principle that an officer should be paid for his services rather than his rank. The half-pay for shorter periods of service, might, I think, easily be placed upon a more satisfactory footing than at present, more equitable to the profession, and not much, if at all, more burdensome to the public.

In a period short of ten years service I do not consider that a young man has lost much ground if he desires to enter into private practice, and is not perhaps entitled to any permanent provision, unless in the exceptional cases of severe wounds or permanent disabilities contracted on service. But such a man has come forward to serve the public with the intention and desire of devoting himself to the service for life; he has gone to an extra expense in his education and outfit; and if reduced, care should be taken that he does not suffer a pecuniary loss at a time when his prospects of advancement have been cut short, and when he must necessarily be condemned to a period of inaction before he can establish himself in private practice. Would it then be too much to expect that a young man in this position should have the expense of his outfit and extra education repaid to him on a liberal scale, and a gratuity of one or more years full-pay, according to the length of time he may have served? After ten years employment in the service, a man, if he has made good use of his time, becomes a valuable servant to the public. He has lost ground in the race with his cotemporaries, some of whom may have established themselves in the very locality where, of all others, he had the best chance of success; he has necessarily attained 31, it may be 36 years of age, and he has become accustomed to habits of deference to his professional authority and obedience to his prescriptions, not conducive to his ad-

vancement in private life,—as witness the few instances of success amongst the medical officers of the army and navy who were discharged at the end of the last war. It is for the public interest that a man of this standing should be encouraged to remain in the service by the prospect of speedy promotion, or, if reduced for the public convenience, he should have the option, if he so chooses, of remaining permanently on the half-pay of his rank. A period being thus fixed for retirement in the junior rank, I would propose that when an officer has gained one step in advance—when he has been promoted to the rank of Surgeon,—if reduced for the public interest, and again called upon to serve, he should, unless disabled by wounds or infirmities, have the alternative presented to him of either resuming his duties, or reverting to the half-pay of an Assistant-Surgeon, and so on throughout each superior rank—the principle being this, that whatever length of service, or whatever degree of merit entitles an officer to a step of promotion, the same should entitle him to the *permanent* half-pay of the rank from which he was promoted. This would seem an arrangement more equitable than the commuted allowance—a measure, somewhat of an arbitrary character—where the allowance is calculated on principles, perhaps very intelligible to the actuary of an insurance office, but not, I believe, generally appreciated by the profession. The question as to the light in which the half-pay is to be looked upon—*questio valde vexata*—would thus be put upon a footing equally obvious and indisputable. The half-pay of each superior rank would fall to be looked upon as a retaining fee, the half-pay of the rank immediately below as a reward for past services. The Army and Navy Surgeon would thus see distinctly, from the moment of entering the service, what the public had a right to demand of him, and what the extent of the sacrifice he must make if not prepared to obey the public call. When an officer, recently promoted, is in receipt of the half-pay of a rank in which he has done little service, it seems

only reasonable that the public should have the right to call upon him to do more duty in that capacity, provided always that the call should not be postponed until the individual is so far advanced in life as to render it impossible for him to complete the periods of 25 or 30 years' actual service specified for retirement. If the national exigencies do not require a man, who has always been ready to move, to resume his duties at the active and useful period of his life, it would seem harsh, not to say unjust, to call upon him at an advanced age, when physical infirmities would necessarily preclude him from serving for the length of time entitling him to a permanent retirement. I have confined myself almost exclusively to a consideration of the position of Assistant and Regimental Surgeons, and this with the view of illustrating a principle, which, *mutatis mutandis*, may easily be applied to all other ranks—that of placing the half-pay after prolonged services, so nearly on a par with the full-pay, that there may be a comfortable retirement for men advanced in life. The objects which I have more immediately had in view, are the liberal treatment of those young Surgeons who have come forward on the present emergency, and who cannot expect to be retained in the service after the termination of the war—an encouragement to hale young Surgeons on half-pay to resume their duties in the service, by the prospect of a considerable sacrifice on the one hand and of a more liberal retirement on the other—the discouragement of superannuated Surgeons from remaining in the service, by giving them a maximum of retirement after a period of life when their energies begin to fail.

The advantages which I should expect from the proposed plan are the more speedy reduction of what has, not very graciously, been termed the dead-weight—the sequel of every war—and, above all, the greater efficiency of the medical department, by substituting young men in the vigour of life for those who are past their work—a measure which may

obviously be carried into effect not only without loss, but with a saving to the public; inasmuch as the half-pay of the young Surgeon, saved by his return to the service, will be more than equivalent to the additional retirement given to the old one who withdraws to make room for him. In the gallant officer commanding the army in the Crimea, and in some of his comrades, we have at this moment brilliant examples of elderly men, as it were, excelling themselves—performing feats of activity and deeds of heroism which would have done honour to their younger days; yet I believe that the public mind was never more alive to the general impolicy of employing old men in the operations of war, in any of its departments, nor was the public ever better prepared to reward liberally those who have spent their best days in the service of the State. I am in fact more apprehensive of being considered to have understated the claims of my profession, than of having over-rated the liberality of the public.

I have the honour to be,

SIR,

Your very faithful and obedient Servant,

GEO. BALLINGALL.

The Right Honourable SIDNEY HERBERT,
Secretary at War, &c., &c.

THE

RE-ORGANIZATION

OF THE

MEDICAL DEPARTMENT OF THE ARMY,

A LETTER

TO

THE RIGHT HON^BLE LORD PANMURE,

MINISTER OF WAR.

BY

PHILO-MEDICUS,

FELLOW OF THE R. M. C. SOCIETY, &c. &c.

LONDON:

JAMES RIDGWAY, Nº 169, PICCADILLY.

1855.

LONDON :
PRINTED BY T. BRETTELL, RUPERT STREET, HAYMARKET.

A LETTER,

&c.

My Lord,

The Medical Officers of the Army, individually and collectively, have reason to rejoice that there is at length a positive determination to re-organize the department to which they belong. Their professional brethren in civil life share in the satisfaction; and so inseparably connected are the interests of the medical department of the Army with those of the public, that all are interested in the result.

The necessity for reform in this department has long been acknowledged. Recent events enforce it. As far back as 1844 it was whispered that the then Secretary-at-War, Sir Thomas Freemantle, was occupied with this important question; and had he remained a few months longer in office, it is not improbable that some measure improving the condition of the medical department, and benefiting the service generally, would have been promulgated. Whether his plans were not sufficiently matured, or whether they did not exactly meet the views of his immediate successors, they alone can tell who

were in the secret. The subject once dropped, there appears to have been an unwillingness to meddle with it. Education in the Army, and the normal school at Chelsea, meanwhile engaged their attention, to their honour be it said; and while every portion of the service underwent more or less supervision and change through the labours of the select committee of the House of Commons, appointed in 1851 to inquire into the expenditure on account of the Army and Ordnance, their report left "this extremely important branch of the service, "one in which principles of economy should be "cautiously yet vigilantly applied," in *statu quo*, with the solitary exception of recommending as a measure of economy and convenience, the consolidation and amalgamation of the Ordnance medical department with that of the Army. It would thus appear that they considered the department and its affairs either perfect, or of secondary consequence, or, feeling themselves unequal to deal with what they may have conceived to be a purely professional matter, they were constrained to leave its reformation entirely in the hands of the Director-General who, under the authority of the Secretary-at-War, has hitherto enjoyed the control over the internal economy of this branch of the Army. The commissioners may also have been deterred from entering fully into the subject by their knowledge of recent fruitless attempts to legislate for the medical profession in civil life. Medical reform has puzzled the most pains-taking committees of the House of

Commons, and for upwards of twenty years confused and perplexed the ablest Home Secretaries; but the difficulties almost insurmountable to an equitable and satisfactory remodelling of the medical profession in civil life have no existence as respects it in the Army, nor are the questions analogous or in any way connected. With a sincere and honest desire to accomplish the task, it is our conviction it would be found more easy of execution than its vast extent and importance indicate. With this belief, and trusting to the good faith of the Government, we do not despair of seeing the organization and efficiency of the medical department raised to the highest perfection.

Fortunately for all concerned, this task now devolves on one who, from the flattering circumstances of his selection to the high and honourable position he occupies in the councils of his Sovereign, offers the best hopes of its impartial consideration and successful issue. Educated in the Army, familiar with the details of staff and regimental duty, your long and tried experience at the War Office eminently qualify your Lordship to deal with the question in its full extent, while your known energy of character and firmness of purpose ensure the eradication of existing evils and the removal of palpable defects, whether the growth of time and prejudice, the vices of bureaucracy, or the consequences of a long peace and parsimonious economy. As a reformer, the eyes of the public are upon you; as Minister of War, you will be judged by the

Army, and among the numerous questions now before your Lordship there are not many, be assured, of more importance for its welfare than the one relating to the organization and efficiency of its medical department.

The faults and misfortunes recently exposed and severely commented upon are less the consequences of defective organization than of insufficient means, the false position the department holds in the army, and a vicious, enervating system, regulated by no fixed principle, pervading its constitution and depriving its administrative officers of all just influence and authority. Exercising duties, and loaded with responsibility of the highest importance, these officers lack the power to give weight to their opinions, or efficiency to their acts. Fettered and controlled by so many different authorities, subject to the Commander-in-Chief, the Master General of the Ordnance, the Adjutant-General, the Secretary-at-War, powerless with the Quarter-Master-General, unknown at the Admiralty, the Chief of the medical department occupies a most unenviable and embarrassing position. He has himself, not inaptly though somewhat humiliatingly, characterised the department over which he nominally presides as parasitical, and living upon every other department of the Army. This officer, as things are, may suggest,—he may petition and urge,—but of himself he cannot act, except in minor matters of a purely professional nature, relating to the internal organization and

discipline of the department. The high-sounding title of Director-General is a misnomer,— an official fiction,— for virtually he possesses no power whatever out of his own office in St. James's Place. There the heart may beat vigorously, the machine may appear to work to perfection, but if examined closely, its action is circumscribed, cramped, and clogged. Hesitating, jarring, and uncertain at head-quarters, it is feeble or irregular at the extremities, and utterly incompetent or inoperative beyond the sphere of its immediate influence; it is an instrument for evil, scarcely for good to its members.

Is it surprising then that a system so complicated, eccentric, and cumbersome, a hand to mouth system that cripples action and energy in its Chief, damps zeal and paralyses the individual parts of the machine, or fetters them by routine and formalism, should, on a sudden and great emergency requiring elasticity and freedom of movement, disclose its weakness and imperfections, and fail in its intentions? Ill-adapted in time of peace, it has signally "broken down" in time of war. But who is to blame? In all justice, not the Director-General of the medical department of the Army, but the promoters of this system, the men who tied his hands and left him a victim in the hour of trial.

If he is to blame at all, it is for tamely submitting to a systematic encroachment on his office, which, in the end, leaving him but the shadow of authority, impaired his usefulness, brought down

obloquy on the department, and exposed his administrative officers to unmerited censure.

It is with no ordinary satisfaction we learn that there is likely to be a speedy end to this pernicious and obstructive mode of carrying on the duties of the department, Destroy it at once, my Lord, with a high hand. Take the medical department under your own immediate jurisdiction as Minister of War; free it from the benumbing grasp of other departments, and place its Chief in direct communication with your Lordship, and you will have accomplished the first great step towards its perfect organization and efficiency. Our next recommendation is this:—give the department individuality and independence, in a military sense, place it on a footing with the other scientific branches of the Army, the Engineers and Artillery, and bestow on its members substantive, instead of merely dubious, relative rank—thus you will insure obedience to its councils and efficiency to its acts, which, under existing circumstances, as a purely civil branch of a military body it never can command, nor ever will possess.

The medical profession in this country has not, as a body, the status it enjoys on the continent, particularly in France, however advantageous may be the social position of its members. Of late years, there has been a growing disposition on the part of the Government to take it into its councils and favour; but only of late years, since the appearance of cholera, first as an invasive and then as an

emdemic disease. The medical department of the Army shared the neglect the profession experience, but has not yet met the same consideration; it never has possessed the influence and authority due to it, and indispensable to its efficiency, and the acts of the late Government rather tended to depress than elevate it.

My Lord, in all that relates to the health of an Army whether in the field or in quarters, the prevention and cure of disease, the site and construction of hospitals, the position of camps in regard to salubrity, &c. &c., the Director-General, and medical officers should possess a voice of no mean weight and authority. They should be answerable for their advice and acts, and, together with the officer commanding, responsible for the health and physical condition of the troops, to a similar extent as the Captain of a Man of War for the safety of his ship, and the sanitary state of his men. Responsibility is proportionate to position and power; where these are undefined, or held lightly, the duties connected with the office of the individual will be indifferently discharged, since assuredly the advice tendered will either be altogether unheeded or carelessly followed. Influence in professional matters is usually measured by acknowledged or supposed attainments; but, under present arrangements, a man might be Sydenham or Hippocrates himself, or possess the administrative talents of a Pitt, without the power of doing good.

No expedition should ever leave these shores without the Director-General being *consulted* in every thing concerning the health of the men. Few considerations can be of higher importance to a commander than the preservation of the health of his army, without which the most brilliant conceptions of military genius may be rendered wholly unavailing. Many an enterprise has utterly failed in its objects through imperfect organization and the neglect of sanitary measures and arrangements which, if followed, would have essentially contributed to success and saved the lives of thousands. On all such occasions, therefore, he ought to be in the confidence of the Minister of War, and the moment an expedition has been determined on, or earlier if possible, he should be made acquainted with the proposed number and probable scene of its operations, so that he may, without delay, organize his staff, prepare hospitals, and recommend such forms and modifications of clothing and diet as are likely to promote the health of the army and ensure its efficiency on service. In the field, the principal medical officer should, in like manner, be in the confidence of the officer commanding, and, to a certain extent, be received into his councils. It must ever, we repeat, be one of the first objects of a commander, the preservation of the health of his troops, and the proper distribution and care of the sick and wounded. To enable his chief medical officer to

succeed in these grand objects, he ought to support him in his measures, aid him in his authority, and give immediate attention to his suggestions. Humanity and policy alike dictate the necessity for ample provision for the disabled of an army, and here it is that the resources of the medical staff, as at present constituted, are conspicuously defective. Without the independent organization we advocate, there can be little responsibility, while there exists every facility for shifting upon others the blame of neglected duties. A General is allowably more occupied and more concerned with the effective than non-effective portion of his army. The latter come more immediately under the eye of his Quarter-Master General and medical staff. That officer naturally partakes of the partiality of his superior, and the sick and disabled, *en route,* are but too frequently entirely left to the care of the staff surgeons of division or subordinates, who with inadequate means and limited authority, are forced to provide for them as best they can.

The formation of an ambulance corps will no doubt be one of the first measures in the re-organization of the department, if it has not already fully engaged your attention. The necessity and importance of such a corps seems recently to have been fully recognized, but the principle on which it was constituted, and the class of men from which it was formed, caused so complete a failure, that unquestionably your Lordship will adopt an entirely different plan, and

procure for it men in the full vigour of life. A well-appointed ambulance corps, acquainted with its duties, trained in the field and in the hospitals, accustomed to act as orderlies, *officered and commanded by the medical staff*, would be a blessing to the Army, and of inexpressible service to the department in the execution of its duties. The ambulance corps should be selected from disciplined soldiers who have been some years in the service, and have given proofs of sobriety and steadiness, indispensable qualities to their usefulness. As a reward for continued good conduct they should have a higher rate of pay than men in the ranks, increasing with length of service, and prospective in benefit after discharge from the Army. Return to the ranks, under these provisions, would generally be a sufficiently severe punishment to deter from crime.

It would encroach more on your Lordship's time than desirable, were we to touch even lightly on the various topics comprehended in the important question now under consideration and not yet alluded to. On one of these only shall we, for the present, offer any observations, but that one strikes at the very root of the subject, and in its extent and interest would afford ample matter for another communication. Need we say we allude to the education and qualifications of the officers of the department ?

My Lord, whatever may have been the consequences of defective organization and system so

often alluded to, the officers, with scarcely an exception, have faithfully discharged their duty, with credit to themselves and with benefit to their country. They have in many instances exhibited traits of heroism, devotion, and zeal for the service, worthy of their high and honourable calling, creditable to humanity, and deserving the highest reward.

If there has been any exception, we opine it has been the result of inexperience in the field, new scenes of labour, overwhelming duties, and, once more, the fault of system. We do not presume to advocate their cause or come forward to defend them. No charge has been made, and defence is unnecessary, but it is due to the medical officers of the Army in the East to state this much, and the public ought to know that no officers have been harder or more continuously worked in the field and in the trenches, while in the hospital their duties have been incessant and excessive. Moreover, we assert, without fear of contradiction, that for professional skill and acquirements they have stood pre-eminent, and that no army ever took the field so ably officered in this branch of the service.

Thanks to the late Director-General, Sir James McGrigor, whose name must ever be associated with all that is good in the department over which he so long and ably presided, the medical officers of the army, ever since the conclusion of the war with our present ally, have been selected with great care, and the studies required of them in the collateral

sciences and strictly professional subjects, before admission into the service, have exceeded the demands of any of the licensing bodies,—the universities, the Colleges of Physicians and Surgeons, or the Apothecaries' Company. We believe the present Director-General has strictly followed out Sir James McGrigor's views, and has rather added to than taken from the curriculum. There are not wanting many who condemned as superfluous certain of the preliminary qualifications. Be that as it may, the error was unquestionably on the right side, and, in time of peace, when the vacancies were few, and the applicants numerous, the regulations secured highly educated young men for the service, though they necessarily excluded many who were equally competent, and fully qualified to exercise their profession in civil life. Possessing a diploma from one of the Royal Colleges of Surgeons, or from the Faculty of Physicians and Surgeons of Glasgow, after undergoing a further examination at the Medical Board, the candidate, who must be twenty-one years of age, and not above twenty-six, was received into the service as a probationer, and, in his turn, appointed Assistant-Surgeon on the staff of the army, or to a regiment. The exigencies of this war has made it imperative somewhat to relax the stringent rules of admission, and caused to be created from among the list of legally qualified surgeons possessing a diploma from one of the aforesaid bodies, a class of "acting Assistant-Surgeons" who

are employed whenever their services may be wanted, and who are subsequently commissioned, if found efficient, as vacancies occur.

We have considered it necessary to make these remarks prior to entering on this portion of the question. The plan hitherto adopted in filling up these vacancies is perhaps unobjectionable, and as good as any that can be devised, but as competition is now deemed the best mode of securing to the public the services of talented young men in different departments, and is the mode recently adopted for the same service by the Honourable East India Company, it seems both advisable and expedient to pursue a similar course in the admission of candidates into the medical department of the Royal Army. The circumstances of either service are somewhat dissimilar, and perhaps the time has not yet arrived, but the question is worthy of consideration, and with this view we suggest it.

Much has been written and said eloquently and powerfully on the necessity of establishing a Chair of Military Surgery in London and in Dublin, similar to the one so ably filled by Sir George Ballingall, in the University of Edinburgh. Chiefly through the exertions of Sir De Lacy Evans, Sir Howard Douglas, and Colonel Boldero, backed by the all-powerful recommendation of the late Secretary-at-War, Mr. Sidney Herbert, Parliament granted in the last and present session certain sums of money for the purpose; at once countenancing and encouraging the scheme. But

where are the Professors, and where are the Students? My Lord, we make bold to say, the latter will never be forthcoming in any number to constitute a respectable class, unless it is made imperative that all candidates for the medical departments of Her Majesty's Army and Navy, and the Honourable East India Company possess a certificate of attendance upon the course of lectures proposed to be delivered by these new Professors. The uncertainty of obtaining admission into the public service, whether by favour or competition, the paucity of appointments, and the comparative uselessness, in private practice, of an acquaintance with the subjects usually treated of in a class where military surgery is taught, will otherwise effectually keep down the number. Time and money are precious, and both will be bestowed only on that which is likely to give a good return.

We have had the advantage of attending the lectures of Sir George Ballingall, but like nine-tenths of the medical officers of the army, who have enjoyed this privilege, and reaped the benefit, it was *after* we had entered the service. Nor would we advocate compulsory attendance; "Mili-" tary Medicine" and "Military Surgery" can only be acquired *in* the service. It was there, in the field and in the tent, in camp and in quarters, that Pringle and Brocklesby, and Monro and Jackson, became acquainted with military hygiène and military medicine, and there only; it was there that Wiseman and Ranby, Hennen and Guthrie

first learned what military surgery really is; it was this school, and this school only, that furnished the Parés and Percys, and Larreys of France. We say it advisedly that whatever relates to military hygiène, the causes and prevention of disease in fleets and armies, is sufficiently dwelt on in the ordinary courses of practical medicine in every school, and, if not, the candidate for appointment in the medical services of the State can make himself acquainted theoretically with this subject by a course of reading and study, and lectures can do no more. Fever, inflammation of the lungs, or an attack of dysentery, is the same disease, whether it appears in a soldier or in a civilian, and requires similar treatment, modified, it may be, by peculiarities of climate, locality, and condition of the individual, arising out of the service, but neither books nor lectures can teach these things or foresee them. Nothing but a well-grounded knowledge of his profession, an intimate acquaintance with the first principles of the science of medicine, can guide the physician under these circumstances, and enable him to do that which is best for his patient, either in way of prevention or treatment. A fracture, or dislocation, is the same accident, whether it occurs in a blue jacket, a red or a black coat, and amputation does not require to be differently performed according to the profession of the unhappy sufferer. Would we then break up the Chair of Military Surgery in the University of Edinburgh, and prevent the institu-

tion of similar Chairs in the capitals of England and Ireland as useless? Certainly not. Let those attend them who may;—the more the better. Something, nay much, may be learned. Our views are these:—We consider one, or, at most, two amply sufficient. Where these Chairs are, there ought to be the school, and that school should be where there are abundant materials for the elucidation of lectures of a *clinical* and *practical* kind, to which every medical officer in the service should be invited in turn, and encouraged to give his attendance. Expectants of military or naval appointments would, with certain restrictions, be permitted to avail themselves of these lectures *gratuitously*. Let us, my Lord, still further unfold our scheme of military medical instruction.

The first suggestion we would offer, is the immediate construction and organization of an hospital worthy of the cause, worthy of the nation, a fit and proper receptacle for the invalids, the sick and wounded of our noble Army; a portion of which should be set aside for sick officers who might choose to avail themselves of the comfort and advantages thus secured to them on their first return from service. This hospital ought to be complete in all its parts, a perfect model in equipment, arrangement, and management, possessing every requisite and every modern appliance, architectural, medical, and surgical. A crowd of reasons might be adduced for fixing its site in London. Among these are, the deficient accom-

modation for the sick of the household troops, the hospitals for which are, in this respect, a disgrace to the country; the facility afforded by rail and water for the movement to and fro of disabled men, whether from the seat of war, the colonies, or the counties; the opportunities afforded to the higher authorities, the Commander-in-Chief, the Director-General himself, and others, of personal inspection at any moment; the facility of discharging the totally unfit from the service, and the opportunity given to the Commissioners of Chelsea Hospital and their representative officers, of seeing and examining these men. In all these respects and others, there is every thing for and nothing against the site we propose, while beyond all doubt it would be the best for the medical school, by enabling its officers to visit other schools and hospitals, not surpassed in this or any country. A laudable emulation would thus be maintained with the happiest results; nor would we have any fear of the comparison. If the plan proposed were adopted this hospital would afford examples of regimental and staff management. In other words, there would be a regimental hospital for the brigade of Guards, and a general hospital for the invalids of the line, either under one roof or in separate buildings; but all superintended by one chief responsible to the supreme head of the department.

This would be the field of the proposed medical school for the Army,—the *Val de Grace* of this

country,—through which, on an average, in peace, between three and four thousand disabled men would necessarily annually pass, and, in war, double or even treble this number, furnishing ample materials for practical instruction. To it would be removed the valuable library and splendid museum of pathological anatomy, illustrating the diseases incident to soldiers in all climates and now hid or lost to the service at Chatham. Here lectures would be given by the principal medical officers in charge of divisions on the cases actually under treatment, attendance upon which should be imperative. Officers from all climates would assemble here, and by intercommunication part with and receive valuable information connected with their profession. A system of oral or conversational instruction would thus be secured, of infinitely more service than set lectures, and things that never are handled there or told in books, would be brought to light and more extensively diffused and perpetuated in the department. The general management of the hospital, the practice on admission of the sick, the dietary, the mode of registering and recording the cases—every thing—ventilation, warming, &c. &c. being daily before the pupils and junior officers of the staff, would make such an impression as to render lectures on these subjects either wholly unnecessary or very secondary. Here also would be taught operative surgery in all its details, by the professor of military surgery himself, or by some

one who, from peculiar dexterity and predilection for that department of his profession, had exhibited talents fitting him for this important post, in reward for which service and as a stimulus to exertion, he ought not only to have additional pay but the certainty of more rapid promotion to the higher rank. Under the superintendence of an experienced officer, the juniors should also be instructed in the mode of examining recruits,—a most important duty which, we fear, and have reason to know, is too often negligently discharged, to the great detriment of the service and injury to the public; also the invaliding of the men, prior to their final discharge from the service,—another duty too frequently, we also know full well, carelessly performed, with equal or still greater inconvenience to the public service, and often, very often, to the injury of the deserving soldier.

Through this portal and ordeal every officer, on his first admission into the medical department, should pass, and when practicable, when the exigencies of the service will admit of it, not less than twelve months should be spent at the school of instruction before he is launched into the service. An acquaintance with soldiers, their habits, peculiarities, and diseases, can only be obtained by constantly dwelling among them; and in every instance it would be well, nay, it ought to be a rule, to attach the medical recruit, on his first entrance into the Army, to a regiment instead of placing him on the staff, as is too commonly

done. Habits of order and military discipline cannot be too early acquired, and they can only be gained by daily subjection to superiors. On the staff a young man is almost his own master. He there, in ordinary times, not only runs the risk of forgetting his profession, but he ceases to have, if he ever possessed, the feelings and qualities of a soldier. A good military medical officer must be both: he must be a soldier as well as a surgeon. The best officers in the department are the regimental medical officers; the indifferent, those who have throughout their career been on the staff of the Army. Our regimental medical system is nearly as perfect as our staff system is defective.

There is nothing utopian or even new in the outline of the scheme put forward. Common sense and observation added to ordinary powers of reflection, point it out as both feasible and necessary. Ours, in ordinary times, is a limited Army, with limited means for the purpose in view. We must make the most of them, and the plan suggested secures this advantage.

To ensure still further the objects contemplated by this school of instruction, opportunities should be afforded staff and regimental medical officers of gaining admission to it, and with the view of attracting to the school all the more junior officers of the department, and considering the increased expense of living in London or its neighbourhood, a small addition should be made to the daily pay, while the fact of having served in it, *after*

admission into the Army, should be regarded as exhibiting zeal and giving claim to promotion. The senior officers should not be removed under three, or at most, four years, nor the junior officers, of the rank of surgeon, or assistant surgeon, under a period of two years. Few things are more injurious to the interests of a general hospital and its inmates, than constantly changing its officers. As at the senior department, Sandhurst, so at this establishment there might be periodical examinations, and certificates granted, according to merit, to those who choose to submit to these trials. The increase of pay recommended could scarcely be objected to, as it must be remembered these officers would be actually discharging important duties at the moment they were gaining increased knowledge of their profession, and acquiring greater efficiency in the service.

The ambulance corps, forming an integral part of the medical department, would have ample opportunities of exercising its members, both in and out of hospital. As orderlies, they would be constantly at work in attending the sick, while in conveying them to and from the railways, steamers, or barracks, they would be acquiring that practical knowledge of their duties so essential to their efficiency in the field. A nucleus of this valuable corps might thus always be at hand, ready to be enlarged and sent forth on any emergency.

With some such scheme as the above, and the

organization and changes proposed, the Government would reap every advantage which the French system of instruction possesses, with a certainty, which it has not, of procuring for the medical service, almost without exception, young men with the highest attainments, both literary and professional, and maintaining the department in a state of perfect efficiency for all purposes. It is chiefly in the admirably organised *corps d'ambulance* that our neighbour and ally possesses superiority over us in the field and on the line of march; and, in the hospitals, if it enjoys any advantage, this is owing to the extra number of attendants, male and female, upon the sick, the perfection of the purveyor's department, its entire subjection to the orders of the medical officers, and the exemption of these officers from all duties not strictly and exclusively professional. In these respects, and in these only, is the French system of medical organization worthy of imitation.

A comprehensive reconstruction of the medical department of the Army would embrace not only the points touched upon, but a consideration of the gradation of rank and principle of promotion,—a tempting subject which we can scarcely resist entering upon; full and half pay, widows' pensions, emoluments and rewards for faithful and distinguished service. In all these, beneficial changes might be introduced. The medical officers of the Army and their survivors ought, in every respect, to enjoy the advantages possessed by their military

companions. If they do not purchase their commissions neither do many other officers, entitled to share with greater liberality in these advantages; while the military officer has open to him, from his first entrance into the Army, numerous lucrative staff appointments, the medical officer toils on without any such prospect. If they are numerically less exposed in the field, who so hard worked when the battle is over? in time of sickness they alone are occupied; when there is a suspension of hostilities, is there any cessation from their labours? who so exposed to contagion and the diseases of camps?—witness the fearful mortality in their ranks in Bulgaria, in the Crimea, at Scutari. In the din of battle, without the excitement of command, there is the surgeon or assistant side by side with his companions; calm and intrepid he must be, for at any moment he may be called upon, in the midst of the carnage and confusion, to perform the most appalling or most intricate operation in his art. On all these occasions, in the midst of trials and sufferings, the medical officers of the Army, as a body, have displayed professional abilities of the highest order, and exhibited in bold relief some of the noblest qualities of our nature. Follow them to the hospitals,—there you find them among the dead and the dying at all hours, for they know no rest from their labours; remote from the eye of their military superiors, humanely exercising their calling, receiving, it may be, the grateful acknowledgments of their humble companions, but seldom the public

approval of their General. Theirs is an unostentatious duty, nevertheless, an ennobling one. But, my Lord, our object on the present occasion is not to plead their claims to higher rewards or emoluments. We have our fixed views on these, and are ready and anxious to submit them. The efficient organization of the department is the primary question, the others are contingent.

If it be the intention, as is rumoured, to place the management of the medical department in the hands of two or more persons, to reconstruct a Board, as in former times, and make it the governing authority, under the title, in imitation of the French, of " The Council of Health for the " Army," pardon us, my Lord, if we beg you will pause ere you introduce into this Board the " civil " element." Throughout, we have endeavoured to press on your Lordship the necessity of at once effecting a radical change in this department by granting it an unequivocal military constitution, and we have not hesitated to affirm that until it ceases to be a civil branch of the service, it will not, it cannot, enjoy the influence and authority essential to its perfect efficiency. If the great increase to the Army, the amalgamation with the Ordnance, the engrafting of the Militia force, and the war in which we are engaged, impose duties beyond the power of a single individual to discharge, in superintending the important affairs of this department in all its extensive ramifications, permit us to suggest, for the consideration of your

Lordship, whether the objects could not be fully and more effectually attained by selecting for this Board military medical officers of experience and ability,—men qualified by habits of discipline and business, to carry out with fidelity and firmness the suggestions of the Minister. Possessing the all-important advantage of an intimate acquaintance with detail, a thorough knowledge of the requirements of the department itself, and with the Army it serves,—who so competent to advise him in all that relates to this branch of the service? There are faults of routine, official technicalities, and difficulties to be overcome; but with the new order of things proposed, the removal of the department from the paralysing grasp and incubus of minor departments and irresponsible agents, to the direct control of the Minister of War, these would speedily vanish, and unity of action, with successful design, would replace the confusion and uncertainty that now prevails and mars the best, the wisest schemes.

It would be out of place to relate the history of former Army Medical Boards, composed on the principle said to be under consideration. Suffice it to say that a mixed board gave rise to scandal, recriminations, and jealousies, which interfered with its effectiveness, and was ultimately abandoned for one of a military character with the best results. In the reconstruction of a medical board, with these views, and with this knowledge, it is our conviction that, if constituted of military

medical officers only, it would, by the simplicity of its arrangement, and the similarity of its sympathies, insure greater unity of action, with precision of effect. To each of the medical officers, forming, when assembled in council, the Army Medical Board, should be assigned especial duties, *i. e.* one might have the medical charge of the recruiting and invaliding, receive reports of the arrival of the sick and wounded, and the departure of troops for the Colonies, or service, for whom he would require to provide; a second, the charge of the medical concerns of the Army at home, in England, Ireland, and Scotland, including the Militia; a third might look more especially to the Army abroad, to the Army at the seat of war, and watch over all sanitary affairs, its supplies of medicines, &c. &c., receive reports from the different hospitals, civil and military, and give immediate effect to the orders of the Minister relating thereto. In board assembled, each member would submit, for the consideration of his colleagues, all matters of importance, his own views thereon, prior to a final decision, which would receive the approving signature of the different members. It is unnecessary to dwell further on the mode of proceeding of a board thus constituted, and furnished with the instructions of the Minister. One of its particular duties would be the examination of candidates for the department; the selection, by *concours*, of lecturers for the School of Military Medical Instruction would also be of the number, the

Minister of War confirming all appointments. There is something in a name;—in our view the President should retain the title of Director-

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LITERATURE.

The Re-organisation of the Medical Department of the Army. A letter to the Right Hon. Lord Panmure, Minister of War. By PHILO-MEDICUS, Fellow of the R.M.C. Society, &c. Ridgway. pp. 29.

The object of the author of this letter seems to be to direct the attention of the War Minister to some of the principal defects in the present organisation of the army medical department, and to suggest the measures necessary to place it on an efficient footing. As to the cause of the late breakdown he observes:

> The faults and misfortunes recently exposed and severely commented upon, are less the consequences of defective organisation than of insufficient means, the false position the department holds in the army, and a vicious enervating system—unregulated by no fixed principles—pervading its constitution, and depriving its administrative officers of all just influence and authority. Exercising duties and loaded with responsibility of the highest importance, these officers lack the power to give weight to their opinions or efficiency to their acts. Fettered and controlled by so many different authorities, subject to the Commander-in-Chief, the Master-General of the Ordnance, the Adjutant-General, the Secretary at War,—powerless with the Quartermaster-General, unknown at the Admiralty—the chief of the medical department occupies a most unenviable and embarrassing position. He has himself, not inaptly, though somewhat humiliatingly, characterised the department over which nominally presides as parasitical, and living upon every other department of the army. This officer, as things are, may suggest—he may petition and urge, but of himself he cannot act, except in minor matters of a purely professional nature, relating to the internal organisation and discipline of the department. The high-sounding title of Director-General is a misnomer—an official fiction—for virtually he possesses no power whatever out of his own office in St. James's-place.

The author lays the discredit of the late failure of the department to meet the exigencies of the service upon the promoters of this system, and not upon the director-general, to whom he attaches blame only for not having energetically resisted a systematic encroachment upon his office, which, in the end, left him but the shadow of authority.

The measures recommended by Philo-Medicus for its improvement are to place the department under the immediate jurisdiction of the War Minister, its chief being in direct communication with him, and free from the control of other departments; to give the department individuality and independence in a military sense, by placing it on a footing with the other scientific branches of the army—the Engineers and Artillery, and bestowing on its members substantive instead of merely dubious relative rank; to give the medical officers a voice in all matters relating to the health of the soldiers, holding them responsible for the health and physical condition of the troops to a similar extent as the captain of a man of war for the safety of his ship and the sanitary state of the crew; to form a well-appointed ambulance corps, officered and commanded by the medical staff; to throw open the appointments in the service to public competition; and to establish in London a large general hospital which might be formed into a medical school for the army on the principle of the Val de Grace at Paris. To the last of these propositions we entertain a strong objection on behalf of the invalid soldiers. The position of the present general hospital at Chatham, though far from unobjectionable, is much better than London would be. To bring poor fellows, broken down in constitution, often far advanced in disease, to breathe the carboniferous atmosphere of London, shut out from the sight of everything but brick walls and chimney pots, may be advantageous to the students who are to walk this hospital, but would be an act of inexcusable cruelty to the men. As one of the reasons for establishing this hospital in London, Philo-Medicus alleges "the deficient accommodation for the sick of the household troops, the hospitals for whom are in this respect a disgrace to the country." Surely the author has never visited these establishments; for, though as plain externally as buildings can possibly be, in point of comfort for the sick, and suitableness for their intended purpose, they might safely be taken as models for regimental hospitals. Had the remark been applied to some of the London barracks, we should have entirely agreed with it. The author suggests the appointment of a council of health for the army, composed of experienced military medical officers, similar to that in the French army, and objects to the introduction into it of the "civil element," as announced by Mr. Peel in the House of Commons. The suggestions contained in the pamphlet are judicious, except the transfer of the invalid hospital to London; in many instances they seem to be founded on the system of the French. In advancing the claims of the medical officers to share the advantages possessed by their military companions, the author thus describes their labours:

> In the din of battle, without the excitement of command, there is the surgeon or assistant surgeon side by side with his companions; calm and intrepid he must be, for at any moment he may be called upon in the midst of the carnage and confusion, to perform the most appalling and most intricate operation of his art. On all these occasions, in the midst of trials and sufferings, the medical officers of the army, as a body, have displayed professional abilities of the highest order, and exhibited, in bold relief, some of the noblest qualities of our nature. Follow them to the hospitals—there you find them among the dead and dying at all hours, for they know no rest from their labours; remote from the eye of their military superiors, humanely exercising their calling, receiving, it may be, the grateful acknowledgments of their humble companions, but seldom the public approval of their general. Theirs is an unostentatious but, nevertheless, an ennobling duty.

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Minister of War confirming all appointments. There is something in a name;—in our view the President should retain the title of Director-General of the Medical Department of the Army; the next in seniority might be called Physician-General; the third, either Surgeon-General or Principal Inspector-General. These are titles which formerly existed, and better could not be substituted for men holding the high position of advisers of the Minister of War, in the direction and superintendence of the medical department of the Army.

I have the honour to be,

My Lord,

Your Lordship's most obedient
humble Servant,

PHILO-MEDICUS.

they might safely be taken as models for regimental hospitals. Had the remark been applied to some of the London barracks, we should have entirely agreed with it. The author suggests the appointment of a council of health for the army, composed of experienced military medical officers, similar to that in the French army, and objects to the introduction into it of the "civil element," as announced by Mr. Peel in the House of Commons. The suggestions contained in the pamphlet are judicious, except the transfer of the invalid hospital to London; in many instances they seem to be founded on the system of advancing the claims of the medical

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NOVEMBER 12TH, 1855,

BY

JOLLIFFE TUFNELL, F.R.C.S.I., M.R.I.A.

REGIUS PROFESSOR OF MILITARY SURGERY.

DEDICATED TO

THE MEDICAL OFFICERS OF THE BRITISH ARMY.

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My Lords, Mr. President, and Gentlemen,

The great drama now enacting at the seat of war is perhaps the noblest sight this world has ever yet exhibited. Great combinations have from time to time taken place for the purposes of conquest, but a combination for purposes so honourable has never before been seen. The armies of two great people, who had learnt face to face on the battle-field to view each other with respect, now fight side by side; and thus intimately ascertaining the good qualities of each other, this feeling of respect has been converted into enthusiastic admiration.

England and France now form one single army, and French and English soldiers tread the same path to glory. These two great nations have cast into the shade of oblivion all former jealousies, rivalships, and animosities, and have united for purposes generous and disinterested. Looking for no temporary profit or gain, or territorial enlargement, but seeking simply to establish the liberty of the world upon a solid and permanent foundation, each nation is making sacrifices of blood and treasure upon sound

political considerations. This union for freedom has not, however, been left to England and France alone; for gallant Sardinia has come forward, and, in the words of her noble monarch, "united her arms to those of powers who are struggling in the cause of justice, in behalf of civilization, and for the independence of nations." The special alliance between France and England is not a mere compact made between the two reigning Sovereigns, but a *bonâ fide* union of the people. The two nations have become united (and I trust *inseparably united*) by their soldiers' blood. The rancour and ill-will of ages has been washed away by those libations which have been poured out on the battle-fields of the Crimea, whilst in the presence of the whole world, at Paris, this alliance has been pledged by England's Queen; there, surrounded by the Royal Family of England, and holding by the hand its future King, she breathed the same in solemn silence to Napoleon's ashes. This was no simple deed of homage to the dead, but a noble act, attesting that past rivalry was indeed forgotten, and the union of the two people consummated.

An alliance of this nature must be fraught with high and holy consequences. Henceforth their objects will be in common merged in one. Examples of freedom, liberty, and power, France and Great Britain have constituted themselves a tribunal for the government of Europe. Europe has now a high court of appeal, an arbitrative power of becoming weight, an authority to which it may look up in the adjustment of all international questions. It has

been said that this view is not the correct one, and that the quarrel in which we are engaged is strictly England's own; that her Indian possessions are at stake, and that the shedding of the blood of her best and bravest sons is in her own defence. Granted that it is so, a war of self-defence must still be looked on in a hallowed light. The antecedent history of Russia tells but of conquest, with visions of universal supremacy filling the minds of all its monarchs; and surely the great mass of stores, the vast armament of war found aggregated in Sebastopol, would point significantly to aggression. The avowed object of Russia, I say, hitherto has been conquest, and what would have been the result of her triumph in the present case of Turkey? Why, it would have converted the future history of Europe into a dreary record of sanguinary struggles, followed by the silent slavery of each subjugated province, similar to that of Poland. The hostilities in which we are engaged have been reluctant ones; they were staved off until the very last, until endurance could endure no longer. War was *forced* on us, and not until necessitated to it did England exchange peace for war. War she well knew was but in one word "misery;" we cannot gild it, but may alleviate its horrors, and with this view and for this purpose are we met here to-day.

With the advent of war, the importance of the course of instruction which I have the honour to represent came to be duly recognised, and teaching, which includes the duties of the camp, the bivouac, and the

field, at once acquired its proper estimate. The importance of military surgery as a preliminary course of instruction for those educating for the public services of the country, now claimed the attention of the Government. The subject was brought before Parliament, and funds for the endowment of two chairs of Military Surgery in London and Dublin, similar to that which has long existed in Edinburgh, were voted by the House of Commons. Thus was this chair instituted; but the merit of the foundation, the origin of the measure, is due to Sir George Ballingall, and I feel I should be doing an injustice to him were I to omit, on this occasion, the opportunity of connecting his name with the institution of this chair. For years he strenuously contended for it wherever he could make his voice heard—for years he steadily used every effort to procure for London and Dublin the establishment of a Regius Professorship—to put these two schools on a level with Edinburgh, and to give to them the same advantages that his own University possessed. To place, I say, in each rival school what existed previously as an attraction to the student only in his own, shows a degree of liberality which deserves general commendation. The exertions of Sir George Ballingall for the English and Irish Colleges have not, I think, hitherto been as fully appreciated as they deserve; and he has, I consider, not received that meed of praise which I feel assured every member of this College will join in conferring on him, who reflects on the absence of self and the

disinterested motives that have characterised his actions throughout.

But before speaking further on the subject of the foundation of the Chair of Military Surgery in Ireland, I ought, perhaps, briefly to allude to the original institution of this chair in Scotland, since some whom I have the honour of addressing may not know the circumstances under which it was first established there, nor be aware to whose suggestions its primary institution belonged. It owes its origin to a spirited memoir which was addressed to the Government, after the battle of Camperdown, by the late John Bell, and it is to his admirable suggestions that Edinburgh is indebted for the Professorship she has so long held.

This office, upon its foundation, was first filled by Dr. Thompson (the author of the work on Inflammation), a man of the utmost talent and learning, but, raised by political influence from civil life to this appointment, he was totally unacquainted with the habits of the soldier. The Professorship in his hands made no impression on the public, as a specific branch of education; he connected it with his course of lectures on general surgery, and so conducted it in conjunction with them during the Peninsular Campaign.

Men instructed by him took with them to the field no knowledge calculated for the prevention, they went there only fitted for the cure, of disease, and such was the system of study when, upon Dr. Thompson's resignation in 1822, Sir George Ballingall succeeded to the chair. He found the course of pre-

vious teaching had created in the minds of the profession and the public the most erroneous ideas relating to the real objects of the course. He found it regarded only as an enlarged and extended system of teaching of the treatment of gun-shot wounds—subjects already embraced in the lectures upon surgery in common.

Prejudice and misconception met him upon every side. He received no support whatever. The first year that he commenced his lectures, he delivered them to a class of four, and only four, students, but his other auditors compensated for this deficiency. They were medical officers of the public services, men who could appreciate the merits of the course, and they numbered thirty-three. It was, indeed, the countenance of those gentlemen that induced Sir George Ballingall to continue in office; and had it not been for their encouragement he would not have recommenced the succeeding year, such total apathy and indifference surrounded him on all sides. He, however, did recommence the course, and pupils and professors one by one dropped in from curiosity. They heard matters discussed and brought before them of which they were in total ignorance before; interest began to be excited, and prejudice correspondingly to decline. In four years from the date of Sir George Ballingall's succeeding to the chair, sentiments favourable to the course began to be generally expressed, and two years subsequently, when the regulations of the Royal College of Surgeons in Edinburgh came to be revised, and two courses of surgery to be required,

it was unanimously voted that those students who wished to do so might take a course of military surgery in lieu of one. Sir James M'Grigor, the late Director-General of the Army Medical Department, and Sir Wm. Burnett, the late Director-General of the Navy, now wrote expressing their regret that similar establishments did not exist in the other schools of the United Kingdom, and soon Sir George Ballingall had the satisfaction of seeing his class amount to no less than eighty-four; such was the change effected by his good teaching and steady perseverance.

Now here a selfish, or less single-minded person, would have let matters rest; Sir George did not. He next addressed a letter to Sir Robert Peel, who was then in office, urging the endowment of London and Dublin as well as Edinburgh. Having visited the Continent and the schools of instruction for army surgeons there, he well contrasted the liberal expenditure of the governments of Austria, Prussia, France, and Belgium, in providing for the public service, with that of England. He showed the remarkable differences which exist in the duties which devolve upon the surgeons of the Continental armies, and of our own; one set of men being engaged in treating the affections of their own climate, the other in combating disease throughout the world. His letter was well received, and attracted attention for the time; the seed was sown, but the then seeming security of peace prevented it from germinating, and from the year 1834 to the year 1846, no change took place, Edin-

burgh remaining the sole source from whence the student educating for the public services could derive any preliminary knowledge of the duties to devolve upon him. In this year, however, with the sanction of the late zealous and excellent head of the Army Medical Department, Sir James M'Grigor, I undertook the task of introducing into the School of Surgery in Ireland, this as a separate and special branch of medical education. The succeeding year the Directors-General of the Navy and Ordnance Medical Departments joined in recognising the course as equivalent to six months' surgery in the professional qualifications of candidates for admission into each respective service, and in the year 1852, the honourable the East India Board joined in giving it their unsolicited support.

Thus far the matter was entirely divested of Government interference, strictly so speaking. Now, however, the attention of Sir De Lacy Evans was attracted to the subject. As a soldier who had seen much service under trying circumstances, he was perfectly aware of its importance. He knew the onerous and varying duties that devolve upon the military surgeon in the field. He, I say, had seen service, and he knew the value of the knowledge sought to be diffused. He broached the subject in Parliament in 1853; his speech was well received by the House of Commons, and attentively listened to by the then Secretary-at-War, who immediately instituted an investigation into the working of this measure on the Continent, and the opinions enter-

tained of it at home. The strongest medical evidence was given in its favour, and military testimony spoke equally of its merits. Lord Cathcart, Commander of the Forces in North Britain, expressed his full concurrence with Sir De Lacy Evans, in the view he had taken, and stated it as his firm conviction, that extending to the other capitals of the United Kingdom the advantages enjoyed by Edinburgh, would be beneficial to the interests of the country, both in regard to economy of money, and, what was of more value, human life. Sir Howard Douglas, Sir Thomas Brisbane, Sir James Russell, and General Wetherall, all advocated the same view. This disinterested evidence was conclusive. War with Russia was declared, and the Government at once proposed a vote of £400 per annum for the endowment of additional Chairs of Military Surgery in London and Dublin, which passed the House of Commons without a dissentient voice. Such, gentlemen, has been the gradual progress of the subject we are met this day to consider: it originated with private individuals; it has terminated in the patronage of the crown.

The object sought by this branch of instruction is, to fit you, gentlemen, for the special duties which, as naval and military surgeons, you will be called upon to perform; for the object in instituting a medical establishment for an army or fleet is not merely to provide for the cure of disease, but it is also, and I may say principally, for the preservation of health, for the maintaining undiminished the vigour of our soldiers and seamen, under favourable and adverse

circumstances, in time of peace as well as in time of war.

The instructions with which I have been honoured by the Right Honourable the Minister for War, in connexion with the duties of this Chair, bear also directly on this point. They say—"You will treat, in your lectures, upon all such subjects as will directly meet the requirements of the army; you will explain the qualifications required in recruits; the various means of maintaining the health of soldiers, in barracks and cantonments, in camp and in the field. You will particularly explain the peculiarities which manifest themselves in the diseases and injuries to which soldiers and seamen are more particularly liable, and the best means of treating them. The diseases of foreign stations—the peculiarities these diseases present in these stations, and the most approved methods of treatment; the specialities of medicine; the arrangements necessary to be made previous to a march and to an action, and the specialities of surgery; the defects which unfit a soldier to serve, and warrant his being invalided; these, and all other matters which are not ordinarily taught in the medical schools of the United Kingdom. And no candidate for the Army Medical service will in future be admitted who has not satisfactorily passed through a course of such instruction by the Regius Professor of London, Edinburgh, or Dublin." It is the wish and desire of the Government that the education of those destined for the public medical services of the country should not only be as perfect as the resources of the

country have hitherto permitted, but that due provision should be made by the State for the deficiencies which existed before. The intention of the Chair of Military Surgery, therefore, is not only to teach you how to treat the soldier when wounded or sick, but it is also to bring before you the full and careful consideration of those measures which are best calculated for the prevention of illness and the maintenance of health. For, you are ever to bear in mind, that it is not the direct weapons of war—shot, shell, and musketry, that really thin our ranks, but that it is disease. This fact has been long ascertained; the experience of every campaign has proved it, and the present but too sadly bears it out, ten times the number of our gallant soldiers having sunk under disease than have fallen on the battle-field—but too truly verifying the words of the Czar after the battle of Inkermann—"that although our troops might baffle his generals that day, they would not be able to resist Generals January, February, and March."

The history of war, too, both by sea and land, shows further that more battles have been lost, more great enterprises failed, through sickness than through the skill or valour of the enemy. Our fleets and our armies are sent forth to maintain the honour of the British arms; sickness and disease may in a brief period paralyse their efforts, and these are not to be prevented by medicine or remedial agents. Medicine, as applied to war, consists in the preserving of the health of the community; the discovery of the causes of endemic and epidemic diseases; the dieting and

the clothing of the soldiers. These will be amongst the first subjects we shall have to consider—subjects totally apart from your general professional education, but subjects which will be henceforth taught in this College by the Military Surgery Chair.

Her Majesty's Government have decided on placing this chair in the Royal College of Surgeons in Ireland, because the position of this College as the national school of surgery of the country constitutes it the legitimate recipient of a royal and national appointment. The charter of the Royal College of Surgeons expressly states that this institution was founded in order—" that it might provide a sufficient number of properly qualified surgeons, as well for the service of the public as for our army and navy;" and the money with which the edifice was built, within whose walls we are assembled to-day, was granted by Government for this purpose.

And here I must be permitted for one moment to digress, for I feel that I should be slighting the memory of a great and good man were I to omit to tell you through whom this money was obtained. It was obtained by the late Dr. Renny, when Director-General of the Army Medical Department in Ireland, whose portrait, in grateful recollection of services rendered to the body, hangs in the board-room of this College, and a monument to his memory has been erected in Christ Church.

But to return. The College of Surgeons in Ireland is of a very different character from the College of Surgeons in England. The College of Surgeons of

this country is its great Medico-Chirurgical school; the College of Surgeons in England stands in relation to the body simply as a council-hall or guild. The examination of candidates for the diploma is held within its walls, but beyond this, and fixing the curriculum of study, it in no way assists in the education of its members. From the school of this College, on the contrary, issue the majority of those who have the honour of its diploma; and the student who gains it, believe me, carries with him into the world a title acknowledged and respected wherever civilization extends. For these reasons, then, the College of Surgeons has been selected as the most fitting locality for this chair. The Council, whilst accepting it as a graceful recognition of the high sense entertained by the Government for the worth of the institution, have not, on their part, failed to reciprocate by co-operating to the utmost of their power. No sooner was it intimated by the Minister-at-War that it was desirable that the Regius Professor should have the fullest means of illustrating his lectures, than the Council at once placed a museum at his disposal. Lord Panmure further expressed it as being the wish of the Government that full accommodation should be provided for the medical officers of the public services who might desire to prosecute anatomy whilst quartered at, or stopping in Dublin; a private dissecting-room was immediately ordered to be built, and is at this moment in progress of construction. The Goverment, it is true, have on their part come forward and granted money for the

fitting up of the dissecting-room and museum, but the College alone has charged itself with the cost of erection. These two, when fully furnished and completed, I do not hesitate to say, for their respective purposes, will not be surpassed in the United Kingdom; and I feel that I may here, on the part of the medical officers of each service, express their best thanks and acknowledgments to the Royal College of Surgeons. All will, on entering its portals now feel, that, no matter whether Scotch or English surgeons, they are here as wholly welcome and at home as in the Colleges from whence they have taken their degrees. They will look upon it as a professional home—a common ground of re-union for all; and when quitting it for service abroad, the deficiencies in its museum, will not, I feel assured, be forgotten, but through their kindness will these deficiencies, year after year, be made less. Here (in connexion with a museum specially allocated to this chair) it may be said that I am speaking mainly with a view to self. I acknowledge, gentlemen, that I am; but believe me, in doing so, it is equally for you. Illustration is the key-stone of teaching. The ear may appreciate and retain, but it never can equal the eye. It would be invidious for me, on an occasion like the present, to particularize the names of some of the donors who have already contributed, when, from the very number, I cannot name all; therefore I can only say that I must beg most gratefully to express my thanks to all who have already aided in the formation of this museum, and especially for the kind

and liberal manner in which they have come forward to do so.

My duty, then, in connexion with this chair, will be, to bring before you the full and careful consideration of those subjects which it is necessary that you should be acquainted with, in order to fit you for the charge of large bodies of men; and the experience of the present war has, I think, sufficiently shown the necessity of such being a branch of the education of every military surgeon—indeed, I might almost add, of every military officer; for if it were inculcated that the object to be attained in war was not only fighting and destroying the enemy, but also preserving our own troops in efficiency as to health, a vast deal of the loss of life in armies would be avoided.

There has, unfortunately for the welfare of the English army, been, from time immemorial, a general dislike to receive medical advice. I do not mean to say that exceptions have not existed to this rule, but it is (as expressed by the Scutari Commissioners, in their report) "notorious that the most valuable suggestions of the medical officers were but too frequently termed 'Doctors' crotchets,' and utterly disregarded." Everywhere it was the same; neither at Scutari nor the Crimea, had the principal medical officer the power to secure from other quarters the co-operation and assistance indispensible, whilst the weight of responsibility was left entirely upon him. More power must be placed in the hands of the Medical Staff; the decision of Medical Boards held by experienced men in all matters relating to the

physical condition of the troops, must be vested with something like authority, and the medical officer should be amongst the very first, instead of amongst the very last, to be consulted in all the great operations of war. At present the English army medical officer has no power in matters where he should be all-powerful. Look at the consequences. Why was there a deficiency of field supplies at Alma? Because the transmission of those supplies was not permitted to that authority who alone could conduct it. Was there a deficiency of stores provided? No. The medical authorities did their part in selecting all that was required, it was in the stowing and transporting of these stores that the lamentable failure was, and in the stowage and transmission the medical department had neither hand, act, nor part.

I say, gentlemen, *that the Army Medical Department has not been fairly used.* The undue suffering of our gallant army through that long and dreary winter has been attempted to be attributed to the failure of the Medical Department. *I tell you that grosser injustice was never perpetrated.* I will do more, I will prove it to be fact.

The causes of the wretchedness and misery of our soldiers were beyond the medical officers' control; they had no power of regulating their own affairs; they could not increase the number of their staff; they could not order the conveyance of the ambulance from Varna to the Crimea; they could not provide carriages for the wounded from the field of Alma to the shore, nor yet transport them across the Black

Sea to the Bosphorus; but what human hands and hearts could effect, they did. I have the honour of knowing personally many of these maligned men, *and I tell you that they are inferior to none, either in professional acquirements, or in those qualities that characterize the British soldier and the gentleman.*

The position of the Medical Department in connexion with the present campaign cannot, I consider, ever be more legitimately discussed, or more publicly brought forward, than upon the present occasion. Will you, then, allow me for a brief period, to trespass on your time, and to state what were the real causes of the miseries of the Crimea.

The first and principal cause was neglecting to follow the suggestions of the Medical Department. This I will now prove. I will make no general statement; I will come to facts.

War with Russia was declared on the 8th of March, 1854, and on the 4th of April, the Director-General, Dr. Smith, wrote officially in these words:—

"If the means of averting disease be not rigorously observed, the British troops will suffer seriously from the moment they land upon the Turkish shores. The clothing which the soldier has at present is not suited to the climate in which he is to serve, nor the duty in which he is to be engaged; and if the necessary adaptation be not effected, sickness, and undue sickness, will be the result.

"The British forces will be exposed to great heat and an extreme of cold. I feel, therefore, constrained to recommend that an inquiry should be instituted, to ascertain if the dress of the soldier cannot be made to contribute to his comfort and efficiency more than it does now; for, as at present constituted, the shako is cumbersome and heavy, the leathern stock unfitted for the field, whilst the coatee,

tightly buttoned to the body, restrains the limbs, and oppresses the man with heat. He should have loose and easy-fitting garments for the hot weather, and be placed (at the expense of the nation) in possession of flannel shirts, woollen drawers, and worsted stockings, to enable him to stand the winter cold.

"There is reason, too, to fear, that from the absence of, or badness of, the roads, wheeled vehicles will not be able to convey the sick and wounded. More simple means of carriage must be adopted, and I propose, therefore, that a body of 800 able men, natives of the country, be raised at once, 'as a Hospital Conveyance Corps,' and if duly organized, and properly managed under military discipline, they will prove most effective for the purpose required, and greatly advance the cause of humanity.

"The welfare of the sufferers and of the army will require that those disabled by wounds or sickness should be removed from the vicinity of the conflicting forces. Ships, therefore, should be *liberally* provided, some for the purpose of carrying to England, or elsewhere, men not likely to be soon available for further service; others in use in harbour, as floating hospitals. The ships for the above-mentioned purposes should be commodious steamers, high between decks, thoroughly ventilated, and having fixed berths."

Gentlemen, I beg you to note that these letters were written and sent on the 4th of April, the 13th of April, and the 10th of May. The battle of the Alma was fought on the 20th of September, after five months had passed away. Where was the hospital corps to carry the wounded to the shore? Where were the fitted transports to convey them to Scutari or the Bosphorus? But to look further: our army took its stand before Sebastopol. Six weeks more passed over, and what was done to aid that army? A while longer, and the days declined. Autumn gave place to winter, aye, and such a

winter, and our gallant troops stood in the tattered remnants of their summer clothing to face the Crimean cold. The keen blast, cutting with its icy edge, thrilled through the soldier as he kept his watch on Balaklava's heights. The damp mist chilled him, and the cold rain drenched him, as he toiled amidst the darkness of night in the mud-soaked trench. Where were the warm flannels now?—the woollen drawers?—the worsted stockings? *Were they wanted? Aye, and wanting.* Sadly and silently the flower of England perished. The flower perished, but not the stem from whence the flower sprung; England herself remains, and soon will be a stronger rooted tree than ever. Decision has been called for by the nation; he has come and found the tree shaken. What has he done to prop the tree? Not placed around it one or two dry sticks, that howsoever goodly-looking in the sunshine, would snap and break away if borne on by a foreign blast. No; he has called upon society to join hands to hold it for awhile—to bear with any little temporary shaking till it recover from the last winter's shock. He knows the ground around it is the source of permanent support—the source from whence the tendrils are to find the sap to fill the head. He has broke up the ground, and opened new channels for intelligence to flow towards the roots; he has loosed the iron band of routine, which, propped on patronage, encircled the trunk, and gave it false support; he has loosed this band, and thus allowed intelligence and understanding to pass slowly up: Oh! that he would

burst that band, and let this sap run through the country's trunk to every spray.

This may be imagery, but this is truth. The picture I have painted, and yet will paint, is but the faithful portraiture of last year's scene. What were the causes that carried off our brave soldiers to inglorious graves? Hardship, drenching rain, and pinching cold, short rations, insufficient clothing, nightly labour. These were the seeds; and scurvy, dysentery, diarrhœa, cholera, and fever, its fruits. Wholly to prevent these ravages might be impossible; still, to mitigate them was within the range of human foresight, and had the right means suggested by the Medical Department, been used at the right time, last year's campaign would have been greatly shorn of its horrors. Neglecting these the British army suffered. Death held his reign. Brave soldiers perished in misery and filth, their decomposing bodies sending noisome vapours up into the nostrils of the rest, blighting and destroying all that breathed that tainted air.

At one period our army lost, from these causes, over one hundred men per day. Of our comparitively small force in the Crimea, 4,000 were ill in camp, and more than double that amount of men sick in hospital at Scutari and elsewhere. Some regiments were extinct, or nearly so. A fine regiment had at one time seven men only, and another corps but thirty soldiers fit for duty. Our picked and chosen Guards, who sailed from England nearly 2,000 strong, could muster little more than 200 on

parade. Of the fine army England sent away in all the pride and pageantry of war, how few remained to celebrate the anniversary of their landing on the Crimea!

And who was it that, through that dread time of pestilence and death, struggled by day and night to stay the plague? *The Medical Department*—the staff and regimental surgeons—these men, I do maintain, individually and collectively, so discharged their duty to the nation, as to call forth the nation's gratitude. I have inquired from numbers that have returned, sick and wounded, officers and men, what was the treatment they received from the surgeons under whose care they came? I have had but one reply—viz., that anxious care, unceasing kindness and attention, with the most skilful treatment, met them from the moment they fell wounded on the battle-field, or struck down by sickness, till they reached England's shore. This, it may be said, is private statement. If their conduct in camp and field be such as I here say it is, *why does not public record tell the same?* Why *are their names held back in each despatch if they are worthy of being placed upon the pages of the Nation's Register?* Why? *Because, routine has, as it were, fixed a scale of names that are to appear on each occasion, and of those that are not.* And yet, in spite of this injustice, (for it is no less,) the deeds of some have forced the unwilling pen to write their names. And thus I read of Wilson, Phelps, and Greer—of Brady, Taylor, Wrench, of Jeeves, O'Callaghan, and *noble*

Thompson—what shall be said of him? what of a man who, exhausted by fatigue in tending on his wounded foes, sunk a martyr to humanity? Why, that in chivalry there is not aught that can surpass his noble conduct towards the wounded Russians; and he, I say, is but a sample of his class.

Who, then, was the cause of all the misery our troops endured? Who to blame? The Medical Department? No! it was not; IT WAS THE NATION; it was you and I, and all who suffered miserable starveling creatures, trading hucksters, to awe and govern in the House of Commons, and to sacrifice to their own interests the country's character, the prestige of the British arms. What, but the pluck and courage of the officers and men of the Crimean army, has saved England? Had they succumbed — had they not, despite of cold and hunger, overwhelming numbers, and disease, held a bulldog gripe of Russia, *where would England now be in the scale of nations?* This is the point for deep consideration. Let us, then, ponder on it. Let us profit by the sad experience of the past. Let the words uttered by the Duke of Cambridge, in the Town-hall of Liverpool, be re-echoed by the country. His Royal Highness said—"The lesson learnt from these events, he trusted would not be forgotten; and that lesson was, not to starve our establishments in time of peace, or to maintain them in such a low state of efficiency as if we thought another war impossible. The defects from which we suffered were not so much the faults of individuals as of our system,

and still more, of the state to which our war establishments had been reduced by forty years of peace."

His Royal Highness here spoke from experience. In doing so he but confirmed what had been said by Mr. Herbert, who, speaking in the House of Commons in his place as Secretary-at-War, spoke the truth, and those who know the Honorable Sidney Herbert know he can speak no other. He said England commenced this war without an army. She had troops, and chosen troops; but what were their numbers? Why, commensurate with the magnitude of our possessions, scarcely to be considered more than military police. I will go further: I will say (for it is useless to conceal the fact) that England at the commencement of this war had a false notion of its own position. It looked upon itself with satisfaction as a power whose military system was perfection. Brief experience showed the fallacy of this opinion; it revealed our whole military system (beyond the regimental) as defective in the field; its arms had to be changed, the Minié rifle to be substituted for the musket, and our artillery made of double weight; our soldiers' clothing changed; the shako he discharged himself, the stock after a struggle was taken from his neck, and the tight coat changed for an easy frock. The Commissariat service was found totally unequal to all the arduous duties it was called on to perform, and a Land Transport Corps had to be embodied to carry the supplies. The Medical Department was defective in everything *but the character and talents of its officers.* It is needless, however,

to prolong this catalogue, or to particularize; for, in one word, our system throughout was bad. Shall it remain so? No; the nation has the wish to repair every defect, and Government the power, and not alone the power, but the will. From the War Minister's own lips have I received the assurance that it is his and the Government's intention, in relation to the Medical Department of the army, to make this service as perfect as means can make it, so that it shall be a credit to the country, and an object of desire for the whole medical profession.

Gentlemen, there are grievances under which its members labour; but this state of things soon will cease. Already has the sister service been relieved of one of its greatest drawbacks; I mean the denial to the assistant-surgeon of a cabin. This necessary accommodation has been granted without qualification or reserve. The withholding of this privilege was an unwise act; for, to my own knowledge, within the last few years, many men of prime ability, and most desirable for the public service, have refused to undergo the annoyances of the cockpit of a man-of-war, and have taken to the mercantile marine, talents which should have adorned the Medical Department of the navy. Grievances, gentlemen, I know are always a theme of popular discourse; but it is not of them that I have to deal to-day. The subject on which I feel impelled to speak is the position of our country in connexion with the present war, and the influence which our profession may exercise for good or evil. Directly or indirectly we have all had more

or less occasion to regret this war; and yet, on principle, I do believe that we ought to regard its advent as a blessing. I believe that Russia at this moment acts the true friend of England; and that we are deeply indebted to her for forcing on this war; and, why? Because, she has stripped the handkerchief off England's eyes, and shown her that she slept on sinking ground; roused her to exertion before she had sunk too deep, and whilst she yet could save herself. The struggle to effect this has been intense; but she has done it. It has taught us where we were deficient. It has led us to comprehend in what our weakness lay, and to correct it. We have admired the splendid camps and field arrangements of our brave ally, France, and have compared them with our own. We have seen the difference; but have we reflected where the difference lay? France began to form her army on the 19th of June, 1815; England hers not until the 9th of March, 1854. If England would be on the same footing, she must, like France, keep up her establishments in time of peace; she will then be equally prepared for time of war.

Our own immediate province in connexion with this subject, is not, however, to go into military detail, but to inquire in what, pertaining to the hospital and field equipments, France has shown her superiority to England. It is not, I say, in the medical officers themselves, but in the system under which they serve. The French have had a staff of carefully-trained men, of every grade needed, in an hospital; the English have had nothing of the kind.

The French attendants have been made perfect in their duties before quitting home; the English have been taught literally nothing; fifers and flute-players to-day, they are turned into hospital orderlies to-morrow. The British Army Medical Department has had no position commensurate with its importance. The Director-General has well expressed its actual state, by saying that hitherto it has been a parasite department hanging on others for support. Gentlemen, this state of things must cease. The Army Medical Department is a department, believe me, of paramount importance to the State. It has been kept down; but why has it been kept down? Because of the want of independence upon the part of its members. Discipline is one thing, but abject subserviency is another. Do your duty honestly, honourably, and faithfully, but having done it, *maintain your own position.* If you do not so individually, you will collectively be in times future, as in times past, a parasite department. The British army surgeon hitherto has had in his own person to combine the functions of physician, surgeon, and apothecary, purveyor, clerk, nurse, and dresser. In the French army, on the contrary, there is a division of labour which exerts a beneficial influence over the whole hospital arrangements, and its effect is striking, by the good order consequently produced. And whence came this superiority of system? From one master-mind, left to work unfettered by routine. It came from Baron Larrey, *not Baron when he formed this system, but made Baron for so doing.* His career

so well illustrates the influence the surgeon can exercise over the well-being of an army that I must adduce it here. When M. Larrey joined first, the French hospital arrangements were as defective as he left them perfect. There was no field hospital whatever. The wounded soldier's sufferings suggested to him the necessity for organizing such, in the immediate vicinity of the field of action—a present help in the very hour of battle. Restrained by no rules or regulations forbidding him from carrying out his ideas, he formed at once that ambulance volante, which we have seen so admirably worked in the present war. Previously to this, the victims of the conflict had to lie for hours and hours on the battle-field, after all was over, before receiving help, many meanwhile perishing for want of aid. Larrey soon showed the perfection of his system by going into action, and taking his wounded out ; and beautifully does he describe the feelings of internal pleasure he experienced when contemplating (as he bore the first sufferer to the rear) the benefits he had conferred upon his countrymen.

His ambulance corps he adapted to the country in which he served. He had two-wheeled carts and four-wheeled waggons for plains, and where the country afforded roads ; for mountainous districts, and places difficult of access, mules with chairs and litters (such as now in use) ; whilst over the soft sands of Egypt he bore his sick and wounded, slung in baskets upon camels' backs. Thus far for the field. Active service being suspended for a while, and the

French army in cantonments, sickness came, virulent disease and pestilence appeared. Larrey stood forth to meet it. At once he extended the cantonments, built huts, separated the sick and healthy, and relieved all over crowding. He scoured the country, brought in vegetables, vinegar, and beer, improved the soldiers' bread, and thus the plague was stayed. Larrey looked not to physic nor yet to France for aid. Peace followed. What did Larrey now? He formed at once a School of Military Surgery, lectured, experimented, and in every form studied disease; collected and tried all sorts of instruments, and invented others to supply the wants of war. Larrey's resources were interminable. He was also cook as well as surgeon. His potages, placed beside those of his good, kind-hearted countryman, Soyer, might not, perhaps, have pleased the palate equally, but they did more, for they saved life. Reverses had attended the French arms; there was a total absence of all commissariat supply; death from starvation seemed imminent. Larrey was summoned in extremity. *He* saw no difficulty in the case. He took the best horses from the troopers, killed them on the spot, cut up the flesh, and made soup for all, flavouring it with powder taken from the cartridge-boxes.

Gentlemen, I think I need say no more of Larrey's value to the army. I have told you what he did; I will tell you now how he did it. He effected it in the same way precisely that Todleben defended Sebastopol — by *absence of routine.* Confidence was placed in him by Napoleon. He had uncontrolled

power over his own department ; what he saw necessary to do he did, and did at once. *Buonaparte looked to him for suggestions, treated with respect each word he uttered, and listened attentively to all he said.* His presence and advice were so valued by that great chief that he made no move without him ; and on his return from Elba, his first care was to secure Larrey's services for the grand army he led to Waterloo.

This was no fanaticism. It was no superstitious prestige that induced Napoleon to seek to have Larrey near his person. It was the knowlege of his value to the troops, his worth in the hour of need. No ! Larrey's fame was universal ; for no sooner had peace been finally secured to France, than foreign powers sought his aid. Free America invited him to the United States ; autocrat Russia offered high emoluments and honours if he would join her ranks ; and Brazil petitioned him to guide her army ; but he declined them all, though suffering at the time almost penury from Bourbon spite. Larrey declined all offers. "I remain," said he, "for France. Her sovereign is changed, but not her soldiers ; they are the same, and my solicitude for them forbids my serving any else." What truly noble feeling is here expressed. Does it not rightly justify what Napoleon said of the great baron—"A brave and honourable man is Larrey. If France ever raise a monument to gratitude, that monument should be to him."

The proudest day, however, in Larrey's life, was that on which he visited the lines of Chatham. Here,

his old professional opponent, Sir James M'Grigor, the Governor, and all the Staff, met him in full uniform, and conducted him over the hospital and fortress, and as he passed the outer gate he was saluted with military honours. Such was the feeling England entertained for honesty and worth.

What was it, gentlemen, that gained for Larrey this proud position? Not destroying life, but saving it. The military officer reaps fame (and justly so) by dealing death amid his country's foes; the surgeon by extending aid to friend and foe. Both are honourable, manly, fine professions; but is there not, (if closely analyzed,) a finer, holier feeling, in saving than in destroying life? I well know that the wild excitement of the charge, and the clash of steel handled as a sword, is far, far different from what its employment is when set in ebony as the surgeon's knife. I know that, in war, the soldier's is more attractive than the surgeon's life; but is it better? Does it conduce to greater happiness in early years, or peace in old?

I am not used to moralise, and no words of mine can equally support this view as well as those which I shall now quote from a letter recently addressed by a staff-surgeon* of the army to his son (a pupil of

* The writer of this letter is Dr. William Charles Humfrey, Deputy Inspector-General of Hospitals, and I publish it without his knowledge or sanction. It may be said, then, that being a private communication, I am not authorised in doing so; but I hold that it is but right that Government should know the private worth of men who are its servants. The public journals have given rumours of the civil element being about to be infused into the reformed Military Medical Department. Such amalgamation cannot be but unnecessary and uncalled for, whilst such men as Dr. Humfrey exist already in the department. The organization of the Smyrna Hospital was the work of this officer. Public record has testified to the ability of his executive powers there.

my own), who wished to change the scalpel for the sword. He says,

"I shall not oppose you, if it is your wish to quit our profession for the army, for ours is a profession in which no man should be kept against his will. Take your choice. My every effort shall be to advance you in whichever you adopt (*so long as you advance yourself*), but, before leaving that in which you are engaged, let me contrast the two. Does the troop officer, whose profession obliges him to take life, when ordered, perform the duty of a Christian so well as the surgeon? The medical profession is, in the eye of God, (next to his own service,) the very noblest of all professions. The physician's life is spent in acts of love and charity—in relieving pain, in mitigating suffering and distress. It is a profession in which all the good and kindly feelings of our nature are called into existence, and when practised by a man of liberal and generous disposition, there is none that commands respect and esteem so much, or more frequently obtains for its members friendship, gratitude, and good-will."

That it does so let me, in conclusion, give a proof. Let me adduce one of recent date, humble in origin, it is true, but not on that account to be reckoned of less worth. It is not the record of a farewell piece of plate presented to a surgeon by his brother officers,—that cherished gift,—No, it is simply a notice from the columns of *The Times*, but a notice recording—what?—the spontaneous expression of the private soldiers' gratitude, and runs thus—

"We, the undersigned, one hundred and fifty-eight sick and wounded soldiers returning from the seat of war (on board the ship *Saldanha*), cannot separate without expressing publicly our heartfelt gratitude to Dr. Fyffe. During the long passage home, morning

and evening, noon and night, he was at the bedside of the suffering man; and when it pleased the Lord to call the soldier to himself, then, in that last dread hour, when earthly aid could do no more, was he still there, fervently imparting spiritual assistance to the dying man.

"The names of many officers of lesser worth, we do not hesitate to say, have been brought to public notice by high official friends; but we will introduce into our humble cottages, with grateful recollection, for many years to come, the name of Dr. Johnston Fyffe."*

And who is Dr. Johnston Fyffe? He was a short time since a student of this college; a short time since he sat where you sit now. May I, a short time hence, from off the present benches, draw like examples for future illustration.

THE END.

* Dr. Fyffe was at this time assistant-surgeon of the 30th Regiment.

T. Lorymore Esq
Surgeon
Army of the East
Crimea

NAVAL AND MILITARY

MEDICAL EDUCATION:

HOW TO SECURE ITS EFFICIENCY, AND PROVIDE FOR THE HEALTH OF OUR SOLDIERS AND SEAMEN.

BY

JOLLIFFE TUFNELL, Esq., F.R.C.S.I., M.R.I.A.

REGIUS PROFESSOR OF MILITARY SURGERY, DUBLIN.

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[The Letter from which these Extracts are taken was not written for publication, but the Author having been requested to make his views generally known, feels much pleasure in doing so.]

NAVAL AND MILITARY

MEDICAL EDUCATION,

ETC.

In reply to the request that I would state my views in detail, in reference to Military Medical Education, and to the proposed project of the Army Sanitary Commissioners to establish a Central School of Clinical Military Surgery in England, I have to make the following observations:—

"The Report of the Commissioners presented to Parliament (so far as it refers to the Regius Professorship in Dublin) is framed upon a totally erroneous basis; the evidence upon which it has been founded, viz., that of Sir Benjamin Brodie, Mr. Ferguson, &c., having been given under a mis-

apprehension as to the real state of the case. Their opinions have been pronounced (and acted upon by the Commissioners) under the supposition that the candidates for the Army who have studied in Dublin, have been permitted to substitute a course of Military Surgery for one of General Surgery—or, as they express it, "that their knowledge of Military Surgery has been acquired to the exclusion of General Surgery"—which is not the case. No candidate from Dublin has ever been exempted from attendance upon the full number of lectures upon Surgery in general, in consequence of having attended the Military Surgery course; the instruction afforded by this course has been that which the Commissioners themselves now specially advocate, namely, *superadded* and not, as they suggest, *substituted* knowledge.

The argument, therefore, upon which this portion of their Report is founded, falls to the ground.

The next point, however, to which I would wish to call attention is of much greater importance, namely, that whilst this proposed School of Clinical Military Surgery, *cannot be practically carried out*, it is likely to exercise a prejudicial influence upon the interests of the Army Medical Department.

The objects contemplated by this school are, I say, not attainable.

It is proposed to be established for the teaching of Clinical Military Medicine, and Clinical Military Surgery; but there is no such thing as the one or the other to be learned in any hospital in the United Kingdom; for nothing can be *clinically* taught except in the presence of the thing spoken of. The impossibility of a right field of observation being afforded in a Garrison or Camp (such as Aldershot) is admitted even by the Commissioners themselves, who state that the cases in Military Hospitals at home "are only ordinary cases, and differ in no way from those in civil life:" Military Medicine and Surgery, therefore, in their true acceptation, cannot be learned there.

Next, as regards Invalids returning from abroad (such as are received at Chatham), they are equally unavailable for the purposes of such instruction, *because their chronic injuries bear no resemblance whatever to wounds as they occur in action*, or their ailments to the original diseases, in their acute condition. The latter, indeed, are worse than useless, for the tonic and supporting line of treatment which they now re-

quire, would but tend to impress upon the mind of the beginner ideas counter to active treatment; and the young Army Surgeon would only learn, on his arrival in the Tropics, *the reality of practice at the cost of the soldier's life.* Military Medicine and Surgery, I repeat therefore, cannot be *clinically* illustrated in the United Kingdom; the principles only can be dilated upon, and for these no special establishment is required, seeing that they are already everywhere taught.

The third objection which I urge against the institution of this proposed school is, that it is undesirable, as being calculated to injure instead of advance the interests of the Army Medical Department, by deterring from admission into its ranks the very men whose services it is the aim of the Legislature to secure, for the compulsory schooling of six months, which it entails, would be intolerable to the highly educated man, who could not but regard it as a superfluous tax.

To place this point in its correct light, and to show that all must adopt this view, I would beg to submit an outline of the qualifications which every future candidate for the Army Medical Department will be required to possess, and the curriculum that he will have to undergo. In

the first place, he must have "such certificates as will qualify a civilian to practise medicine as well as surgery," and in the next, he is to be subjected, "as regards both his surgical and medical knowledge, to a practical as well as a theoretical examination." "This examination to be competitive, (based upon standard,) to be conducted by four paid examiners, on Anatomy, Physiology, Comparative Anatomy, Medicine, Surgery, and Natural History; and to extend over a period of five days, including bed-side medical and surgical testing, and dissections and operations on the dead."

After having passed this ordeal, it is the proposal of the Commissioners, that the candidate, instead of obtaining his commission at once, shall become only what they term a "Probationer"; and he now is to be sent back to school, under compulsory tuition, for a period of not less than six months; after which he is to be subjected to another examination, "and on passing this only will he be eligible for an appointment as Assistant-Surgeon."

Knowing the feelings of medical students as I do, I have no hesitation in saying, that a scheme more thoroughly calculated to be obstructive to

the interests of the Service could not by possibility be devised. The idea is hateful to every student, and the practical result (if persevered in) will be, to deter from entry into the army the very class of men—"House Surgeons from hospitals, and Prize-men in their different schools"—that the Minister for War (when speaking upon the Estimates) congratulates the country on now obtaining through the medium of the new Warrant. This class of individual will shun the idea of being subjected to a renewal of schooling, after he has *proved* himself to be fully qualified for the discharge of every branch of his profession.

I speak thus forcibly, because I know that what I am stating is correct.

Having urged, then, the impolicy of adopting the proposal of the Commissioners in the institution of this School, I deem it to be my duty to suggest such substitution as will, if carried out, fulfil the great and necessary end of providing for the candidates for the Medical Department of each public service, the means of acquiring a thorough knowledge of those measures which experience has shown to be necessary for preserving the lives of our soldiers and our seamen, under circumstances of an adverse nature.

I beg to suggest, then, that in each of the great central Schools—in London, Edinburgh, and Glasgow—a Regius Professorship of Military and Naval Hygiene shall be established, with the means of practically illustrating what the Chair is intended to teach, similar to that which is now attached to the Regius Professorship in Dublin. The information afforded by these Chairs will be open to the candidates for each public service, as well as to those intending to practise in the United Kingdom; for it is not generally known that forty per cent. in Scotland, forty-four per cent. in England, and fifty-five per cent. in Ireland, of Medical Practitioners, hold medical offices of one kind or another, connected with the public service, and bearing upon the public health.

In addition to these local Professorships, there should be appointed a Military Examiner, to be associated with the Board of Civil Examiners in London, a gentleman whose peculiar knowledge and experience would enable him to examine in the specialities of Military Medical Service—subjects which the other Examiners, as civilians, necessarily could not undertake. The duty of this officer should be, to test every candidate for the public service, and ascertain, not only that he has

been ably taught by the Regius Professor, at his respective School, but that he has also learned, and is master of, those subjects which, for the public welfare, it is necessary he should know.

In the School proposed by the Commissioners, the acquirement of this necessary knowledge would be limited to the candidates for the army only; although each service equally needs, and each service is equally entitled to, sanitary protection from the State.

Local Professorships, moreover, whilst generally useful, would at the same time be much less expensive to the country than the establishment of the proposed Central School.

The total cost to the public of the Regius Professorship of Military Surgery in Dublin is under £200 per annum, the Council of the Royal College of Surgeons in Ireland having liberally provided a Museum, Lecture Theatre, and every other accommodation required for the Chair. I feel fully assured that the authorities in London and Glasgow (of whatever College a similar Regius Professorship should be attached to) would act with like liberality. The expense of the Central School, on the contrary, would amount to *many thousands a year*, and this too

for the teaching of but one section of the Public Service; whereas the instruction given by the Local Professorships would be open to all, whether educating for the Army, Navy, East Indian Army, Colonial or Emigration Services, the Royal Mail, and Mercantile Marine; as also those who, purposing to practise in the United Kingdom, must necessarily be entrusted with the charge of Militia Regiments, Military Detachments, Constabulary, Union Workhouses, Gaols, and the public health of towns.

Upon these grounds, therefore, I beg to advance it as my decided opinion, that Local Professorships should be adopted in preference to any Central School; and that whilst so many objections to this school can be shown to exist, the idea of establishing it should not be entertained until the Local Professorships have been fairly tried and found to fail.

The plan then that I would advocate is briefly this: Appoint three Regius Professorships of Naval and Military Hygiene, in London, Edinburgh, and Glasgow. Select well qualified men to fill these chairs, (and there are many such in the Medical Department of the Army, whom I myself know personally, or by reputation); supply

them with the means of *fully* illustrating their lectures; make attendance on the same compulsory upon the candidates for each service; and examine every candidate upon the subjects in which it is desirable for him to have been instructed. Let this be done, and I will undertake to say that each Assistant-Surgeon shall join his respective service able to apply principles to practice, and to adopt for the maintenance of the health, and the preservation of the life, of the soldier and the seaman, those measures which experience has shown to be best calculated to meet these ends, under circumstances of the most adverse kind."

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THE

SANITARY CONDITION

OF

THE ARMY.

BY

THE RIGHT HON. SIDNEY HERBERT, M.P.

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THE

SANITARY CONDITION OF THE ARMY.*

ENGLAND has always been jealous of standing armies. In their long struggles for freedom, the people have found how important it is that they, as well as the Sovereign, should have a hand on the hilt of the sword of state. Even when the relations of the governor and the governed have been at the best, the latter seem never to have lost sight of possible contingencies, and took care that, in case of recourse to the *ultima ratio*, no danger should arise from any incautious confidence in quiet times. A large home military force, maintained irrespective of foreign enemies or foreign apprehensions, imbued with a thoroughly military spirit, and animated by a devotion to their colours, in which the sense of citizenship is altogether lost, is what we never have seen in this country, and probably never shall. We have maintained large armies abroad, in foreign wars—large armies at home, to resist apprehended invasion—but the former were not standing armies, for they ceased to stand from the moment that peace was attained; and the latter were composed chiefly of militia, who have always claimed to be the parliamentary, or people's army. It is true that this distinction is a good deal lost, simply because the Queen's army—voted by parliament, paid by parliament, disciplined, distributed, and governed by ministers responsible to parliament—has lost its character as the personal instrument of the Crown, and has accordingly ceased to give ground for jealousy or apprehension on the part of the people. We still object to large armies, but on other grounds. Of our two great services, the navy is the popular one. As islanders, our first and best defence must always be on the water. It is not till that line is broken through (and woe betide the day!) that our safety can depend on trained battalions. Again, it is by sea only

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* *A 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.* (Presented to both Houses of Parliament by command of Her Majesty.) London. 1858.

that our vast colonial empire can be defended. It is on the sea that our unnumbered merchant vessels, scattered over every ocean, require protection. It is on the sea that our greatest, because most undivided glory has been attained. Our interest as traders, and our vanity as a martial nation, alike combine to make the sea-service our *decus et tutamen.* The standard of both our services is kept within limits by economy; for being an industrial people we are also a thrifty people; we grudge men to unprofitable employments, and we do not like expenditure, because we do not like taxes.

But for the reasons above stated, when the pruning-knife is applied, it is the army that is first reduced. We have ceased to fear it for our liberties, but we fear it for our pockets. We feel, too, that large armies have their temptations to ministers. They have before now been the origin, as well as the instrument, of a captious, arrogant, meddlesome, "spirited" foreign policy, which diverts public attention from domestic reforms, for which, may be, the minister has no stomach; and little bullying piratical wars are undertaken, to justify the retention of a large force. An ambitious minister, particularly if a popular one, requires under these circumstances to be kept low. It is unnecessary to give further reasons why our standing army will always, probably, be a small one; and the fact that it is raised by voluntary enlistment alone, is a reason why its numbers cannot be rapidly augmented.

But in proportion as it is small it ought, if on that account only, to be as efficient as care and discipline can make it. We would compensate by efficiency for want of numbers. What we have we must have of the best material, worked up into the most highly-finished and enduring article; for our army is a nucleus, and there must be in it skill and efficiency to spare, enough indeed to leaven the accession of mere brute force, which alone upon an emergency we can add to it.

This is not the place to discuss the relative value of compulsory as against voluntary service. For the purpose we have in view, it is sufficient to state the fact that, whatever be the case with the militia, for whom by law, though not now in practice, we have a conscription, we have none for the regular army. We cannot afford to spend our men as Continental monarchs can, who know that every stroke of the pen will set in motion another decimation of the peasantry, which will be equivalent to so many thousand men. We get our men with difficulty, by every kind of cajoling and inducement we can devise, and in our necessity descend to those means which men do not have recourse to till they think all others are exhausted. We cannot then afford to waste our men, but as we want to use them, we must learn to husband them.

Of all the causes or means of destruction to which the profession of arms exposes mankind, that which ranks lowest in point

of blood-guiltiness, consists of shot, shell, bayonet, and sabre. The actual destruction effected upon one another in fair fight, in the field, by contending armies, is as nothing. That which destroys an army in the field is disease; superinduced by exposure, by fatigue, by insufficient and unwholesome food, by insufficient clothing, by want of cleanliness in camp and in person, by ill-chosen sites for encampments, by crowding in insufficient buildings in towns,—in short, partly by necessity, but partly also by ignorance, and by a kind of traditional disrespect for precautions, and indifference to all but the more stirring but less fatal risks attendant on collision with the enemy.

The greatest commanders have always been great precautionists, and have habitually entered into the minutest details connected with the preservation of the health of their men. The Duke of Wellington said if he knew anything he knew how to feed an army; no mean matter when health is to be preserved; and his quick observation and intuitive sense soon made a sanitarian of him. Napoleon, who, perhaps, was the greatest general the world has seen, epigrammatized his experience of the means of strategic success in the well-known irreverent form, "Le bon Dieu se range toujours du côté des gros bataillons." And his whole object was to produce his *gros bataillons* in the best possible condition at the decisive moment. He bestowed much thought therefore on the preservation of his army in the intervals between fighting. Not from humanity but from calculation; for he would sooner bury his men when once sick, than treat them; inasmuch as sick men take the pay and consume the rations which would maintain sound men in their places. But even Napoleon lost far more men out of action than in it. The Russian campaign of 1812 was a signal instance of this; for, though he fought one of the bloodiest battles on record since the use of gunpowder, the killed and wounded make but little show in the wholesale destruction which mismanagement brought upon the "*Grande Armée.*" The statistics of that campaign are so curious that they deserve to be reproduced. The policy of Napoleon, as admitted or rather held up to imitation in his correspondence with his brother Joseph, was always to magnify his forces before battle, in order to intimidate the enemy and encourage his own men; to underrate his losses for the same reasons, and, for the heightening of his own success and reputation; and lastly, to lay the blame of failure on anything and anybody except himself. The popular belief still remains extant that the *Grande Armée* consisted of 400,000 men, that there was a great victory at Borodino, and a triumphant march to Moscow, but that the army was subsequently destroyed by the rigours of a winter unusually rigorous even for Russia. Now the "*states*" of the *Chef d'Etat Major* quoted by Carnot, who was war minister, give the numbers of the invading army which

crossed the Niemen on the 24th of June, at 302,000 men and 104,000 horses. On the advance to Moscow was fought the great battle of Borodino. In this battle there were put *hors de combat,* that is, killed and wounded, on the side of the Russians no less than 30 generals, 1600 officers, and 42,000 men. While the French, according to Marshal Berthier's papers, subsequently taken at Wilna, had in killed and wounded 40 generals, 1800 officers, and 52,000 men. The French, however, claimed the victory, inasmuch as the Russians fell back after the battle, and left the French in possession of the ground.

The cold began on November the 7th; but three days before the cold began, namely, on the 4th of November, there remained of the mighty host that had crossed the Niemen but 55,000 men and 12,000 horses; 247,000 men had perished, or become ineffective in 133 days. Of the 55,000 men, however, *plus* any reinforcements they may have met on the way, 40,000 returned to France, showing how few men were lost in that masterly retreat, either by the severity of the winter or the harassing attacks of the enemy. But even if three-fourths of the wounded at Borodino had died, and allowing for those killed in minor actions and operations, there would remain nearly 200,000 men who perished by insufficient commissariat—by want of forethought. The Count de Ségur, the historian of this campaign, considers that the genius of Napoleon had culminated before he undertook this expedition, famous among the world's disasters, and that constant prosperity had led him to look on success as so certain that he neglected the means of attaining it. Any way, here is an instance under the greatest of generals, that it is not the enemy, however numerous or skilful, who effect the destruction of armies. It is fatigue, exposure, want of food, want of shelter, want of clothing, want of sanitary prevention.

We cannot enter now into the question how far this is remediable—how far energetic precaution may counteract, in part at least, the ill effects of risks which must be encountered. That they must be encountered, and that war must be more or less destructive of armies apart from collision with the enemy, is obvious; but the question arises, why should peace too be destructive of armies?—why, when there need be no exposure, no fatigue, no deficiency in food or clothing, no exceptional circumstances whatever, should the profession of arms entail on those who adopt it a higher rate of mortality than almost any other profession?

No argument can be so eloquent as the figures which give the comparison of the mortality of different avocations, and different localities, with that of the army. In order to avoid fractions, we have taken the number of deaths of 10,000, instead of 1000 men:—

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
Twenty-four large Towns	119
Manchester	124
Infantry of the Line	187
Foot Guards	204
Household Cavalry	110
Dragoon Guards and Dragoons	133

And yet these facts, appalling as they are, and unaccountable as at first sight they seem to be, were established beyond a doubt twenty years ago by Colonel Tulloch, who, by command of the War Office, then administered by the present Lord Grey, compiled from the Regimental Returns some admirable tables, showing not only the absolute but the comparative mortality of the army at home. Mr. Hume moved for the returns, and they were laid on the table of the House of Commons. But there the besetting sin of the veteran reformer left them. His diffusion over many subjects left the greater number uncompleted. He was content to rest when he had got that which he was always asking for, "information," and it remained useless because unused. The world in general knew little, perhaps cared little, about the matter. The subject was dry; the figures looked repulsive; and no recent military successes, or military disasters, had fired the imaginations or roused the indignation of the public—so the matter slept.

Later events have excited the popular interest and the popular sympathy with the army. We have felt anew the responsibilities of a nation towards those to whom we entrust the defence of our soil and our honour. While in this mood the report of the Royal Commission on the Health of the Army was laid before Parliament. It was eagerly taken up by the Press. It was extracted, abridged, analysed, commented on, and excited a marked interest among all classes of society. This was not owing to any discoveries made by the Commissioners, for they did not affect to have made any, but their report showed knowledge of detail, a conscientious and rigorous examination of facts, a careful abstinence from exaggeration, and a brevity in statement, which tended greatly to popularize the subject. The report also derived authority, not only from the composition of the Commission, but from the names of the witnesses who were examined, and on whose

evidence the Commissioners founded their conclusions. The only fear was, that the almost universal assent with which the report was received, would be fatal to the practical adoption of its recommendations; that the subject would die out for want of controversy, and, in the silence of universal consent, that the pressure would be wanting which would set in motion the cumbrous torpor of the vast department on whose action the adoption of the reforms indicated must depend. The English people, however, cannot afford to let this subject die out; and it is only by discussion that they can maintain their property in it. Large administrative offices, if inclined to shelve a question, have wonderful facilities for doing it. It is done without parade or ostentation, with a respectful silence, but the interment is none the less complete. Other subjects arise, which however ephemeral in their character, have an interest for the hours during which they last, and the public gaze is diverted from the graver matter which is kept in the background.

We confess, then, that we left this subject, when last we had occasion to treat it, with considerable misgiving as to its future. Its success seemed to be its danger. Nothing was yet done. It was the success of an essay, not of an act; the advice had been admitted to be sound, but it had not yet been followed; the prescription was good, but it had not yet been taken, nor even as yet made up.

We promised to revert to the subject, and it is well in doing so to take stock of the progress, if any, made in the interval.

Believing, as we do, that a strong continuous expression of public opinion is the true motive power to impel to action public offices and public men, and holding, as we have said, that without the fuel of controversy the continuous fire of public opinion cannot be maintained, we have rejoiced to see that the conclusions of the report have been subjected to question, attack, and contradiction, by opponents more or less formidable. There can be no doubt that the cause of army sanitary reform derived a fresh impulse from the onslaught made by the Guards' officers in the House of Commons on the figures which represented the mortality of the Guards not only as more than double that of the civil population, but as exceeding that of any other corps in the whole army. The officers disbelieved the fact, and the history of their disbelief is curious and important too, as showing how great is the disadvantage under which the regimental authorities, medical as well as combatant, labour for want of a good system of military statistics, and the constant promulgation through all corps of the results as affecting the whole and all the component parts of the army.

The Guards' surgeons, it is said, had counted up the deaths in the respective hospitals, and found the numbers less than those

given by the Royal Commission as the mortality of their regiment; but they forgot the men, and they are not few, who die out of hospital and on furlough, the practice, it appears, being to give leave of absence to those poor fellows whose lung diseases are confirmed, whose cases are hopeless, who yearn for home, and who are humanely allowed to go and close their eyes among their own kith and kin. The medical officers had thus misled the Parliamentary Guardsmen; but the error being discovered before the return was presented to Parliament, a corrected edition was finally produced which established the accuracy of the statistics on which the arguments of the Royal Commission were founded.

The statistics, therefore, now stand much better than if they had never been questioned, but the error of the Guards' medical officers bore excellent fruit in other ways. First, all the officers, medical and combatant, were induced to look closely into the facts. They began an investigation which turned out far more serious than they expected, and which they will not now abandon, for it is an error to suppose, as some people seem to have assumed, that there is among the officers of the Guards an indifference to the welfare of the men. On the contrary, it was remarked by more than one intelligent observer in the Crimea, that the personal relations between officers and men were perhaps on a better footing in the Guards than in the Line, partaking less of the austerity of discipline, and showing more individual interest in the men. But habit and ignorance make all men in all professions wonderfully acquiescent in evils which, if once known and felt, are remediable. If any one two years ago had told a Guards' or a Line officer that the mortality in the respective corps was twenty or eighteen in a thousand, he would have told them that which they did not know, but which would have made no great impression on their mind. They would have taken for granted that the rate was about that incidental to adult males of the same ages under any circumstances, and everything would have gone on as before.

Some discussion, however, next arose as to the order of precedence in which the causes of this mortality, as assigned by the Royal Commission, ought to stand. The report enumerates over-crowding in barracks, combined with want of ventilation, sometimes with defective sewerage, night duty, want of variety in exercise, and want of employment, and, lastly, as the result of the latter, dissipation and excess, as the main causes of the fearful mortality which thins the ranks of the army in England.

The Commission seemed disinclined to attach any great importance to night duty, and adduced the example of the police, who perform much severer night duty than is ever required from soldiers, with a far lower rate of mortality. This comparison

was objected to, on the ground that, though the mortality of the Guards and the corps of the army which habitually perform the most night duty was greater than in the police, yet that invaliding is less in that corps than in the police, provided all the discharges in the former case and all the resignations in the latter, are included under the general term of invaliding; the fairness of this objection appears, at least, doubtful, the resignations in the police being very numerous, and to be attributed, no doubt in many cases, as also the discharges in the army, to other causes than the failure of health. Taking a mean, however, between the metropolitan and city police, and adopting this mode of comparison, the difference between that force and the Guards probably would not amount to much. We object, however, to the comparison, on the opposite grounds, namely, that there is no parity, either as to the frequency or duration of the night work done. The night duty of the policeman lasts eight hours, and is given every night in the week, till the term of his furlough comes round—that of the soldier is stated at the utmost, if it be taken at three nights in the week, and four hours in the night; indeed, with the larger battalions we have maintained of late years, it might be stated as low as two nights in the week. Those four hours are not consecutive, but are divided into two spells, of two hours each, with two hours' interval, spent on the guard-room plank bed; whereas the policeman is on his legs, in all weathers, without intermission, every night for eight consecutive hours. Clearly, if the mortality and invaliding corresponded with the duty, the deleterious nature of which is insisted upon, the police would die or be disabled at a rate much exceeding that of the Guards. The same objection applies to a case much stronger than that of the police, and for which we are indebted, not to the Commissioners, who seem to have been ignorant of it, but to Dr. Guy, who quotes it in his lecture on the sanitary condition of the army, delivered in 1858, at the United Service Institution, namely, that of the London Fire Brigade, the details of whose service were communicated to him by Mr. Braidwood, who is the superintendent:—

"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 men-of-war's men. Each man, on the average, has been on duty 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 also 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, 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. 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.

"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, but being accompanied by the most scrupulous care of the health and comforts of the men, it 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?"

The very pertinent question with which Dr. Guy concludes his description of the service and health of the firemen was answered by anticipation by the officers of the Guards, who pointed out that the policeman, with his well-spun cloth coat, his sound boots, his oil-skin cape, was far better protected than the soldier, who came every two hours into the ill-ventilated guard-room where, in bad weather, his wet clothes were steaming in the close and heated atmosphere, till his turn came again to leave that vapour-bath and plunge into the cold and wet to pace up and down for another two hours, opposite his sentry-box. Truly, it is not the night duty, but the way in which it is done, which kills the men. The extreme length of the duty performed nightly by the police appears most questionable, and would fully account for the greater mortality of the night than of the day force; but the description given by military witnesses of the soldier's night duty, shows that, though far less trying to the strength, human ingenuity could scarcely devise a system more trying to health. Are spongy clothes, absence of waterproof, and frequent and violent alternations of temperature, indispensable to discipline? And cannot the good sense of the military authorities devise a remedy for evils which appear to have no compensation, and from which no earthly being derives advantage? So far as the Guards are concerned, the public has taken up the subject of their peculiar mortality, with great and not unnatural interest, since they garrison our metropolis, and are a corps whose magnificent appearance and perfect discipline is ever under our eyes; but the Royal Commissioners, dealing with the army as a whole, suggested remedies as for the whole, and contented themselves with pointing out the higher rates prevalent

in the Guards, without attempting to account for them. Indeed, the President of the Commission stated frankly in the House of Commons, that he for one could not account for them; he only showed that it was not, as had been stated, the result of greater sexual debauchery than in other corps, for he showed that their admissions into hospital for venereal complaints are less instead of more than in the infantry of the Line; and he certainly did not simplify the problem, when he further showed that there is a permanent standing difference in the rates of mortality of the three Regiments of Guards, which has been rather increasing than decreasing of late years, till the Grenadiers stand at 21·05 per 1000, the Coldstream at 18·20, and the Scots Fusileers at 15·66 —a difference which, as their barracks, their clothing, and their duty are identical, can hardly be attributed to minute differences in discipline alone, though the latter regiment, we have heard it said, claim a certain superiority in point of conduct. More is probably owing to greater strictness in the original selection of the men, or to a recruiting connexion with hardier races of some of our healthy districts.

These are questions of great interest, and can only be solved by a careful comparison of the drill, punishments, hospital treatment, conduct, and habits of the three regiments; and we trust that the officers of the Guards, whether combatant or medical, will not lose sight of them.

The result, however, of these discussions certainly was not to shake the credit nor to invalidate the conclusions of the Royal Commission, for in the course of them not only did the Secretary of State for War give his general adhesion to them, and pledge the Government to their adoption, but the House of Commons, after a protracted discussion, with a general and rare consent, passed a series of Resolutions, at the instance of Lord Ebrington, pledging the House to carry the recommendations of the Commission into effect. So far, so good.

Since that time, however, an opponent more formidable than the Guards' officers has arisen to question, not the data on which the Commissioners have argued nor the facts which they have exposed, but the deductions they have drawn from them, and consequently the remedies which they have advised. Mr. Neison, the eminent actuary (in an elaborate paper read before the British Association at Leeds), challenges the medical opinions hazarded by the Commissioners. He denies that a vitiated atmosphere can be the cause of pulmonary disease. He shows which towns are the most and which are the less overcrowded, and that diseases of the zymotic class vary, increase, or diminish accordingly, but that these differences in crowding have no perceptible influence on consumption at all.

The logical consequence of Mr. Neison's argument seems to

be, either that soldiers are not overcrowded, inasmuch as they die of pulmonary more than by zymotic disease, or that they are overcrowded, but that the disease of which they die is not pulmonary; that the diagnosis of the medical officers is defective; and that a hectic complexion, pain in the side, cough, wasting, and expectoration are symptoms, not of consumption, but of cholera or typhus, which would be absurd. We therefore assume that the first is Mr. Neison's meaning, and if he be right, it will follow from it that the soldier does not require additional space; that the sanitary condition of the barracks is on the whole good, and that any attempt at improvement would be no more than a wanton, because unnecessary, expenditure of money.

These consequences are so serious, and the prospect they offer so inviting, especially when held out by so high an authority, that it will be well to examine the arguments by which the theory is supported.

This controversy seems to have arisen, as half the controversies in the world do, from the inaccurate use of terms. Mr. Neison says that overcrowding, *per se*, does not generate consumption, in which assertion we cordially concur; and he goes on to say what overcrowding, *per se*, does produce, and he tells us it produces fevers and bowel complaints, and the whole class of zymotic diseases. This we utterly deny. Overcrowding does not generate disease at all. It is the presence or absence of a sufficient supply of air for the consumption of each person in a room which affects the health. It is not on the size of the room, but on the size of the apertures into the room, that life depends. Dr. Bence Jones, in his report on the method of determining what number of persons ought to be accommodated in a given space, addressed to the Poor-Law Board in 1856, says:—

"If a single man constantly inhabits the largest room, he will, if it be perfectly closed, be poisoned in it just as certainly as in the smallest room, the difference will only be in the time required; and whether in the small room or in the large room, to live healthily he would require only the same amount of ventilation. The rate of passage of the air (depending on the size of the openings, and the difference of temperature within and without the room), is the important question; for the cubic contents which are enough or too much when one amount of ventilation exists are quite insufficient when the ventilation is less; that is, when the expired air is not sufficiently removed."

And he illustrates this position very happily by the example of a fish confined under water in a glass tube open at the two ends:—

"The time during which the fish would live in the tube would not depend on the cubic contents of the tube, but on the quantity of water caused to pass through the openings; so the cubic contents of a room will give no more information than the cubic contents of the glass tube."

Men may therefore be thoroughly well supplied with air in a very small space, and very ill in a large one. A man in a diving-helmet has the smallest conceivable amount of cubic space—merely a few inches—round his face, but a pump at the other end of a tube is filling his lungs with fresh air all the while; on the other hand, many a wealthy but ignorant invalid is being gradually poisoned in a vast apartment, which the most accurate joiner's work, aided by paste and tow, has made as impervious to fresh air as the coffin to which it is sending him.

The truth is, there can be no fixed rule as to cubic space, unless you combine with it a fixed amount of ventilation per head.

But that a certain cubic space is indispensable to comfort in every room thoroughly ventilated on any plan yet known, is so evident that it may be assumed to be an invariable rule. A few words will explain this.

There is very great difference of opinion as to the amount of fresh air which should be supplied per minute to each inhabitant of a room, to keep him in health. Carbonic acid is a poison, and it is expired from the lungs; but it is by no means established that it is the only poison so expired, but being both detectable and appreciable without difficulty, it may be used as a rough index to the quantity of foul air which should be removed from and the quantity of fresh air which should be supplied to a room inhabited by any given number of persons. The foul air must be so expelled, and the remainder so diluted, that the whole atmosphere of the room shall contain a per centage of carbonic acid so small as to be innocuous. How much this should be is a matter of dispute. Dr. Arnott thinks that one part of carbonic acid in three or even four hundred is injurious, and therefore that a supply of three or four cubic feet per minute, which is calculated to effect that per centage, is insufficient. Dr. Reid recommends ten cubic feet per minute, which would reduce the carbonic acid to one thousandth part. These estimates are all given by Dr. Bence Jones. In the prisons Colonel Jebb gives to each prisoner a supply of 1800 cubic feet per hour, or 30 cubic feet per minute, which, in a cell of 900 cubic contents, would give an entire change of atmosphere every half hour.

Now, the great difference in these estimates, all formed by competent and skilful men, shows how rough they are, and how little is yet positively ascertained on the subject. But if there be difference of opinion as to the quantity of air which should be sdmitted, still greater is the difference of opinion as to *how* it shall be admitted. Extraction of air by single shafts, by double ahafts, by shafts with furnaces, by shafts without furnaces—impulsion of air by fans, through hollow beams, through openings below, openings above, openings from under the floor, openings over the windows—ventilation which acts by the opening of

windows—ventilation which will not act unless every window is kept closed—each of these systems has an inventor, a prospectus, and certificates without end, from learned and unlearned men, testifying to their complete success in unnumbered instances. Each decries his co-inventor, and maintains that his own is the one and only infallible nostrum. In truth they are all good, for they all succeed in bringing in pure air and letting out the foul; and they are all unobjectionable, so long as they are applied in moderation and in rooms not too densely inhabited, and when, consequently, the amount of air to be brought in for the consumption of the inmates, bears a small proportion to the whole amount of atmosphere in the room: or, where the room is inhabited but a part of the twenty-four hours, or of the day; or in halls and churches, where the stock of pure air at the beginning is so large that it nearly lasts out the audience or the congregation temporarily contained in them. But when you have, as in a barrack-room, a large number of adult men inhabiting it both day and night, so that the process of vitiation is constantly going on, and the whole mass of air is hardly ever thoroughly replaced, then it is clear that the amount of air to be constantly brought in is so great that it will cause most sensible disturbance in the atmosphere of the room, and the more you reduce the room while you maintain the stream of air into it, the more intolerable will be the hurricane in which you will compel the inmates to live. The man in the diving helmet has fresh air and plenty; but even though the whole of his body, except the head, is protected from draughts, such a mode of respiration would be intolerable for a continuance. Clearly, you may effectually ventilate any barrack-room, but the men will stop up every one of your apertures rather than be blown out of their beds; and, if they cannot succeed, will troop to the pot house so long as you convert their own room into a Temple of the Winds. It is common to see in barrack-rooms an open grating in the external wall, two feet from the ground, and eight or ten inches from the bed of the man nearest the wall, and in the grating an old jacket tightly stuffed, rather than let the supply of air destined for twenty men be blown through a funnel, in a concentrated form, into the loins of one man as he lies asleep in his bed. The difficulty is, how to diffuse the air so as to render its admission insensible—how to admit the greatest quantity with the least disturbance. It is obvious that this difficulty increases or diminishes as the requisite supply of air is increased or diminished, and that must depend on the proportion borne by the number of men to the area of the room to be supplied, or, in other words, on cubic space. The Commissioners therefore asked for increased cubic space, not because cubic space will in itself give the soldier more air, but because it will enable them by other means to give him an increased supply of air with a greater

certainty of comfort. They laid down an arbitrary minimum of 600 cubic feet per man, which Dr. Guy quarrels with as too low, but they have not attempted to make a Procrustean rule even of that; for we hear that the barrack commission, acting in the spirit of the recommendations of the Royal Commissioners, vary the amount under different circumstances; not, for example, requiring so large an amount in wooden huts, where the whole building is pervious to the air, as in masonry constructions, in which there is no admission of air except through openings made for the purpose; nor, again, do they require the same space per man in high airy situations as in barracks surrounded by buildings, or where from any other cause there is stagnation in the external atmosphere.

It is clear, therefore, that cubic space is only important in connexion with the more or less ventilation by which it is accompanied; but that when ventilation as a rule is deficient, the amount of cubic space hastens or retards the injurious results from such deficiency.

But there is another point, for the elucidation of which an accurate use of terms is necessary. What is overcrowding? Are density of population on a given area, and density of population in a room of given dimensions, the same thing? Is a town area, that is, an area covered by houses, the same thing as a municipal or political area, conjoined within the limits, say of a parliamentary borough? These questions are suggested by the paper read by Mr. Neison at Leeds, in which the same term is used to cover all these different conditions. A comparison is made between the density of population in different municipal boroughs; but the limits of the one may comprise nothing but streets and alleys, while the other may include gardens, market gardens, accommodation land, villas, and parks. The division of a population of a parliamentary or municipal borough by its acreage proves nothing as to its density.

Clearly, any argument founded on the indiscriminate application of the same terms to conditions so essentially distinct as these, must be hopelessly bewildering. Especially is this the case when comparing the condition of the soldier with that of the civilian inhabitant of a town. There is never, or scarcely ever, any area density of population in a barrack, inasmuch as its limits comprise parade-ground, stables, chapel, reading-room, officers' quarters, racket-courts, in short, great area space compared with that on which the dwellings of mechanics and labourers are built. No one has complained of density of population within barrack-walls; it is density of population in barrack-rooms which it is maintained has injured the health of the soldier.

No rational man, however, will deny that over-crowding an area is frequently followed by over-crowding in rooms, and that the

latter, aided by the evils likely to accompany it, will produce a state of health peculiarly susceptible to attacks of fever, diarrhœa, and cholera. All authorities seem to agree on this point, and Mr. Neison, in his Leeds paper, has yielded his assent to it. He has had experience of it. Dr. Guy quotes the case of Church-lane, a part of the old rookery in St. Giles's, which he inspected in company with Mr. Neison, and where the cubic space without ventilation ranged from ninety-three down to fifty-two cubic feet. It was a perfect fever factory, one house alone contributed twenty-two cases of sickness and fourteen of fever. "Yes," Mr. Neison would at once answer—"fever—that is my case; overcrowding produces fever, cholera, and zymotic diseases generally, but not consumption." Now it may fairly be assumed that this wretched population were not suffering from want of ventilation alone. Such neighbourhoods are not remarkable for decency or comfort. The worst fever, the most filthy habits, dirt on the person, dirt in the houses, open gutters, unemptied cesspools, were no doubt all present to contribute their share to the sickness and mortality. Now of all these causes which combined to kill the inhabitants of Church-lane, the first is the only one from which the soldier, comparatively with such a population as that in Church-lane, can be said to suffer, and that in a far lesser degree. The cases in which they suffer from sewerage and cesspools in the barracks are, comparatively speaking, rare, though it is bad enough that they should suffer from such causes at all. Still they do suffer from them, and when they do, as has happened lately at Gosport, at Croydon, and at Canterbury, fever breaks out among them. But in all these comparisons of the effects of different diseases, it is necessary to take into account the *modus operandi* of each disease. Allowance must be made for the more or less rapidity with which each variety of disease acts on the human frame. Take, for example, the case of drinking. The effects of habitual indulgence in the use of spirituous liquors affect the nervous system and digestive organs; sots die of liver complaint. In his evidence before the Royal Commission, Mr. Neison shows how great are the ravages made by this disease among classes and in countries addicted to intemperance, and he argues from that fact and from the comparative scarcity of liver disease in the army, that the men do not drink. But soldiers do drink. We need not go to the defaulters' book to know that. Every man has ocular demonstration of it in the streets. This mode of argument, indeed, presupposes that men who drink are specially guaranteed against all other diseases except the one which is the legitimate consequence of this peculiar vice: that an immunity against fever and consumption is accorded to them, in order that poetical justice may be satisfied, and that they may die as drunkards should do, by the drunkard's disease. But clearly, it would not

be more absurd to argue that all men who die by disease of the digestive organs have been drunkards, than to say that all drunkards die by failure of the digestive organs. Other and more rapid causes may intervene. A man who is shot does not die of liver complaint, though he may have been an habitual sot, and typhus or cholera are sometimes little less rapid in their effects upon a frame already debilitated by intemperance. The characters, however, of men so dying would, on Mr. Neison's theory, be relieved from the stigma of intemperance, because they had been cut off by the action of a disease more rapid than the appropriate liver complaint. For liver diseases, fatal as they are, are not rapid; the victims of intemperance die off at forty, forty-five, or even fifty, but these, be it remembered, are not soldiers' ages. There are very few soldiers of forty years of age, and those are certainly not the worst conducted. Those who are discharged, invalided, pensioned, or not pensioned, may or may not die of disease of the digestive organs. It is very likely that they do, but we have as yet no evidence on the matter one way or another. We know what soldiers in the ranks die of. They die young, and they die of diseases far more rapid in their execution than those which affect the nervous system and the digestive organs.

Surely it is not unreasonable to suppose that as, under circumstances favourable to their development, typhus and cholera will anticipate consumption, so consumption, under circumstances favourable to its development, will anticipate the diseases of the nervous and digestive organs. Popular terms are not bad indices of the peculiarities which they describe. We hear sometimes of galloping consumption, but never of galloping liver disease.

But what are the circumstances incidental to the soldier's life in England which favour the development of consumption? Mr. Neison says want of healthy exercise, and so say the Royal Commissioners, who appear to have been struck by the amount of deficiency in that respect from which the soldier suffers. But Mr. Neison says it is that alone, whereas the Commissioners say it is that in combination with other causes, some of them even more important. In his evidence Mr. Neison seems inclined to lay down that a man's health depends on what he does, and is not affected by the where or the how he lives. External circumstances, except as regards drink, are nothing, muscular exercise everything; and we look upon his Leeds paper as a great advance, on his part, towards sound doctrine, inasmuch as he there admits the danger to health of external circumstances, such as the impurity of air, the deficiency of water-supply, the absence of sewerage, &c.

But that the habitual admission of vitiated air will injure the lungs and produce pulmonary disease, just as the admission into the stomach of poisoned food will destroy that organ, seems so obvious, that but for its being questioned by so acute a statist

it would hardly be justifiable to detain the reader by adducing evidence to support the proposition. Evidence certainly is not wanting. Dr. Neil Arnott, before the Health of Towns Commission, tells an instructive story about certain monkeys in the Zoological Gardens for whom

"A house," he says, "was built to insure to those natives of a warmer climate all attainable comfort and safety. 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. 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, being 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.

"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."

Now the disease of which these animals died was consumption. They died of inhaling a vitiated atmosphere. They had no symptoms of typhus, nor diarrhœa, nor cholera, nor of any zymotic disease in any form or degree, and they were overcrowded, that is, overcrowded in the sense of the Commissioners and not in that of Mr. Neison. They were confined in a room in which the supply of air was insufficient for the number of the inhabitants who were to consume it, though there was not too great density of population in the area; on the contrary, the Zoological Gardens constitute an ample space, which divided by the number of men, birds, and beasts quartered upon it, would give far larger cubic contents to each individual than the Commissioners ask for the soldier. According to Mr. Neison's test they were not overcrowded, and ought not to have died at all; or if overcrowded, they ought to have died of zymotic disease. The fact is, that they were overcrowded, in comparison with their ventilation—they did die, and what is more, they died of consumption.

Dr. Guy gives another instance of the effects of vitiated air in producing consumption, which appears by anticipation to have completely answered Mr. Neison's theory. He says:

"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. I measured the area of the several rooms and calculated the cubic space to each inmate; 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. 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."

We think we have now said enough to show wherein the fallacy of Mr. Neison's ingenious paper lies. He imagines that the Commissioners in their report had asserted, that too dense a population on a given area produces consumption; this they never did assert; and he proceeds to demolish an untenable theory, which nobody had advanced, by setting up another which is equally untenable, having unfortunately confounded two separate conditions, either of which, if taken to include the adjuncts by which they are generally accompanied, are injurious to the human frame, but neither of which can be said to produce one class of disease alone as their result.

One word more on the general topic of overcrowding and ventilation, and we have done with that part of the subject.

It is often objected, how can overcrowding or non-ventilation be so deleterious to soldiers, when the Dorsetshire labourer with his two bed-rooms and his large family are among the healthiest of all classes. If the fact be so, we answer, that if he breathes a vitiated atmosphere for the eight hours that he is in bed it is for that time only: for twelve hours he is breathing the purest and freshest air possible. On his downs, when he is hoeing or ploughing, he has ventilation without stint in a cubic space which is illimitable, and he breathes this air while taking strong and most varied exercise. In his cottage too, his kitchen, which serves for parlour and all, opens directly on the external air, of

which the exit and entrance of every child or neighbour gives him a fresh supply. Neither is any part of his house probably so air-tight as the barrack built by the Royal Engineers, who pique themselves on the solidity, whatever may be the beauty or the convenience of their constructions. But there is great reason to doubt the fact. It is true that the close packing and indecency of the labourer's cottage has been such as to excite the reprobation of those most practically acquainted with the result. If it be no worse than that of the soldier's, the case of the Government authorities who have tolerated such a state of things in their establishments, does not seem to be much improved by the fact that the comparison is possible. Certainly on the score of indecency, the practice of married couples pigging in the same barrack-room with the unmarried soldiers, equals anything to be found in a cottage. But so far as ventilation is concerned, that comparison by numbers and cubic space is not a fair one. A man and his wife and three children cannot be counted against the same number of adult soldiers. On this point we recur again to the authority of Dr. Bence Jones, who says :—

"For women and children the amount of air required is different. If M. Andral's experiments are true, an adult man burns about ten grammes of carbon per hour, a boy of eight years burns about five, an adult woman, whilst regular, burns from six to seven, a girl of fifteen years six, and an adult woman, after change of life, eight and a half.

"That is, two children of eight years are equivalent to an adult man, and a girl of fifteen is equivalent to a woman. Two women, up to the change of life, are rather more than equivalent to a man. After this time a woman is nearly equivalent to a man. Probably three children of four years would be equivalent to an adult."

This at once disposes of the comparison of the man, wife, and three children, with the five adult soldiers. Their value as consumers of air would probably little exceed half that of the five adult males, and the inconvenience, the danger, and the injury to health must be halved likewise.

So much for the subject of space and ventilation in barracks. It has taken up more pages than it ought within the limits of an article, for of all the points raised and discussed in the Report of the Royal Commission, it is the one which can best take care of itself. It was the most intelligible, and the remedies the most obvious, and therefore it has been the one most taken up by the public; but for all that, it is not the most important. The controversy which has arisen, and the prevalence of some popular errors on the subject, have alone induced us to enter so fully into it.

Our main object is to take stock of our progress in these proposed reforms, and to ascertain to what extent the recommendations of the Royal Commission have been, or are in a fair way to

be, practically carried into effect. Two Secretaries of State have expressed their approval of those recommendations. This, however, *per se*, would not necessarily inspire an unhesitating confidence in the result. But the Commissioners themselves, to do them justice, do not seem inclined to let go the subject. General Peel informed the House of Commons that the President of the Royal Commission had offered, by means of four or five sub-commissions or committees, to elaborate the details, and put the chief recommendations into a working shape, ready for immediate adoption. This proposal he accepted; and the sub-commissions, composed of some members of the original Commission, namely, the late and present Directors-General, Sir James Clark and Dr. Sutherland, with the addition of the Quartermaster-General, Captain Galton, R.E.; Mr. Croomes, late Chief Clerk of the War Office; Sir Alexander Tulloch, Dr. Burrell, and Dr. Farr, were forthwith appointed to various sub-commissions, Mr. Sidney Herbert acting as chairman of each. To one was entrusted the inspection of each barrack at home, and the suggestion of the necessary sanitary improvements in each; to another, the drawing up of a complete code of regulations for the Army Medical Department, for the sanitary as well as medical treatment of the army in the field or in quarters, and for the organization of general and regimental hospitals. To a third, the drawing up of a complete system of statistical forms for the army. A fourth undertook to draw up the regulations under which candidates should be admitted to the Army Medical Department, and to place on an efficient footing the Medical School, which has hitherto languished in a state of inutility at Chatham. A fifth was to define the duties, and to devise a scheme for the transaction of business for the council by whom it is proposed that the directors-general shall be assisted. And, lastly, a draft warrant, fixing the pay, retirement, rank, promotion, and status of the army medical officers, was to be prepared for the consideration of the Secretary of State.

It is understood that all these sub-commissions have reported, but the results have, as yet, in one case only been promulgated. The new warrant for the Army Medical Department has been published. It improves financially the position of the medical officers, it simplifies and diminishes the number of ranks, it lays down intelligible rules by which promotion is to be regulated, seniority being the rule in the first promotion, when the value of the men has hardly yet been tested, and selection for the upper ranks, when the comparative merit of the different officers has been shown by their services. Lastly, without materially altering the rank which each grade of medical officers should hold relatively with the combatant officers, it makes that rank carry with it the substantial advantages which had been previously

withheld. This warrant is a kind of charter to the Army Medical Department. It defines their rights and privileges as well as their material advantages. Their pay was unjustifiably low, looked at merely as a naked matter of salary for work done, and accordingly it repelled the better class of students from a branch of their profession which afforded so low a remuneration. But its indirect effects were worse, for in this country, where money is not overlooked as an element in the attraction of social respect, the rate of salary is held to indicate the social position of the recipient. Still more valuable, therefore, are the provisions which define the relative rank of the medical officer. They practically recognise, for the first time, the status which a scientific body, on whose efficiency the efficiency of the army in a great measure depends, ought to hold in the hierarchy of army rank. In a military body no position can be secure without rank, for in it there can be no overwhelming force of opinion to confer socially and by custom what authority withholds.

Again, the new warrant, by fixing the rules according to which promotion is to be awarded, removes an objection which has hitherto deterred medical students from entering the army service. The warrant embodied the two principles laid down in the following passage of the Report of the Commission :—

"To attract a fair proportion of the best medical pupils to the military service two conditions are necessary—certainty of a competency, and the hope of distinction. Men, who enter a profession after a long and expensive course of study, and who give proof of their proficiency by subjecting themselves to the ordeal of a competitive examination, have a right to expect that, if their professional and personal conduct be unobjectionable, they shall have guaranteed to them the prospect of rising to a rank in the service, which, while assuring to them the means of subsistence, shall give them a certain standing and position in society. On the other hand, the hope of rising, by merit or distinction, to high rank, or to posts which, though unattainable except by a few, confer on those who succeed the highest honours which the profession has to give, operates strongly at the age at which men choose a profession, and when each is sanguine of success in the race in which he is about to engage."

This is clear and sensible, and it was high time that something clear and sensible should be enunciated on the subject. It is necessary to read the evidence before the Commission, not of disappointed juniors, but of officers eminent in their profession, to appreciate the dissatisfaction which prevailed throughout the department on that subject; but in order to understand how just that dissatisfaction was, the late Director-General's evidence should be carefully studied. We have not space to describe the system, even if we understood it. Some faint conception of it may, however, be formed from Dr. Andrew Smith's *naïf* statement, that the

rules have never been written, are known to no one but himself, and are only to be found scattered over a correspondence of forty years; and, again, that it was his practice to make a new rule to meet each special case, but that the rule was never promulgated. In fact, it was a system which combined all the evils of seniority without its certainty, and all the evils of selection without its stimulus.

The warrant has been received with nearly universal approbation; and General Peel and the Horse Guards deserve every credit for the readiness with which they have adopted it.

As regards barracks, the column in the newspapers headed "Military Intelligence," gives daily information of new ventilation, new sewerage, redistribution of numbers, and the introduction of proper cooking apparatus, following the inspections of the Commissioners: and there is every reason to believe that the pledges given last Session, in the course of the debate on Lord Ebrington's resolutions, are being faithfully redeemed.

But what is being done with our military hospitals? We do not mean with the buildings—with the brick and mortar. They, no doubt, will, like the barracks, have their share of whatever improvement their faulty construction is capable of (always, of course, excepting the extravagant blunder which is being persisted in at Netley); but what new organization is to be given them—what is the system to be practised? Are any precautions to be taken to prevent, at the outset of another war, the recurrence of the horrors of Scutari? Are we to have general hospitals at all, and if so, how are they to be organized, and how governed?

There is a great prejudice among army medical officers against general hospitals, and not only among all medical, but among all military officers. We have none during peace, or nearly none. Our system has always been regimental, and the nearest approach to a general hospital is only an aggregate of regimental hospitals. The fact is, that in this, as in many other things, we have for years maintained an army as though it was never to be used. We neither expected nor believed in war; and we failed to give our army in peace the organization which would be necessary for war. On the contrary, we attempted in war to continue the organization, if it could be called an organization, which had insensibly grown up in peace. Thus, in war, we adhered to the regimental hospital system as long as we could, because the records of general hospitals having been records of failure and suffering, the authorities were satisfied that the regimental one was the best (which it may be, provided you have no great number of sick); and, also, because they are used to no other. But a great battle and harassing march, and, what is more common than either, the spread of disease, sooner or later necessitates a recourse to the general hospital system. But the only organization to which every man is accustomed, namely, the

regimental, is inapplicable to the general hospital. They have, therefore, suddenly to devise a system, or to do without one. Great mismanagement, great suffering, great mortality, and moreover, great waste ensue, and every one piously exclaims that general hospitals are great evils; and, therefore, that regimental hospitals are the real thing. They forget that it was the failure of the regimental which forced them to have recourse to the general hospital; and it is the absence of proper system which has converted general hospitals into charnel houses. Great evils they are, because wounds and disease, and their remedies even are great evils. An amputation is a great evil, but that is no reason for submitting the limb to an inexperienced operator, who does not know how to set about it. No one would expect ten companies of infantry, none of whom have ever learned more than company drill, or even attempted to act together, at once to be an efficient regiment; nor will ten regiments, none of whom have ever been brigaded, constitute an effective army; yet we establish a general hospital in this very way, when the necessity arises, and are then surprised that utter confusion is the immediate result.

It is not, however, the want of practice only which produces this result. Whatever system there is, is in itself radically wrong. In war, rapid action is everything. In order to secure it the first conditions are that the machinery should be simple, the number of departments, whose co-operation is necessary, few, their duties and their position relatively to one another clearly defined, their subordination to a common head unmistakeable, and their processes of business simple and rapid.

These objects are not only not attained by the existing system of what are called general hospitals, but the regulations seem to have been framed on purpose to prevent their attainment. It seems to be a realization of Mr. Dickens's "How not to do it." Nothing can be more complicated or more cumbrous than the composition of the staff of the Military General Hospital, and the mode in which the business is conducted. Look first at the organization of a London civil hospital. They could afford to have a complicated system, and a great subdivision of labour, for they are not exposed to the chances nor the roughness of war, nor have they the same necessity for promptness and vigour of action. Yet in a London hospital, then, what are the departments? There is a governor or a committee, who are supreme over all, a steward, a matron, a treasurer, and a medical staff, each with their own distinct duties and responsibilities, but all subordinate to the one head.

Now for the army. It is fair to suppose that Scutari in its later days was more than a fair specimen of military hospital organization. It had been inquired into, and reported upon by commission after commission, and it has been held up as the most perfect

example of what skill and energy (and we must add money) could effect. We have seen that the civil hospital has five departments —one to govern, one to pay, one to supply, one to nurse and keep house, and one to treat—five in all. At Scutari there were eight—the engineer, the paymaster, the commissary, the purveyor, the medical department, the quartermaster-general, the adjutant-general, and the commandant, or general commanding the forces or the garrison in which the hospital is situated. That is to say, one to build and repair, one to pay, two to supply, one to treat, three to govern, and none to nurse—eight in all. At home and in the colonies, there is also the barrack-master, making nine in all, of whom two are to build and repair. Again, the duties of matron are performed by the ward-masters or the hospital-sergeants, the latter of whom being the lowest paid of any, seem to do a good deal of everybody else's business in addition to their own.

But the three who compose the governing power are not in the hospital at all, nor does its management constitute their only or their chief duty. The quartermaster-general and the adjutant-general have an authority over the patients; not, however, as patients who are part of the hospital, but as soldiers who are part of the force. The commandant has a general authority over all, but the hospital is not only not his chief care, but, in point of numbers, it forms a very insignificant part of his command. He can have little opportunity of knowing, and little time to inquire into details, and, in ninety-nine cases out of a hundred, he has neither the taste which would lead him to interfere, nor special aptitude which would justify his interference. To insist on an average general officer in command of a force, whether in war or in peace, conducting the administration of an hospital, is not more absurd than it would be to ask the intelligent governor of the London Hospital, in addition to his hospital duties, to undertake the command of the Household Brigade. Occasionally you may find an officer like Sir Henry Storks, in the later days of Scutari, who has a special aptitude and fondness for administration, and who will set things right when they get wrong; but that was a happy accident, on the recurrence of which we cannot rely, and even if we light on such a man, he cannot anticipate, he can only correct what is known, and the mischief is not known till it is done. In most cases the general officer, conscious of his ignorance, contents himself with an occasional formal inspection, carefully turns a deaf ear to reports of differences and unpleasantnesses, and refuses to meddle till the scandal can no longer be overlooked. In fact, there is no governing power at all, nor are the subordinate departments so placed relatively to one another that they can supply the deficiency. All are equal: all can obstruct, none need assist—because none feel that they must obey. The medical officer can

ask the purveyor for something which he considers necessary for his patients, and the purveyor may procure it, or he may use his discretion and refuse it as too costly, or as not being according to warrant. The building may require alteration or repair, and the barrack-master exercises his discretion whether or not he shall apply to the engineer, who exercises his discretion whether he shall or shall not comply. Each covers his own responsibility by asking. He records his requisition and his conscience is clear. Men under such a system soon learn to acquiesce in refusal, and so save trouble, nor is it to be wondered at, when whatever is done can only be done by a fortuitous concourse of consents. It would require St. Athanasius himself to define these various co-ordinate authorities. But for the entire absence of unity the task would have delighted his heart. In place, however, of unity we have an inevitable antagonism.

And yet the War Office attempts, whether at home or abroad, to regulate and govern hospitals organized with such a machinery as this. These jarring elements are to be reconciled, and the machine made to work by a Secretary of State, through the medium of the Post. There is but one condition on which he can succeed. If he be infallible, omniscient, and omnipresent, the plan is a good one, if he be not it is absurd.

Here is the observation of no inexperienced judge of hospital organization upon this very point:—

"In the military general hospitals," says Miss Nightingale, "as they are now constituted, the governing power is wanting which, by its superior authority, can compel the co-ordinate departments within the hospital to the complete co-operation necessary for success. In the naval hospitals this object is attained, where the hospital is small, by placing the supreme power in the hands of the medical officer, and where it is large, in the hands of a governor, who is generally a naval officer of rank."

This last example seems to be conclusive as to the practicability of the change advocated; for there is an analogy between an army and a naval hospital, which, it may be maintained, does not exist between an army and a civil hospital. As to its efficacy, no one walking through the wards first of a naval and then of an army hospital, could fail to be struck by the superior order, cleanliness, and comfort of the former.

But is this deficiency of a supreme power on the spot, and this unnecessary multiplication of departments, compensated for by rapid and simple methods of transacting business?

Now we have no wish to join the popular cry against the checks imposed to guard the outlay of public money, when the object is to prevent fraud and peculation. Recent commercial revelations lead to the conclusion that, as between too much check and too little, too much is the safest. Character is well worth money

Even if not a sixpence be saved, if every farthing which might have been abstracted from the right channel by roguery is expended on the means of prevention or detection, an immense object is accomplished; but where outlay alone is to be repressed, a balance must be carefully struck between the money saved and the money spent in saving it. If the latter be the larger, there is a clear loss; and even if they are equal, it must be remembered that we have nothing to show in the one case, except two or three clerks the more, whereas the outlay would probably have shown some work accomplished or some end effected, even though neither were indispensable. This seems obvious enough, yet the War Office appears for years to have overlooked it in the management of the military hospitals.

The medical officers formerly had the supervision of the supply to their respective hospitals. The actual details of catering, purchase, &c. &c., naturally fell into the hands of the hospital-sergeants; for it was not to be expected that the medical officer would leave his patients to higgle with the butcher or cheapen the greengrocer. The system was altogether wrong. The wrong person superintended and the wrong person bought. Neither the surgeon nor the sergeant was a fit commissariat. The one was too good and the other not good enough. This system, defective in principle, bore its natural fruits. Allegations were rife, and they were by no means without foundation, that extravagance and peculation prevailed in the supply of the hospitals.

The War Office, not without reason, interfered; but if there was reason in their interference, there was little enough of it in the remedy. Purveyors, or rather deputy-purveyors (for the War Office was honestly determined to do the thing cheaply), were introduced into the military hospitals, and superseded the joint commissariat of the principal medical officer and the hospital-sergeant. The new establishment was full of zeal, and determined to justify its creation by the results it might produce. A great diminution was effected in the hospital accounts; but the purveyors were made, what they ought never to have been, supreme in matters of diet over the medical officer. Too expensive a diet—that is to say, a diet which the purveyor knew cost more than a certain sum—was at his discretion by him refused. It might have been the cheapest diet, if the patient was to be cured or saved by it; but the purveyor judged, not by the effects it would produce on the patient, but by the effect it would produce on his accounts. The medical officers complained, but the purveyors appealed triumphantly to their book and totals; and the War Office was satisfied that the new system was working well. We doubt whether a farthing was saved. We believe the same money was spent, but spent on different things. Patients were stinted, but clerks were fed. The same money was

spent, but some patients were cured more slowly, and some not at all. If the object of a hospital is to save stores, and show cheap accounts, the plan was successful; but if the object of a hospital is to save life, and cure the sick as quickly and as thoroughly as human skill can do it, then the plan was wrong, and, to our belief, expensive into the bargain.

Add to this the disheartening effect on the medical officer, who finds himself thwarted in his efforts to do his duty; who is humiliated by an inferior, comparatively without education, virtually interfering in his treatment, and who is taught the lesson that he need not estimate so very highly the human lives entrusted to his care, since the authorities above him put them in the balance, not against pounds, but against shillings and pence.

When the Russian war broke out, the system was in practice materially modified, and according to the now existing usage, the purveyor obeys the requisition of the medical officer, representing at the same time any apparent extravagance to superior authority; but we doubt whether any regulation exists compelling him so to do.

The late director-general, however, from first to last protested stoutly against the new evils of the new system; but his remedy was either to revert to the old system, and reconvert the medical into a commissariat officer, or to make the purveyor the immediate servant of the medical officer. This arose from the singular conception of the duties of a physician or surgeon which has hitherto existed in the Army Medical Department, and which is certainly peculiar to that branch of the medical profession. It has been held that young men should practise, operate, and prescribe; but that the higher ranks should be confined to what have been considered the higher duties of administration. A very grand name for very humble offices. To the surgeon very properly, to the assistant-surgeon very improperly, have been made over the knife, the pharmacopœia, and the *corpus vile* of the British soldier. To the experienced physician and skilled surgeon — namely, to the inspector or deputy-inspector—have been entrusted the sacred inspection of stores, the cleanliness of wards, the filling up of returns, the countersigning of requisitions, the necessity of which he has less means of judging than the prescribing officer, the supervision of washing, and even of washerwomen; in short, all the dealings with buildings, with furniture, with stores, with pots and pans, which in civil hospitals are the province of a house-steward, a matron, or a housemaid. To such an extent has this been carried, that in the Russian war a medical officer of some standing was actually employed for weeks in tasting wine, and testing the soundness of corks, bottle by bottle, while in the hospitals close by there was an urgent want of medical men to attend the sick and wounded.

Imagine Sir Benjamin Brodie withdrawn from the bed-sides and the theatre at St. George's, and, in virtue of his experience and ability, set to overlook accounts, countersign demands for extras, check the issue of stores, and see that the broom and the scrubbing-brush have been properly applied.

Messrs. Cumming and Maxwell, the commissioners sent in 1856 to inquire into the state of the hospitals in the East, seem not unnaturally to have been struck by the way in which the time of the medical officers was thus encroached upon by these subordinate and almost menial duties; and they remarked upon the apparently large number of medical officers on duty at the very moment that there were loud complaints of their insufficiency. The supply was not deficient, but the distribution and application of the medical staff was such that the public service derived little or no benefit from their presence. Their skill, knowledge, and experience were being systematically wasted. They were doing, at large salaries, what uneducated men would have done better on small ones; and what purely medical duties they did perform, and which consisted in inspecting the practice of those who were actually engaged in treating the patients, was probably on the whole more injurious than advantageous to the service, for it relieved the latter from the responsibility of their treatment—a responsibility which is the only safeguard of the patient, who, on the other hand, had gained but little by the interference of the superior officer, who, if more learned as to the rules of treatment, was of course less acquainted with the details, peculiarities, and previous history of the particular case. The Report of the Royal Commission puts this clearly enough:—

"By this system," they say, "it is true that the juniors are enabled very early to acquire a great amount of experience, but they acquire it, to a great degree, at the expense of the patient—they learn their mistakes by the results. The superintendence of the inspector, who has not observed the case from its commencement, is not of great practical value, especially when the number of cases is very large, and his attention is distracted by the details of the administration of the hospital. A patient treated by an inexperienced junior, and superintended, or rather interfered with, by a pre-occupied senior, is as little likely to gain by the interference of the one as by the original treatment of the other."

The Report then proceeds to point out the effect of this system on the young medical officers themselves:—

"We cannot but think that, in addition to the direct loss to the State by the misapplication, which is the waste, of the valuable time of the seniors, this system has, indirectly, a bad effect on the juniors.

"Every young man looks forward to the ultimate attainment of high rank, and to the performance of the duties which belong to it. He naturally attaches the highest importance to those functions, and

he insensibly learns to undervalue those which seem to belong exclusively to the lower grades, and from the practice of which he hopes, by promotion, to be emancipated. The assistant-surgeon is led, by the present system, to look to the performance of administrative duties as the ultimate object of his ambition, and knows that, when once he can reach an inspectorial rank, it is on their performance, and not on his medical skill, that his reputation and his further chance of advancement will depend. The result must be to lower his estimation of the highest duties of a scientific profession, and diminish his ardour in its pursuit. Neither is it without its ill effect on the senior, who, when retired from the service, does not compete with the civilian practitioner on terms so advantageous as he would have done had not his medical practice been partially suspended, and his skill and science allowed to rust during the years in which he was employed on those administrative duties which occupy so much of the time of the inspectorial ranks."

These remarks are well worth consideration. It was not only the low pay, or the advantages of rank withheld, that lowered the Army Medical Department in the esteem of the medical profession and their own. Employed at the commencement of their career in a manner which their inexperience did not warrant, but at the same time over-inspected, because untrusted, they felt that they were treated like schoolboys, and not like gentlemen; and if, while collecting their hazardous experience, they acquired a strong interest in and love of their profession, that interest and love were repressed by the reflection that the fruits of their experience would never be gathered, but that they would take leave of the higher and more scientific duties of their profession just when they became fit to perform them.

But looking at this system simply as a matter of organization, it is remarkable that, after searching through the whole mass of evidence given before the Commission, not one witness can be found to defend it. Indeed, all the evidence taken on this subject goes the other way. Sir Benjamin Brodie seemed utterly at a loss to understand the practice. He states that—

"his duties at the end of thirty-two years, during which he was surgeon at St. George's, were the same as on the day he began. He is of opinion that everything which a surgeon requires should be found, and everything which he orders should be done, but it should be done to his hand, his time being too valuable to be spent on any duties to which his medical science and experience are not available."

This is the common-sense view of the matter, and so obviously so, that it is useless to expend further argument upon it.

It would be endless to go through, in detail, the various misapplications of men and work of which the distribution of the medical department is a specimen. The ward-master or hospital sergeant is overloaded by the amount and variety of the work imposed on him; and the nursing work, which is his first duty,

is generally sacrificed to the writing work, because the neglect of the latter is at once detectable, and produces official confusion, whereas the former is not detectable out of the hospital, though its consequences within it may be fatal. The nursing therefore falls into the hands of the orderlies, who are soldiers taken from the ranks, who enter knowing nothing of their duties, and who are liable, as soon as they have acquired them, to be recalled to their regiments. To obviate this evil, the medical staff corps was created, who of course at the outset were as ignorant as the orderlies. If continued, they would in time have acquired a knowledge of their duties; but the evidence of an army surgeon employed on the Netley inquiry leads to the conclusion, that the corps is, or is to be, dissolved, for it appears to be contemplated that at Netley the patients are to nurse one another. Here is the account given by an eye-witness of the working of the orderly system at Scutari:—"The orderlies do not bring skilled labour to the work." "The cleaning and airing of the wards (at Scutari) would make a housemaid laugh; each orderly worked at it in his own way, and then the patients undid it all, and it had all to be done over again." "Except when the medicine was given by the medical officers themselves, or by the women, it was taken by the patient or not, at his own discretion."

But without dwelling further on the ill construction of the various departments by which the general hospitals were worked, we will answer the further question as to the simplicity, rapidity, and accuracy of the conduct of business, by the following description of the system of requisitions by which the necessary supplies were in a great measure obtained in the hospitals on the Bosphorus:—"The mode of supply by requisitions is faulty both ways, both in pretending to supply that which is not in store, and in not supplying that which is. For the requisition remains, although the supply has never been given; and the supply is often not given, although it is in store." That is to say, that a requisition which had not been complied with, and which as a document has just the same value as a dishonoured check, was kept as evidence of a transaction which had not taken place, and as a voucher for the issue of what had never been supplied. A comparison of such vouchers with the original store might have led to a belief in the re-enactment of the miracle of the widow's cruse.

Here is a short but simple sketch of the organization which Miss Nightingale's joint experience, both of civil and military hospitals, leads her to recommend both as regards the *personnel* and the *matériel*.

"One executive responsible head, it seems to me, is what is wanted in a general hospital, call him governor, commandant, or what you will, and let it be his sole command.

"The departments should not be many:—

"1. A governor, solely responsible for everything but medical treatment.

"2. A principal medical officer and his staff, relieved of all administrative duties, and strictly professional.

"3. A steward, who should fulfil the duties of purveyor, commissary, and barrack-master, and supply everything, subject to the governor.

"4. A treasurer, who should be banker and paymaster.

"5. A superintendent of hospital attendants, who should undertake the direction of the cooking, washing, care of hospital furniture and government of orderlies. All these officers to be appointed at home by the War Department. According to this plan, the governor would cumulate the functions of quartermaster-general and adjutant-general, and, under the advice of a sanitary officer attached to him for that purpose, would be solely responsible for carrying out the works advised, and for engaging the requisite labour.

"*Supply.* With regard to the mode of supply, let the steward furnish the hospital according to a fixed scale, previously agreed upon.

"With regard to food, let the steward make contracts, subject to the governor's approval, and with power to buy in the market at the contractor's expense if the contractor fails. A scheme of diets should be constructed, according to the most approved authorities, in order to save the cumbrous machinery of extra diet rolls. Equivalents might be laid down, so as to afford the necessary choice, depending on the nature of the climate, the season of the year, the state of the market, the productions of the country," &c.

This sketch, *mutatis mutandis,* and preserving, which is always important, the traditional military names of purveyor and paymaster for the civil terms of steward and treasurer, indicates an organization at once simple and effectual. The scheme recommended by the sub-commission probably does not differ much from it. Improved and enlarged diet tables were, many months ago, prepared by one of the sub-commissions and communicated to and revised by Dr. Christison, the highest living authority on this subject. These revised tables include a great variety of diets; for, it must be recollected, that reversing the ordinary rule in such matters, the greater the number of diets contained in a diet table, the more simple its working is. A short diet table implies a long list of extras, and each extra requires a requisition and a separate transaction for each patient for whom it is ordered; whereas a varied table enables the treating surgeon to prescribe the diet for each patient by a simple reference to the letter or number at the head of the various columns in the table, which comprise, in different combinations, the articles hitherto in general use as extras.

It would take too much time to particularize how much of this proposed organization would be applicable to regimental as well as to general hospitals. Both require to be dealt with on the same principles, and with a view to the attainment of the same

objects, namely, reduction in the number of departments, definition of the duties to be performed by each, and simplification of the forms and processes by which the business is to be carried on.

But the general hospital is the one on which the greatest pains should be bestowed, because it is there that the existing system is the most defective. You cannot do without them in war, and you cannot have them effective in war unless you give them a good organization, simple and suited to the rough exigencies of war, and in which those who are to conduct them have been thoroughly practised during peace.

But as these military general hospitals have to be extemporized in war, as their habitat is often shifting—as they must frequently be established in buildings never intended for the purpose, and in localities requiring minute inspection and much sanitary precaution before they can be adapted to hospital purposes with any security to the sick, it will be necessary to provide the governor, who is to be responsible for the safety and efficiency of the whole, with the best possible advice on points on which obviously he cannot himself be a competent judge. This is the reason why a sanitary adviser should be attached to him as to the quartermaster-general of an army. The duty of an army surgeon is curative, but it is not so much so as it is preventive. Health is the first condition of success to an army, for health means numbers. Precaution alone can arrest the constant thinning of the ranks by disease. Remedy, however effectual, comes too late. For the mere purpose of the campaign, putting aside humanity and duty to the soldier, the success or failure of the remedy is not very material. Indeed death effects an army less than disease. For death only diminishes numbers, whereas disease not only diminishes numbers, but detracts from the efficiency of the remainder who are still unaffected by it. The hospital intercepts rations, transport, guards, surgeons, money, all of which are wanted to maintain, in efficiency, the army at the front. No doubt it was some such calculation as this which led the Emperor Napoleon, that great military utilitarian, to cumulate so much medical and sanitary precaution on his fighting men, and to trouble himself so little with the fate of his sick and wounded. But inhuman as it may be thought, the lesson ought not to be lost upon us. It need not teach us to regard our disabled men less, but it ought to teach us to regard our active battalions more. We have not that constant warlike habit and experience which generates a belief in it. Nor is this scepticism, or rather this ignorance, peculiar to military men. It is the same in civil life. Sanitary science is looked upon as mere humbug by the mass of mankind. It is not till we have been decimated by cholera that we can be persuaded to cleanse our dwellings, to remove our cesspools, and attend to our sewers. Neither is the civil surgeon as much in

advance of the lay civilian on these matters as his education and knowledge should make him. The generality of civil physicians and surgeons live not by prevention but by cure, and what men live by they most esteem. They neither live by prevention, nor practise it, nor do they teach it. Our army surgeons have acquired the groundwork of their medical knowledge in civil schools, but the specialty of sanitary science they have never been taught. They may have picked it up, and though many may thus be ahead of their civilian co-professionals in this respect, there are but few among either the civil or the military who have studied it as a specialty. The combatant military officer, again, like the lay civilian, is seldom practically convinced of the necessity of measures of prevention, and is conscious that he is too ignorant to know whether the advice offered him is sound ; and, if convinced of the necessity, perhaps doubts, and often justly doubts, whether his adviser knows much more about the matter than himself. There was no lack of evidence to show the royal commission how often medical advice is not asked, because its necessity is not felt ; how often when volunteered it is resented as an intrusion, or, if asked, is not acted upon, because not good, or not thought to be good. The commission seems therefore to have attached great importance to raising the standard of sanitary knowledge among army medical officers, and recommended measures to secure that that knowledge when attained shall be produced, and when produced shall be attended to, or, at any rate, not carelessly or capriciously set aside.

When a medical officer goes to the general-in-command who, under a tropical sun, up a river surrounded with swamps, is feeding his troops on salt pork, and tells him that unless he gives them fresh meat and vegetables they will be down with scurvy and fever, he does no more than his duty, and what it is imperative that he should do. But if he is met by the man in authority with the rejoinder, "Sir, when your advice is wanted it will be asked for," he probably vows never again to expose himself to such a rebuke. Six weeks after he is called upon to cure disease which is not curable at all, or not curable in time, though care and precaution a few weeks earlier might have obviated much of it. Such things ought to be impossible, and the Commissioners urge that so far as regulation can affect it, they shall be made impossible. "The duty and responsibility of both the commanding and the medical officer," say they, "should be defined by regulation. The medical officer should be made to feel that, charged as he is with the care of the troops in health, as well as with their treatment in sickness, he is responsible for any act or omission which his advice or warning might have prevented ; and the commanding officer should be made to feel that he is responsible for disregarding that warning or overruling

that advice, and should have sound reasons to show for the course taken." The Commissioners therefore propose to fix on the medical officer, whether in peace or war, the duty and the responsibility of tendering his advice in writing, and on the commanding officer that of adopting or rejecting it. In the latter case the reasons for rejecting it might be perfectly sound on strategical, while the advice itself was equally sound on sanitary grounds; but in this, as in any other case, the reasons for rejection would be endorsed on the document in which the advice was tendered.

By this regulation the proper responsibility would be fixed on each; at present a military disaster is like a railway accident, no one is ever to blame; but when once the man whose business it is to advise is made to record his advice, and the man who is to act record his reasons, we shall know, as the Turkish pacha said, whose beard to pull. It is proposed that this regulation should apply to all medical officers in relation to their immediate military superiors; but it is further and most wisely suggested that to the quartermaster-general of an army in the field, and to the governor of a general hospital, a special sanitary officer should be attached. This is right. The duties to be performed are so important that not only must the very best advice be secured, and it can only be secured by previous special study and preparation, but means must be taken to ensure that the whole attention of the officer appointed shall be concentrated upon his particular work. The principal medical officer in charge of the force cannot do it. He is at the head of a large medical staff in charge of divisions, brigades, and battalions, scattered over a vast extent of country. He has an enormous amount of official business to transact. If there be much sickness the work is overwhelming. If, again, the sanitary duty be entrusted to a medical officer not restricted to sanitary, that is precautionary, duties alone, the progress of disease and the consequent want of surgeons will withdraw him first partly, then wholly, from his specialty, and while engaged in treating the sick, he will, by his neglect of his primary duties, be increasing the numbers who are already overwhelming the hospital. These sanitary officers cannot, therefore, be too exclusively devoted to their special science, nor too rigidly restricted to the one paramount duty of precaution and prevention.

There are several capital errors in the system by which candidates are now admitted to the army medical service. They are called upon to produce certificates and to undergo an examination; but of the certificates required, some do, and some do not, constitute evidence of the study of medicine as well as surgery, and the mode of examination is deficient in these points. The examiners are named by the person who names the candidates.

There is, therefore, no confidence in their independence. Different men are named examiners at different times, the result is that the standard of the examination varies, that as the examiners are not habituated to the work, nor accustomed to deal with pupils, as teachers are, they are, comparatively speaking, inefficient; and, lastly, that the examination is entirely theoretical, both in medicine and surgery, while in that which is the most important of all to the army practitioner—namely, preventive science, which we may call military hygiene, there is no examination at all. Now it is clear that the public will never place confidence in the fairness of an examination when the examining body is dependent on the very authority who exercises the patronage. The examination is the only check on the improper exercise of patronage. True, there have never been any imputations of unfair acceptances or unfair rejections of candidates; but, in what we fear we must call the degraded state of the profession, there has been little or no competition for admittance into it, and the favour was all on the side of the candidate and not of the patron. Let us hope that those times have passed away, and that with higher attractions to the profession will come not only a higher class of candidates, but more of them. The prize will be worth winning, and provision must be made that the race be fairly run. The East India Company set an excellent example in this respect. There is a permanent independent board of examiners for the Indian medical service, composed of men whose names are a guarantee, not only for their rectitude and independence, but for their thorough competence for the performance of a duty which requires constant practice to be done well. A chance deputy-inspector pressed into the Director-General's office to conduct an examination, who had long ago forgotten what he learned in the schools, and lately forgotten (thanks to the administrative system) what he learned in his practice, is the very last man to discern the difference between mere memory and ability, between sound knowledge and a superficial cram. All the evidence goes to show that, unless an examiner be a teacher likewise, and conversant with the habits and attainments of students, he is little likely to prove efficient. Nor is a mere book examination a sufficient test, for much theoretical knowledge may be got up by a young man, who, with the dissecting knife in his hand, or at the bed-side of the patient, would prove to be utterly helpless.

What is required, then, in order to secure efficient candidates and an efficient examination, is, first, to require from all a diploma in surgery, and a licence in medicine, derived from some competent body; or a degree in medicine, the qualifications for which include the knowledge of surgery. The candidates should also produce certificates of having attended courses of practical instruction, such as materia medica and practical pharmacy, practical

chemistry, practical anatomy (in which the student shall have himself dissected the whole body at least once), clinical surgery, ophthalmic surgery, clinical medicine, and attendance on hospital practice of not less than a year. Add to this—if, under the new system, a strong desire to enter the service is manifested—a university bachelor's degree, or its equivalent, as tested by examination. This test has been applied in the examinations for the fellowships of the College of Surgeons with a marked success in raising the tone and character, as well as the attainments, of the candidates. The man who has had the advantage of a liberal and general education will always be immeasurably superior to the man who has got up a stock of medical knowledge and nothing else. The former has learned to learn. He has braced his mind and enlarged his judgment, and there is far less fear of subsequent stagnating when once his object is gained, than in the case of the latter. No means must be neglected by the military authorities through which the weight and influence of the medical officer in his regiment can be raised. His position, socially speaking, is sure, in a country constituted like England, to be considered inferior to that of the combatant officers. The position which he must aim at is an intellectual one. He is a member of a scientific and a liberal profession, and he must show to those with whom he associates that he is master of it.

As "new brooms sweep clean," possibly under the new Medical Council changes and improvements will be effected which will raise the whole standard of medical education, and so long as the military services wisely trust to the civil schools for their education in medicine and surgery, they will reap the full benefit of those improvements, especially if the examination of their candidates be entrusted to an independent board consisting of the first civil examiners and teachers to be got.

That, however, which is the most important of all to the army-surgeon, remains untouched by these proposals, because untaught in the civil schools. The diplomas, the certificates, the examiners, and the examinations we have indicated, will give to the army as good civil practitioners as can be got, but they will give them nothing more. We shall have got a fair prospect of the means of cure, but none of prevention. Military hygiene is not taught in the civil schools. It is not to be expected that it should; but even sanitary science as applicable to civil life forms no part of the teaching of the civil schools, unless the few lectures given at St. Thomas's Hospital be an exception; and this is natural enough. A young man enters a profession for his livelihood; that which gives no remuneration offers no attraction. The surgeon and physician cure not only that their patients may live, but that they may live themselves. No man fees a doctor except for work done. If he is ill, he sends for him. If he is well, he

does not trouble his head about him. The Emperor of China is the only man who has the sense to pay his physician only when he is well, and stop his salary from the day when his illness commences till the day he is convalescent. That is his way, but it is not ours. The aim and object of the medical man, and his hope of living, depend on his curing, not on his anticipating, disease. The schools can only teach what young men must study, and they will only study that which will bring them in a livelihood. They are to live by disease, not by preventing it. The sanitary doctor's specialty is to prevent. That, however, he cannot live by, unless employed and paid by some public body whose interest it is to do so. His functions are of an entirely different character from those of the curative doctor. His practice is not ancillary to that of the curative doctor; nay, it is almost hostile to it, for the prevention of disease does not contribute to the prosperity of medicine and surgery. The sanitary doctor is to the curative doctor very much what the landowner who shoots foxes is to the master of hounds: he spoils his sport. It is vain, therefore, to expect that the civil medical schools should go out of their way to teach what few want to practise, inasmuch as, except from public bodies, there is no remuneration to be expected from it, and it forms no part of, but so far as it is successful, is incompatible with, a large experience of the curative treatment of disease. The army, therefore, which is a public body to whom preventive science is far more important than curative, must of necessity find the means of teaching it themselves, or must allow the medical officers either to practise it without having been taught, or else not to practise it at all; processes the risk of which can unfortunately be exactly measured by past results. The death returns of the Walcheren, the Burmese War, and the Crimea show what are the fruits of such neglect. The latter, especially, offers the most valuable testimony, inasmuch as, to use the words of the Royal Commissioners, it "offers to our view the most complete case on record, on the largest scale, of neglects committed, of consequences incurred, and of remedies applied."

The Government, therefore, must find some means of teaching that which is not taught in the civil schools, and never will be, and which is far more important to the army than what is taught in the civil schools, and fortunately there lies ready to their hand an instrument well adapted for the purpose. There languishes at the great army hospitals at Chatham, an institution having the semblance—but the semblance only—of a military medical school. The candidates who have passed the ordeal of the examination in the Director-General's office, are sent down to Chatham to the Invalid Depôt and Fort Pitt, and the General Hospital at Brompton, and there study medicine and surgery, and receive pathological instruction. In fact, they are taught that which an examination

is supposed to have just ascertained that they already know. The practice seems to have arisen from a kind of misgiving that the previous examination was not worth much, and that the intervening course at Chatham would act as a safeguard against an utterly incompetent practitioner being appointed to a regiment. But even in this it failed; for there is no fixed period during which the candidate is to remain at Chatham, but he stays one week or fifty-two weeks, according as vacancies for assistant-surgeons are few or many. Now if the examination was such as to secure in all cases a thoroughly competent general practitioner from the civil schools (and a soldier's leg is amputated in the same way as a civilian's, and their fever or cholera must be treated alike), the interval between the successful examination and the actual appointment to a regiment offers the time and the opportunity to convert the civilian into a military practitioner. That is the time, now that he has left the civil schools, to instruct him in the treatment of tropical diseases, and all the diseases to which the soldier is peculiarly liable; to make him acquainted with the habits, not only of soldiers but of armies; to show him the dangers to which they are peculiarly exposed, and the best means of defence against them; to impress upon him the importance of vigilant precaution; to imbue him with the science of sanitary prevention, and to store his mind with resources drawn from the great precedents of the history of armies, whether in quarters or in the field.

Fortunately, therefore, there is no Government institution to create in this case. The institution is there; and indeed it is one of those cases in which Government has no option. It is no question whether a government or "private enterprise" can do it best. "Private enterprise" cannot do it at all. Government must do it, or it wont be done; and if it be not done, we know the consequences.

Chatham is peculiarly adapted to a school of this description. No hospitals in England present so great a variety of cases. It is a great depôt of recruits and a great depôt of invalids. The latter, returning from all parts of the globe, offer opportunities of study of the sequelæ of the peculiar diseases contracted in a soldier's life. The recruit shows the type of the material which these diseases threaten, and from which it is to be the business of the surgeon to defend him.

There is a large medical staff for the treatment of these hospitals. Convert some three or four of them into professors, or rather, select for the principal medical officers in these hospitals men capable of instructing as well as treating; make every candidate, whatever be the exigencies of the service, pass through a stated definite course, tested by examination, before he is judged capable of taking up an appointment, and you have at once a

school which will not only bring the juniors into the service, with a standard of attainment and preparation never yet seen, but which will, by holding out these professorships as prizes to the seniors, offer an inducement to scientific observation and study, and to that accuracy of knowledge which teaching so indispensably requires, and which must ere long elevate the character of the whole profession.

Not many professors would be required. Military hygiene, clinical military medicine and surgery, pathology, and natural history and applied chemistry, would be the subjects of instruction. The two latter need not require a professor. The curator of the museum would teach pathology and natural history, and a good practical chemist (an officer without whom the hospitals are not efficient) would give instruction in applied chemistry. But of all these subjects, military hygiene should be first and foremost. That is the most important to practise and the most difficult to teach. "It is sanitary science," say the Royal Commissioners, "applied to the prevention of disease and mortality, under conditions far more varied, more threatening to health, and above all, more sudden and novel in their character, than those which affect the health of men engaged in the ordinary avocations of life."

To be an effective teacher of military hygiene will require no ordinary attainments and no common grasp of mind. The lecturer must possess a thorough knowledge of the physiological laws relating to health, of the physical geography and the medical topography of the greater part of the world. He must know the character of every climate and every soil, their changes and peculiarities, the dangers arising from them at various seasons and under different conditions, and the best available safeguards against them. In towns, as in the country, he must be prepared against the emanations which produce typhus, plague, and their kindred diseases, as well as against the marsh miasmas, with their train of remittent and intermittent disease. Space, ventilation, cleanliness, personal and local, diet as applicable to climate, with the nutritive value and the wholesomeness of different equivalents under different circumstances, must all have been studied by him. He must be conversant with the habits of armies in the field, and must be able to point out the precautions necessary for the selection of sites for camps, for huts, even for bivouacs: how best tents, huts, barracks can be drained, ventilated, and warmed; how hospitals should be placed, and how constructed, for health and administration. He must know well the history of disease and mortality, not only in our own, but in foreign armies; in short, he must be physician, physiologist, geologist, meteorologist, topographist, chemist, engineer, and mechanic; and he must be all these things not as a theorist, but as one prepared to make

practical application of these sciences to the varying exigencies of military life, and to teach others to do the same. Where is the man? He must, however, and will be found, and no surgeon must be allowed to practise in the army till he has passed through his hands.

No branch of a profession, however, thrives which has not a head. Knowledge which is confined to the lower ranks dies with them. Labours which are performed unobserved and unchecked by a competent as well as watchful superior authority, cease to be performed with zeal, till they cease to be performed at all. The sanitary duties of the army medical officer must, if well performed, be rewarded, and be rewarded by distinction and promotion equally with the curative. Sanitary science as well as curative science must be represented at head-quarters.

There would be a direct economy in establishing in the office of the Director-General a sanitary branch, with a competent officer at its head, specially devoted to the overlooking and directing all sanitary measures. We have thrown away not hundreds of thousands, but millions, in the course of the last ten years, from our blind and reckless neglect of the simplest laws in this respect. A man who had seen the modern hospitals at Paris, such as Lariboisière and Vincennes, would have been struck by the wonderful simplicity of the plans, and by the light, the airiness, the cheerfulness of the wards; and that in a climate far more severe than ours. But we had no sanitary department in the office of the Director-General to look to these things, and no one whose business it was to study the construction of buildings for the use of the sick, nor the conditions necessary to a healthy site. Hence, when an immense sum was voted to create a general hospital; with all England to choose from, our selection fell on three acres of clay, standing over ten miles of mud bank, with a soft, damp climate, in a district to which there is no record of any man having been ever sent for his health by any physician that ever lived; and this is to be a place of recovery for our soldiers returning from abroad, the majority of whom come from tropical climates, and whose constitutions, according to the highest living authority, Dr. Martin, require a high, dry, bracing climate! A plan was adopted, magnificent in scale, far more extensive than is likely to be required, and far more costly than was necessary, and which, with reduction, was admirably adapted for a barrack, though quite unsuitable to a hospital. Not but that Netley is a step in advance. To get a good barrack instead of a hospital, is an advantage which the sick soldier is not everywhere provided with. In the majority of our stations, the best hospitals are those which were built, not for hospitals, but for barracks. Where a hospital was designed as such, the constructor seems to have racked his ingenuity to devise as many crooked corners, blank

walls, dark and unventilated spaces as possible; as though light and air, instead of being the two first requisites of a hospital, were dangers to be carefully guarded against. At Woolwich—not in the benighted days of the Georges, nor even of King William, but in the reign of Queen Victoria, in this very decade, during the Russian war—a ward was added to the General Hospital, which we venture to say is the largest room with the smallest window-space which can be found in all England, built to be inhabited by human beings.

At Dumdum, within a drive from Calcutta, upwards of 500 women and children perish from disease, in fifteen months, out of a mean strength of about 1000, from sheer overcrowding in unventilated rooms. It seems as though we wanted to rescue the memory of Shah Soujah and the Black-hole from infamy, by showing how, by our ignorance or neglect, or both, we can emulate his world-known crime. For it is ignorance and it is neglect; and it is horrible to find that so little is the responsibility of the authorities felt in this respect, that the Government is actually praised for its energy, because one of its officers, as soon as the details of the tragedy were known (that is, when the victims had been dying for weeks), drove over in a buggy, and made a report. As if a report would resuscitate the dead, or save the living! How came the details not to be known? And who was the military, and who the medical officer, who ordered or who allowed the crowding which destroyed these poor creatures?

These things would not be possible if the army medical officers were made to understand that their first great duty is prevention. But for this purpose their responsibility must be fixed, and they must have secured to them the means of acquiring a really sound sanitary as well as curative education, so as to make them equal to their responsibility.

Lastly, there must be, in the office of the Director-General, a department, with a recognised, competent head, to overlook, to advise, and, above all, to be responsible for the advice given on these subjects. At present, the Director-General has no responsible adviser. Medical officers, who happen to be near at hand, are seized upon and constituted advisers, *pro hâc vice*, not because they are competent, but because they are near at hand. Chance makes them advisers, and chance is to blame, not they, if the advice they give turns out to be bad. If they are right they get no credit for it, and it is but fair that if they are wrong they should escape blame. This was the composition of the office under the late Director-General, and it is so still. The work is multifarious, and in extent and variety far beyond the powers of any one man. There is a vast routine business to transact with the 700 or 800 medical officers over whom he is the sole professional authority. He must have that

undefinable tact in governing men which induces them to follow willingly, and acquiesce in his decisions even when against them. He must be gifted with discernment, to judge of merit and capacity, not only for the purpose of awarding promotion with justice, but of allotting to each the task for which his attainments or qualities especially fit him. He is ultimately responsible for the health of an army of 150,000, or 180,000 men, scattered over the world, in every latitude, and in every climate. He has to deal with sanitary questions, on the largest scale and in the greatest possible variety. He has to deal with medical questions, with surgical questions, with statistical questions. He must be able to interpret rapidly the dry array of figures before him, and argue from them to sound conclusions; to trace the evils detected to their true causes, and to apply the proper remedies. To do all this, he is to be assisted by a few clerks, and his judgment is to be strengthened and informed by whatever medical officers, of a certain rank, happen to be at home on leave, or to be quartered within reach. We mean no disparagement to the talents of the late Director-General, who was an able and scientific man, when we say that the task was altogether beyond his strength. We mean none to his successor, when we say that if he attempts to discharge his duties, with an office constituted like that of his predecessor, he will utterly fail. It is an impossible task. A simple recurrence to the old form of an ordinary board will not meet the difficulty. A board, consisting of members having equal powers, voting on each measure as it arises, is a form of government almost incompatible with a decided and energetic administration. It divides the power without strengthening it. It either produces continual difference and continual bickering; or it results in a series of compromises, in which every convenience except the public convenience is consulted. Little is done, and for that little the responsibility is divided. When representation is an object, these evils have to be endured, in consideration of the advantages by which they are compensated; but where administration alone is the object—where rapid but not hasty decision, energetic but well-considered action are required, the responsibility and the decision must be vested in one man, but the mind of that one man must be strengthened by friction with the minds of men whose special acquaintance with each of the classes of subjects on which he has to decide, make them competent to inform him. They should be responsible for the advice they give; but he, and he alone, should be responsible to the Government and to the public for the decision taken.

It is scarcely necessary to remind our readers that these are the principles on which, after long discussion, and with almost universal consent, the greatest administrative office in the world has been constituted—namely, that of the Secretary of State for

India, with his council. A director-general solely responsible, but assisted by three councillors—one medical, one sanitary, and one statistical—through whom all business would pass which might appertain to the specialty of each before it came up to him for decision, all important measures being reserved for discussion by all, but for the ultimate decision of one, appears to us to constitute a machinery the most likely to perform the duties which have hitherto proved too much either for an unaided autocrat or an irresponsible board.

Lastly, let us reprint from the Report of the Royal Commission the following sentences:—

"Without some publicity we fear that this subject may again fall into oblivion and neglect, and the evils which we have described continue unnoticed and unremedied.

"The publication of the statistics of mortality of the troops in the West Indies enabled the Secretary at War (Lord Howick) to grapple with the evil and apply a remedy.

"It is desirable to ensure to the troops at home the advantage of the same publicity, in order to secure the adoption of the measures necessary to relieve them from the continued influence of conditions deleterious to health and life."

We have now gone through the measures which appear to us to be indicated by the Report of the Royal Commission as necessary to secure the objects aimed at by them. But one thing is wanting, and on that the Report of the Commission was silent. They propose to educate the medical officer to give advice, but they do not propose to educate the combatant officer to receive it and to appreciate it. True, they fix upon him the responsibility of rejecting it, by compelling him to affix his reasons for the rejection. If the advice shall have been bad, well and good—the reasons will be given and the course will be justified; and if the advice be good, and it be rejected, the blame will ultimately fall on the right shoulders; but the mischief done in the interim may be incalculable. Authority may visit the error on the head of the officer, but it cannot compensate for the disaster. Means must therefore be taken to inform the combatant officers on these subjects, that they may be protected from their own errors, and what is more important, that those under their command may be protected from them. Our army is, perhaps, at present, the least professional of all our professions. The education for the army, and the examination previous to admission, has been as yet but very superficially military. For the first steps of promotion there is a purely technical examination, but it is of the most elementary character, and refers much more to drill and parade than to the care, management, and utilization of troops. It is an examination for peace rather than war. It

omits some of the first and highest duties of an officer, without a familiarity with which no one can be fit for high command. It is not on fields of battle alone that great commanders have won their victories. Our belief is, that unless the military authorities give to our officers the means and encourage them to acquire this knowledge and secure its acquisition by them, through the means of examination, much of the advantage which the measures recommended by the commissioners, and now, we hope, about to be adopted, will be neutralized or lost.

Add this, and it is a complete scheme, thoroughly well balanced in all its parts, which fit and dovetail one into the other.

Throughout, from beginning to end, it keeps the one main object steadily in view—namely, the efficiency of the army. The troops must be kept in health if they are to do anything. Whatever is necessary to conduce to that end, is fearlessly recommended. Whatever has been asked for, with no other object than the gratification of a class or a profession, is summarily set aside. If much seems to be done for the medical officer, it is because, with a view to secure the health of the men, duties far more onerous—far more responsible—requiring far more knowledge, are imposed upon them. Respect for their opinion is not easily obtained, unless respect for their position be also secured. In England, mere scientific attainment does not obtain the same acknowledgment that it does in France. Social distinctions overshadow them. A young medical officer joining the mess of a fast regiment for the first time, has sometimes no easy task to hold his own. He is one against many, and a large portion of that "many" are of an age and habits which do not lead to a respectful consideration of the superior attainments of others. At that happy age when the schoolboy of yesterday is suddenly transformed into "the officer and the gentleman" of to-day—when, for the first time, he finds himself able to get drunk without being flogged, and possibly to smoke without being sick—he is apt to assert his claim to manhood by imitating its vices, and to look down upon a man who neither drinks, nor hunts, nor rides races, as a sorry creature. For these social deficiencies, authority compensates by marking their estimation of the man on whose knowledge and forethought these very youngsters, when they shall have acquired (as they soon will) not only the name but the character of officers and gentlemen, will often and in critical circumstances have to depend.

On the other hand, the duties and responsibilities of the medical officer are enormously increased, but he is better rewarded if he performs them, and the opportunity is offered him of rendering himself equal to their performance, and his diligence and success in availing himself of those opportunities are tested before health and life are entrusted to his care. Security is taken so far as it

can be taken by improved and simplified organization, that his treatment shall not be debarred from success by want of the requisite appliances, nor the sick be debarred from recovery by the want of necessary material comforts. The whole scheme is left to be watched and directed in each of its parts, medical, sanitary, and statistical, by officers of the highest ability and experience that can be found, acting with and under the authority of the director-general, who will combine and be responsible for the whole. Lastly, as a check upon the whole, and as a security to the soldier and to the country, the publication, at fixed intervals, of the statistics of the army is provided for, as the only safeguard against oblivion and neglect.

We are told that the sub-commissions charged with the elaboration of the details of all these measures have all reported; that the medical regulations have been codified; that a complete scheme of statistics, and a complete organization of army hospitals has been devised; that the whole curriculum of the reformed army medical school has been prepared; and that the duties, the relative powers, and the mode of transacting business by the director-general and his council, have been defined. They wait and we wait for the action of the government. There can be no difficulty about money, for the cost of two or three councillors at the medical department, and two or three professors at the medical school, cannot be large, especially when we recollect that the irresponsible advisers in the director-general's office did not work without pay, and that the patients at Chatham must be treated by medical officers of high rank, whether those officers be also professors or not. Why, the interest of the money spent on Netley in excess of what would have built and administered a properly constructed hospital, would in itself more than maintain these officers, even were they net additions to our establishment, which they are not.

But if this matter is to be looked at as a matter of finance, and of finance alone, it is hardly possible to conceive a larger proportion of saving to be obtained at so small an immediate outlay. We are recruiting our army, say at the rate of 25,000 men per annum—at this moment it is much more. The mortality in our army has been shown to be more than double that of civil life. Our invaliding exceeds it. Whatever diminishes the one, diminishes the other. Reduce the sickness, and not only the mortality but the invaliding is diminished with it. If the health of the army could be raised to the level, or, which is the same thing, if the mortality of the army could be reduced to the rates of civil life, half of our recruiting would become unnecessary. The vacancies would have been reduced one-half; half the number of recruits would be sufficient to maintain our present force. But that view may be too sanguine, and in order to be beyond all

cavil, assume that a good sanitary system based on the reforms specified in this article, reduces the sickness and mortality by no more than one-fifth; and assume that the loss of a trained and efficient soldier can be made good for 50*l*., which is just half the amount of estimate of the cost of a recruit, enlisted, fed, clothed, drilled, in short, converted into a trained soldier, and transported to the regiment to which he belongs, and the country at once gains an annual saving of a quarter of a million, and this is a very low estimate of the ultimate saving when the measures shall have come into full operation.

But there are other and higher motives for immediate and energetic action. Every month that is allowed to pass while nothing is done, brings into the service fresh batches of young men to whom are entrusted duties for which they have received no previous preparation. They are sent out to be taught in their turn by disaster what they have learned from no teacher at home. Their experience will again be acquired at the expense of the soldier, whose life and health are in their hands. If there be war, fresh sufferings and fresh disasters will again lower our reputation as a military nation, and *pro tanto* deprive us of the security which rests on military reputation. Every day's delay, therefore, is a loss. While these plans, matured by practised and experienced hands, are being bandied from branch to branch in the cumbrous consolidation of the War Office, not only are the evils complained of unarrested, but the seeds are being sown for their long continuance. Delay then is not only a loss but a sin, and one which we trust that the country will not long allow our rulers to commit. The army of England deserves better treatment at our hands. Its officers and its men are of the finest material which the world can show. They have undergone much unnecessary suffering, and been exposed to much unnecessary difficulty; but they have endured those sufferings, and overcome those difficulties, with a patience and a courage which have never failed. It remains for us to give them the organization and the skill which shall utilize those great qualities to the utmost, and constitute our army a machine perfect for its purpose. Then we may rest assured, that while so defended, neither envy of our prosperity, nor hatred of our freedom, will induce any nation to risk aggression or court a contest with us.

THE END.

6

QUALIFICATIONS AND EXAMINATION OF CANDIDATES FOR COMMISSIONS IN THE MEDICAL SERVICE OF THE BRITISH AND INDIAN ARMIES,

ORGANIZATION OF THE PRACTICAL ARMY MEDICAL SCHOOL,

INCLUDING THE SUBJECTS TO BE TAUGHT BY THE PROFESSORS;

AND

RULES FOR THE EXAMINATION OF ASSISTANT-SURGEONS PREVIOUS TO PROMOTION.

LONDON:
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FOR HER MAJESTY'S STATIONERY OFFICE.

1860.

PREFACE.

THE following Qualifications of Candidates for Admission to the Army Medical Service, the Plan of Organization of the Army Medical School, and Rules for examining Assistant Surgeons previous to Promotion, are intended to give effect to the recommendations of the Royal Commission on the Sanitary State of the Army, and were included in the Warrant of October 17, 1859.

Since that Warrant was issued, the Government of India has adopted a similar standard of qualifications for admitting Candidates for the Indian Medical Service, including the special instruction to be given at the Army Medical School, and the same form of examining Assistant Surgeons for promotion in the Indian Army. In consequence of this the Physician to the Council of India has been added to the Senate, and certain changes and modifications of the Warrant have been adopted, to assimilate the Regulations in both Services.

War Office, March 1860.

CONTENTS.

Section I.

Page

Qualifications and Examination of Candidates for Commissions in the Medical Service of the British and Indian Armies - 7
1. Certificates. Age of Candidates - - - - - 7
2. Declaration to be made by Candidate - - - - 7
3. Candidate must possess Degree, Diploma, or Licence to practise Surgery and Medicine - - - - - - - - 7
4. Qualifications and Certificates to be lodged a week before Examination 8
5. Subjects of Examination - - - - - - 8
6. Classification of successful Candidates - - - - 8
7. Course of Practical Instruction at Army Medical School - - 9
8. Examination for Commission - - - - - - 9
9. Allowance to Candidates at the Medical School - - - 10
10. Candidates to conform to Discipline - - - - - 10
Schedule of Qualifications - - - - - - 11

Section II.

Organization of the Practical Army Medical School - - 12
I. Candidates for Commissions to attend Course of Instruction - 12
II. Subjects of Course - - - - - - 12
III. Government of the School - - - - - - 12
IV. The Senate. Its Functions - - - - - 12
V. Museum - - - - - - - - 13
VI. Library - - - - - - - - 13
VII. Length of Course - - - - - - - 13
VIII. Nature of the Instruction - - - - - - 14
(I). Lectures and Instructions on Hygiène - - - 14
Part I. Principles - - - - - 14
Part II. Application of Hygiène to Armies - - 18
(II). Clinical and Military Medicine - - - - 24
(III). Clinical and Military Surgery - - - - 25
(IV). Lectures and Demonstrations in Pathology and Morbid Anatomy - - - - - - - 26

Section III.

Rules for the Examination of Assistant-Surgeons previous to Promotion - - - - - - - - - 29
Addendum. Constitution of Senate, March 31st, 1860 - - 31

Section I.

QUALIFICATIONS AND EXAMINATION OF CANDIDATES FOR COMMISSIONS IN THE MEDICAL SERVICE OF THE BRITISH AND INDIAN ARMIES.

I.

Certificates. Age of candidates.

EVERY Candidate presenting himself for admission to the competitive examination required for the Medical Service of the British and Indian Armies must be unmarried. He must produce a birth certificate from the District Registrar, or a certificate of baptism, in which the date of birth is stated. Or, if neither of these can be obtained, an affidavit from one of the parents or from some other near relative who can attest the date of birth, will be accepted. The certificate or affidavit must show that the Candidate is not above 26, nor under 21 years of age. He must also produce certificates of moral conduct and character, one of them from the parochial minister if possible.

II.

Declaration to be made by candidate.

The Candidate must make a declaration that he labours under no mental or constitutional disease, nor any imperfection or disability that can interfere with the most efficient discharge of the duties of a Medical Officer in any climate. He must also attest his readiness to engage for general service immediately on being gazetted.

III.

Candidate must possess degree, diploma, or licence to practise surgery and medicine.

The Candidate must possess a diploma in surgery, or a licence to practise it, from the Royal College of Surgeons of England, Scotland, or Ireland; or from the Faculty of Physicians and Surgeons of Glasgow; or from some other corporate body legally entitled to grant a diploma in surgery or a licence to practise it. He must besides, and in addition to such diploma or licence, possess a degree in medicine or other legal qualification to practise medicine in Great Britain or Ireland.

IV.

Qualifications and certificates to be lodged a week before examination.

Degrees, Diplomas, Licences, and Certificates of age and character, must be lodged at the Army Medical Department, or, in the case of Candidates for Medical Service in the Indian Army, with the Physician to the Council of India, for examination and registry at least one week before the Candidate appears for examination.

V.

Subjects of examination.

On producing the foregoing qualifications the Candidate will be examined by the Examining Board on the following subjects:—

Anatomy and Physiology.

Surgery.

Medicine, including Therapeutics, the Diseases of Women and Children, and Pharmacy.

(The examination in Medicine and Surgery will be in part practical and will include operations on the dead body, the application of Surgical Apparatus, and the examination of Medical and Surgical Patients at the bedside.)

Comparative Anatomy, Zoology, and Botany, with especial reference to Materia Medica.

The subjects for this part of the examination will be taken from the following books:—

(1.) "Animal Kingdom," by W. S. Dallas, F.L.S.

(2.) "Outlines of the Structure and Functions of the Animal Kingdom," by Rymer Jones; or, "Cours Elémentaire d'Histoire Naturelle," par Milne Edwards.

(3.) Lindley's "School Botany;" Lindley's "Medical and Economic Botany;" Henfrey's "Elementary Course of Botany."

Candidates who may desire it, may be examined in the Elements of Physics and in Physical Geography. The following books are recommended for this purpose:—

(1.) "Elements of Natural Philosophy," by Golding Bird and C. Brooks.

(2.) "Physical Geography," by Mrs. Sommerville.

VI.

Classification of successful candidates.

The Names of Candidates who pass the Preliminary Examination of the Examining Board, will be sent to the Director-General, or to the Physician of the Council of India, and communicated to the Professors of the Army Medical School. The Names will be arranged in the following Classes:—

Class I.

Names of those who have passed a pre-eminently distinguished examination, *arranged in their order of merit.*	Characters which distinguish the excellence of each. Fitness for special service.

Class II.

Names of those who have passed a creditable examination, *arranged in alphabetical order.*	Statement of the topics in which each has individually excelled, or fallen short.

Class III.

Names of Candidates who have passed the MINIMUM examination, *arranged in alphabetical order.*	Statement of the particular branches of science in which each has been found to be DEFICIENT.

This information will enable the Professors of the Army Medical School to carry out their instructions with a definite aim as regards each Class.

VII.

Course of practical instruction at the Army Medical School.

After passing his preliminary examination, every Candidate will be required to attend one entire course of practical instruction at the Army Medical School, before being admitted to his examination for a commission, on

(1.) Hygiène.
(2.) Clinical and Military Medicine.
(3.) Clinical and Military Surgery.
(4.) Pathology of Diseases and Injuries incident to Military Service.

These courses to be of not less than four months' duration.

VIII.

Examination for commission.

At their conclusion the Candidate will be required to pass an examination on the subjects taught in the school. The examination will be conducted by the Professors of the school.

The Director-General, the Physician to the Council of India, or any Medical Officers deputed by them, may be present, and take part in the examination. If the Candidate give satisfactory evidence of being qualified for the practical duties of an Army Medical Officer, he will be eligible for a commission as Assistant Surgeon.

IX.

Allowance to candidates at the medical school.

During the period of his residence at the Army Medical School, each Candidate will receive an allowance of 5*s.* per diem with quarters, or 7*s.* per diem without quarters, to cover all costs of maintenance. And he will be required to provide himself with uniform, viz., the regulation undress uniform of an Assistant Surgeon, but without the sword.

X.

Candidates to conform to discipline.

All Candidates will be required to conform to such rules of discipline as the Senate may from time to time enact.

Schedule of Qualifications.

Recommended by _____

Christian and Surname at full length.

I _____

_____ Years of Age, in _____ last, a Candidate for employment in the Medical Department (*of the Army*), (*or of the Indian Army*), do hereby attest my readiness to engage for General Service, whether at Home or Abroad, and to proceed on Duty immediately on being Gazetted.

I declare that I am unmarried, and that I labour under no Mental nor Constitutional Disease, nor *any imperfection* or disability that can interfere with the most efficient discharge of the Duties of a Medical Officer in any Climate.

The Dates of Graduations and the Universities or Colleges are to be stated.

I have the Degree of A.M. or A.B. from the _____

I have the Degree of M.D. from the _____

I have a Licence to practise Medicine from the _____

I have a Diploma in Surgery from the _____

I have a Licence to practise Surgery from the _____

(*Signature at full length*) _____

(*Date*) _____

(*Place of Residence*) _____

Section II.

ORGANIZATION OF THE PRACTICAL ARMY MEDICAL SCHOOL.

I.

andidates for ommissions attend urse of in- ruction.

After passing his preliminary examination, every Candidate for a Medical Commission in the British and Indian Armies will be required to attend one entire course of practical instruction at the Army Medical School, and at the Military Hospital in connexion with it, on the subjects herein-after named, before being admitted to his examination for a Commission.

Cadets and Officers of the Royal Engineers and of the Indian Engineers may also attend a course of instructions on Hygiène. Combatant officers will have the same privilege extended to them should they desire it. Army Medical Officers will also have access to the School.

II.

ıbjects of urse.

The special practical instruction which the school is intended to afford will be given by the following five professors :—

The Professor of Hygiène.
The Professor of Clinical and Military Medicine.
The Professor of Clinical and Military Surgery.
The Professor of Pathology.

III.

vernment of school.

The school has a distinct and independent existence under the Secretary of State for War, and is governed by its own Senate, which will hold a meeting for the dispatch of business at least once a month or oftener if necessary.

IV.

e Senate. functions.

The Senate consists of the Director-General of the Army Medical Department, who will preside, when present, at the meetings of Senate; the Physician to the Council of India, the Professors, and the Principal Medical Officer on the station *ex officio*; but only those members of Senate who may be present shall vote on the questions discussed.

The Senate will regulate the routine business of the School.

It will decide on the arrangement, number, hours, &c., of the Lectures, and instructions.

It will make and amend regulations for the conduct of the Students.

It will preserve discipline.

It will also have the regulation and direction of the Library, Museum, Model-room, and Laboratory; the selection of books, models, chemical and other apparatus necessary for the School, and will make up, and submit to the Secretary of State all estimates of expenditure connected with the School.

All acts of the Senate will be communicated to the Director-General, and to the Physician to the Council of India.

No act of the Senate shall be binding until it has received the approval of the Secretary of State.

V.

Museum.

The Museum will consist of four divisions:—

1. A collection of Pathological Anatomy, having special reference to the more prevalent diseases of the Army.

2. A collection of Specimens of Geology and Natural History.

3. A collection of Materia Medica and Alimentaria, containing specimens of the more important articles, both in their natural and prepared states; and of the principal seeds, grains, pulses, and other dry or prepared articles of food, from all parts of the world.

4. A collection of plans and models of whatever is used in the Army for the conveyance, support, or protection of wounded men; models of tents, hospitals, and the like.

Classified Catalogues of the contents of these several divisions are to be kept.

VI.

Library.

The Library contains standard works in every branch of Medicine, and the allied sciences. Attached to the Library there is a Reading room, furnished with maps, books of prints, &c., to be kept in the Library, but the Pupils will have permission, under the regulations of the Senate, to take books to their own quarters.

VII.

Length of session.

The business of the session will be arranged by the Senate, in such manner that there shall be at least six months' residence at the School and Hospital, including courses of not less than four months instruction by lectures, &c.; so that there shall be two sets of Candidates ready for examination for commissions every year.

VIII.

ature of the struction.

The Lectures and Practical Instructions to be delivered at the School will be directed exclusively to the specialties of the Military Medical Service.

The Courses of Lectures will include the subjects in the following five programmes arranged in such order and manner as the Senate may from time to time decide.

I.

Hygiène.

CTURES AND STRUCTIONS N HYGIENE.

The Course of Lectures and Instructions in Hygiène will be directed to impress forcibly on the mind of the Student the whole principles on which the prevention of disease is based, not only in their scientific but in their practical aspect, and from thence to follow out the special application of those principles to the preservation of the health of troops in Barracks, Garrisons, Stations, Camps, and on Marches, both by practical instruction in the problems of Army hygiène, and by reference to maps, diagrams, models, instruments, and other methods of illustration.

PART I. IYGIENE, INCIPLES.

Part I.—*Principles of Hygiène.*

ıre and im- ance.

Hygiène, its nature, importance, historical notices of, objects as regards civil populations and armies. Literature, &c.

siological relating to h.

General statement of physiological laws relating to health and disease. Influence of age, sex, temperament, trades and occupations. Longevity.

Comparative healthiness of different races. Physical and mental qualities of different races, influencing their fitness for military service.

rnal con- ıs as to te, &c.

Examination of external conditions as to climate, &c., and the effect of these on health and life.

EOROLOGY.

Meteorology: its importance in the science of hygiène.

Manner of making and keeping meteorological observations. Instruments. Barometer, &c. Reduction of observations.

Description of climates. Effect of different climates on health. Beneficial effect, or the reverse, of change of climate, and precautions required. Acclimatization.

ICAL GEO- HY.

Physical Geography. General sketch of the Earth's surface. Land. Water. Mountains. Hills. Plains. Plateaux.

Deserts. Valleys. The sea. Rivers. Lakes. Proportions of land and water. Natural drainage. Marshes and marshy ground. Vegetation.

General geological sketches of the Earth's surface. Stratification. Formations. Surface soils. Subsoils.

Medical topography of the British islands, colonies, and possessions. MEDICAL TOPOGRAPHY.

Geographical distribution of disease and mortality over the surface of the Earth in relation to physical geography.

Sketch of external conditions influencing the geographical distribution of disease, such as climate, elevation, marsh and subsoil miasm; miasm from river and lake banks, and stagnant waters. Salt marshes. Salt and fresh water marshes. Sea coasts. Defective natural drainage, irrigation, heavy rains, damp and stagnant air, and mists in plains, valleys, hollows, forests, jungles, rapid changes of temperature, decomposing organic matter, &c.

Influence of elevation above or below the sea-level on health. Beneficial effects of change of elevation.

Sanitaria. Rules for selecting them. Rules for selecting military stations.

Medical topography of mountain ranges in our foreign possessions, including the history of mountain climates. Sanitary advantages of such climates in our intertropical possessions. Necessity of establishing European troops in the hill ranges of our intertropical possessions. Advantages of solitary mountains. Advantages of mountain climates in tropical countries.

Meteorology of mountain ranges, specifying the different phenomena and their influences on health at different degrees of elevation.

Influence of marsh miasm in producing intermittent, remittent, and tropical bilious fevers, yellow fever, &c. Diseases arising from marsh miasm.

Effect of emanations from putrescent animal matter on health. Emanations from excreta: from the skin: from the lungs. Illustrations of the production of speedy death by such emanations; also of plague, gaol fever, typhus, &c. Sources of putrescent organic effluvia. Effects of miasmata from putrescent animal matter. Sources of putrescent organic effluvia.

Overcrowding of the population on a given area. Illustrative examples of this in civil life and in the Army. Relation of disease and mortality to surface overcrowding. Effect of surface overcrowding during epidemics, in increasing their intensity.

Beneficial effect of spreading the population during epidemics.

Influence of defective surface and subsoil drainage, in predisposing to epidemics, with illustrations. Similar illustrations from defective or deficient drainage in towns and buildings. Fatal effects of sewer air diffused through the atmosphere of towns and buildings. Miasmata from nuisances, Defective drainage, &c.

unwholesome manufactories, cesspools, sewers, accumulations of decaying refuse, unburied carcases, and offal, dead bodies, and overcharged grave-yards. Defective burial of the dead. Burial in churches, or under habitations. Illustrations of their influence on health, and in predisposing to epidemic disease.

Overcrowding in cubic space. Influence of overcrowding in cubic space in the production of disease, especially during epidemic seasons. Amount of cubic space and superficial area requisite for health. Principles on which the amount of cubic space should be determined.

Ventilation. Ventilation. Sources of atmospheric impurity in unventilated dwellings from respiration, exhalations from the skin: from foundations of buildings: from fires, lights, cooking, stables, under or near buildings. Their effects, especially during epidemic seasons.

What constitutes good ventilation: quantity of air required.

Simple methods of ventilation in use, with models and plans. Natural ventilation, artificial ventilation, their relative advantages.

DIET.

Animal diet. List of dietetic substances, animal and vegetable.

General account of the classes of animals from which dietetic substances are derived.

Comparative nutritive value of animal food: fresh, dried, salted, smoked.

Marks of health and disease in animals. Signs of fitness or unfitness for food. Signs of wholesome and unwholesome meat.

Sanitary precautions to be adopted on board transports for animals.

Diseases arising from the use of unwholesome or badly prepared flesh or fish.

Cooking. Different forms of cooking apparatus and utensils. Benefits to health of change in the mode of preparing food.

Cereals. List of grains used for food. Their geographical distribution.

Comparative nutritive value.

Signs of wholesome and unwholesome grain. Diseases arising from the use of unwholesome grains. Ergotism.

Signs of good, bad, and adulterated flour. Microscopic characters. Deterioration by insects.

Baking. Preparation of grains for food. Bread, its constituents and manner of preparation. Yeast and its substitutes. Field ovens.

Roots. Bulbs, tubers, roots used as food. Nutritive qualities.

Vegetables. Green vegetables. List of plants used as such. Their geographical distribution. Dried vegetables. Constituents. Mode of preparation and preservation. Nutritive value.

Sugar. Sugar and Saccharine matter. Nutritive value.

Condiments. Condiments. Their use and abuse.

Drinks. Water. Daily quantity per man required. Physical tests of pure water. Rain water, its composition and qualities. Hardness and softness. Saline ingredients. Their effects on the purity and wholesomeness of water. DRINKS.

Sources of water. Rain, springs, streams, rivers, lakes, wells, ponds, marshes.

Diseases produced or aggravated by impure water: Diseases from impure water.

Methods of purifying, collecting, storing, and distributing water. Subsidence, filtration, &c. Storing and purifying water, &c.

Collecting by superficial drains, by earthenware, metal, or wooden pipes. Necessity of guarding water sources and wells. Covering reservoirs. Precautions in distributing water to prevent pollution.

Supply of water for animals.

Tea, coffee, cocoa. Their chemical composition, dietetic properties, utility in repairing waste. Tea, Coffee, &c.

Wines. Adulterations, and the manner of detecting them. Wines.

Spirits. Adulterations, and the means of detecting them. Influence of spirit drinking on health. Spirits.

Malt liquors. Their dietetic qualities. Vinegar, lime-juice, acids. Their properties and uses in dietetics. Adulterations. Malt Liquors, &c.

Clothing. Its weight, material, colour. Conducting or non-conducting power for heat. Also the fitting of clothes to allow free play to the muscles and internal organs. Clothing, Composition, &c.

Clothing for different countries, climates, and seasons.

General resumé of the conditions necessary to health already discussed. Limits within which these conditions may be imperfectly fulfilled without producing disease. General Resumé.

Vital statistics. Their foundation. Method of collecting facts. Structure of tables and diagrams. Tables exhibiting the leading facts of comparative vital statistics referring to the health of countries, districts, cities, and towns, sex, age, occupation. Examination into the causes of mortality. Diseases which influence mortality to the greatest extent. VITAL STATISTICS.

Prominence due to zymotic diseases in all classifications. Their importance to civilization. Their especial importance in armies.

Epidemiology. Importance of this branch of science. Laws of epidemics. Localizing conditions of epidemics. Predisposing effects of season, bad and unwholesome food, deficient clothing, misery. Epidemiology.

Mediæval epidemics. Plague, black death, sweating sickness. Account of the conditions under which these diseases desolated Europe and Asia. Modern epidemics, cholera, yellow-fever, typhus, &c.

Transmissibility of disease. Inoculation, vaccination, re-vaccination. Transmissibility of disease.

Sanitary measures. Earliest records of their use for preserving health, and preventing epidemics. Sanitary legisla- Sanitary measures and legislation.

tion. Authorities, Officers of Health, and Inspectors, their duties. General organization of sanitary police in towns: account of recent sanitary improvements introduced into towns, buildings, and country districts.

Drainage, its object and principles. Formation and construction of sewers and drains. Trapping, ventilation, flushing. Various forms of soil-pans, water-latrines, urinals.

Cleansing and preventing nuisances. Paving. Its great utility as a means of preventing disease, with illustrations. Limewashing of houses. Baths, ablution rooms, and wash-houses.

Improved health. Instances of improved health from sanitary works. Improved towns. Model lodging-houses. Requisites for healthy buildings.

Influence of light on health and disease.

PART II.—*Application of Hygiène to Armies.*

PART II. ARMY HYGIENE.

MILITARY VITAL STATISTICS.

Military Vital Statistics. Army ages. Mortality due to Army ages in civil life. Mortality in the Army. Inquiry as to its amount.

Invaliding, its amount at different ages. Causes of invaliding. Deaths amongst invalids.

Actual Army mortality, and comparison with that of civil life.

Mortality of Foreign Armies. Mortality of different foreign armies. Comparison with that of the British Army.

Mortality in different Arms. Mortality in different branches and arms of the service, Household Troops, Foot Guards, Cavalry of the Line, Infantry of the Line, Artillery, Engineers, Sappers and Miners, Military Train, Colonial Corps, black and white troops.

Comparative Mortality in different Colonies and Possessions. Comparative mortality of troops on home and foreign service.

Comparative mortality in different Colonies and Possessions.

Mortality in War, Peninsula, Walcheren, Crimea, Napoleon's Russian Campaign.

Causes of high Mortality in Armies, Zymotic Diseases. Examination as to the diseases which occasion the high rate of Army mortality. Effect of zymotic diseases on the mortality of armies as compared with diseases of other classes,

Diseases of different Colonies and Stations. Diseases incident to different Colonies and Stations:—India. West Indies, Ceylon, Cape, Mediterranean, Bermuda, Canada.

Sick in Armies. Percentage of sick in Armies, and from what diseases.

ARMY EPIDEMICS. Historical sketch of Army epidemics. Local and personal conditions with which they are usually connected.

Epidemic influence. Signs of its approach. Effect on other diseases.

Yellow Fever. Yellow Fever. Temperature and latitude under which it exists. Yellow fever zones. Account of Army yellow fever epidemics. Barbadoes, Jamaica, Gibraltar, Bermuda, Trinidad, &c. Their history, origin, mode of propagation. Sta-

tistics. Sanitary defects in Stations, Barracks, Garrisons, and Hospitals with which they have been connected. Loss to the Army from them. Sanitary improvements already carried out to diminish their intensity. What preventive measures are further required.

Army Typhus. Nature of the disease. Causes. Influence of sanitary defects in predisposing to it, with illustrations. Sanitary and other prophylactic measures required to prevent it. Army Typhus.

Remittent Fevers. Their relation to yellow fever. Their origin. Local favouring conditions. Personal predisposing causes. Parts of the globe where they occur. Facts connected with their occurrence. Influence of marsh malaria, impure water, and decomposing vegetable matter under high temperature. Sanitary and other prophylactic measures required for their mitigation. Remittent Fevers.

Intermittents. Influence of malaria, impure water, extremes of heat and cold, exposure to night air, &c. Prophylactic and sanitary measures required for their mitigation. Intermittents.

Continued Fevers, their local favouring conditions. Influence of damp, overcrowding, defective ventilation. Prophylaxis. Continued Fevers.

Dysentery. Types of the disease. Predisposing causes from filthy camps, bad water, monotonous or unwholesome diet, exposure to extremes of heat and cold, night air, &c. Sanitary and prophylactic measures required. Dysentery.

Plague. Instances of its appearance in armies, and the conditions under which it has shown itself. Sanitary state of towns and districts visited by plague. Prophylactic measures. Plague.

Cholera. History, progress. Local and personal conditions under which cholera is most fatal. Bad water, overcrowding, defective ventilation, malaria, fatigue, filth, drunkenness, &c. Premonitory diarrhœa. Precautions against Cholera. Evacuating affected Barracks and Hospitals. Camping out. Shifting camps, reducing overcrowding, ventilating, lime-washing, cleansing, spreading the men on march. Avoiding bad camping ground on march. Spreading the troops. Short marches. Avoiding fatigue. Regulation of latrines. Great importance of inspection for the discovery of premonitory diarrhœa. Cholera. Precautions againstCholera.

Scorbutus. Importance of to armies. Causes, influence of salt provisions, monotonous diet, want of vegetables, damp, exposure, foul air, other concurrent causes. Prevention, rations, vegetables, and vegetable acids, lime-juice, lemon-juice, vinegar, acid fruits, vegetables. General attention to hygiène. Scorbutus.

Ophthalmia. Its great importance in armies. Predisposing conditions. Preventive measures against ophthalmia. Ophthalmia.

Phthisis Pulmonalis. Phthisis pulmonalis. Its predisposing causes in barracks. Necessary sanitary measures.

Furunculus, sun-stroke, frost-bite. Foot lameness.

Syphilis. Syphilis, its importance in armies. Prophylaxis of syphilis.

Prevention of parasitic diseases.

PRACTICE OF ARMY HYGIENE.

Training. Drills, exercises. Games, gymnastics, their nature, and importance in developing different sets of muscles, of respiration, walking, running, arms, &c. Gymnastic apparatus.

Training Exercises. Gymnastics. Injurious gymnastic exercises and accidents that may arise from them, and precautions. Practical importance of gymnastics in improving health and increasing the agility and muscular power of the soldier.

Personal cleanliness. Baths, &c. Functions of the skin in preserving health. Personal cleanliness, bathing, different kinds of baths, bathing parades, hygiènic rules and precautions in respect to bathing in different climates and seasons.

Prevention of cutaneous diseases. Scabies. Prevention of diseases of scalp.

Construction of lavatories. Substitutes on field service.

Stations. Stations. Selection of sites for buildings in different climates, with reference to elevation, exposure, configuration of ground, marshes, natural drainage, nature of surface and subsoil, water supply. Changes of station. Clearing away vegetation.

Plans and construction of Barracks. Plans and constructions of barracks. Foundations of buildings for warm climates. Drainage of site. Materials for building. Arrangement of rooms and staircases to secure independent ventilation of every part of the building. Size and proportions of barrack rooms. Cubic space per man in different climates and seasons, and during epidemics. Means of ventilation and warming. Amount of window space. Means of lighting. Limewashing. Materials for walls, ceilings, and floors.

Latrines and urinals, their structure. Drainage. Drains not to pass under buildings, and why?

Hygiène of Barracks. Hygiène of barrack-rooms. State of the air in unventilated barrack-rooms at night. Ventilation during night. Chest diseases produced by neglect of night ventilation. Methods of ventilation now in use in Barracks and Hospitals.

Objections to basement barrack-rooms.

Barrack kitchens, their structure for various kinds of cooking. Boilers. Soyer's stove. Open fire-places. Ovens. Economy of fuel.

Cavalry barracks. Special sanitary precautions regarding them. Position of stables. Arching of stables. Independent ventilation of stables. Cleansing. Drainage. Removal of manure. Separation of stables from men's barrack rooms.

Selection of Buildings. Selection of existing buildings to be occupied as barracks. Their position, neighbourhood, drainage, structure, cleansing,

ventilating. Allotment of cubic space. Limewashing. Provision of latrines. Selection of quarters. Billeting of troops. Nature of the sanitary precautions required. Sanitary inspections, and reports on barracks. Points to be examined into.

Garrisons. General sanitary police. Drainage. Cleansing. Hygiène of buildings. Casemates, their construction. Their sanitary defects in want of light and ventilation. Special sanitary precautions required in regard to them, whether used as barracks or as hospitals. Garrisons.

Special sanitary precautions in respect to occupied towns during war. Duties of Quartermaster-General's Department in respect of buildings, stations, camps, marches. Duties of Medical Officers under the regulations. Inspection of towns as to vicinity, position, drainage, cleanliness, population. Water supply. Organization and duties of sanitary police. Selection of buildings for quarters and hospitals. Precautions against epidemic disease in occupied towns. Cleansing. Drainage. Removal of Nuisances, &c. Sanitary Police.

Seaports in occupation. Special sanitary precautions in regard to them. Harbour police. Co-operation of military and naval authorities in preserving the health of seaports.

Sanitary regulations and works for occupied towns and seaports.

Selection of sites for Hospitals. Exposure. Locality. Vicinity. Composition of surface and subsoil. Natural drainage. Hygiène of Hospitals.

Plan of hospitals. Discussion as to advantages and disadvantages of different plans for sanitary and administrative objects. Great principle in hospital construction to break up the sick into small numbers under separate roofs.

Number of flats. Size of wards for administration and salubrity. Number and position of windows. No more than two rows of beds in a ward. Amount of light required in hospitals. Illustrations of good and bad hospital construction. Advantages of recent improvements.

Ventilation of hospitals. Various methods. Artificial, by extraction: by injection of air. Natural, by doors, windows, and fire-places. Their comparative facility, and advantages in securing freshness of the air. Amount of air which can be admitted by natural methods.

Quantity of air requisite for sick. Usefulness of artificial. ventilation in defective hospital construction.

Hospital water-closets. Their structure, position, and ventilation.

Cubic space for sick in different climates. Distance of beds

Warming of hospitals. Advantages of open fire-places. Their great ventilating power. Radiant heat best for warming, and why?

Walls and floors of hospitals should be of impervious materials. Position of nurses' and orderlies' rooms. Ward furniture and bedding. Water supply of hospitals. Baths, cold, hot, vapour, shower, medicated.

Best structure of Hospital kitchens. Hospital cooking and diets. Diet rolls and tables. Analysis of diets. Explanation and use of diet tables.

Selection of Building for Temporary Hospitals.

Examination and selection of buildings for temporary hospital purposes.

Points requiring special inquiry. Position. Drainage. Ventilation. Cleanliness. Amount of accommodation. Adaptation of buildings. Improvements and works necessary to remove defects. Instances of disastrous results from sanitary neglects in hospital buildings.

Hygiène of Camps.

Preliminary inquiries before troops take the field as to physical geography. Medical topography. Climate. Supplies. Numbers, and habits, and diet of the population. Houses, &c. Prevalent epidemics and diseases. Manner of conducting inquiries. Reports. Precautions founded on reports. Selection of camp sites. Marks of positions favourable or unfavourable to health. Examination of vicinity, of surface and subsoil, of drainage, woods, vegetation, products, waters, prevailing winds.

Sanitary reports to Quartermaster-General on these points. Methods of improving positions by drainage, cutting down timber and brushwood, &c. Details of sanitary inspection of

Arrangement of Camps.

camps. Arrangement of camp. Order and distance of tents best adapted for health. Estimate of the number of men on a given area in different forms of camp. Importance of the question as regards health.

Drainage of Camps.

Drainage of camp sites, on hillsides, slopes, and flats. Nature of drainage required in different inclinations of ground and in different soils.

Water.

Water supply of camps. Estimate of amount required for men and animals. Examination of water sources. Selection of sources. Plans and methods of supply in hilly countries and plains. Methods of purification of water, construction of filters, tanks, wells, &c. Arrangements for watering animals indispensable. Proper construction of watering troughs.

CampKitchens.

Construction and position of camp kitchens. Position and distance of Slaughtering-places. Latrines, Manure depôts, Stables, and Burial grounds.

Huts.

Huts. Materials for construction, stones, planks, panels, wattles. Best form and dimensions. Preparation of ground. Drainage of site. Raising of foundations above surrounding levels. Utility of this precaution. Ventilation, and best methods of effecting it. Means of keeping huts cool in hot weather. Utility of limewash. Protecting hut sides during

cold weather. Good and bad methods of doing so, and their influence on health. Dangers to health from excavated huts.

Tents. Preparation and drainage of sites. The importance of this to health. Methods of ventilating tents. — Tents.

Bivouacs, &c. Sanitary precautions required as to ground, shelter, fires, food, clothing, &c. — Bivouacs, &c.

Field hospitals. Selection and drainage of site and arrangement of Hospital. Hospital huts, their structure, preparation of sites, draining, ventilating, warming, limewashing. Marquees, their construction, and means of ventilation. Flooring for huts, marquees, and tents. Boards, punned earth, stones, &c. Paving vicinity of tents and huts. Field Hospital kitchens. Various forms of construction. Cooking utensils. — Field Hospitals.

Rations. Sources of supply. Those of every country should be known. Composition of rations on physiological grounds, according to the supplies available. Changes in rations required to prevent disease. Practical details of rations in conformity with the work, duties, climate, season, &c., to which the soldier is exposed. — Rations.

Drinks best suited for soldiers in foreign countries and climates. Practical tests of their adulteration. Canteens. Their regulation and good sanitary state necessary to health. Intemperance. Means of suppressing it in camps. Disease, mortality, and loss of efficiency arising from it. — Drinks. Canteens.

Military clothing and equipments. Their material parts, make, and adaptation to duties by day and night, in different weather, climates, and seasons. — Clothing and Equipments.

Burial of the dead in armies. Position of burial grounds, their regulation. — Burial grounds.

Troop and sick transports and Hospital ships. Requisites for health, ventilation, cleanliness, deodorising substances, pumping out bilge water. Cubic and superficial area required. Equipments. Sanitary duties of Medical Officers on board ship. — Troop and sick transport.

Practical instructions on hygiène. — Practical Instruction and Exercises.

Exercises in examination into the qualities of various articles of food, drink, and clothing.

Exercises in examination into the sanitary condition of districts, buildings, barracks, hospitals, &c., for the purpose of pointing out defects and their remedies.

Exercises in making sanitary inspections and drawing up sanitary reports by Medical and Sanitary Officers.

Exercises on the sanitary regulations for the Army, explanation of their objects, and their application to the prevention of disease.

Exercises on the means of mitigating or preventing epidemic disease in armies.

Exercises in keeping statistical accounts of disease and mortality, with special reference to questions in Army hygiène. Statistical forms and reports in use.*

Exercises on medical topography, showing its sanitary relations.

Exercises on the preparation of camping ground.

Exercises in the routine of sanitary inspections and reports by Inspectors and Deputy Inspectors.

Drawings and Models.

Drawings and Models of improved barracks, hospitals, tents, marquees, huts, kitchens, transport ships, drainage and ventilating arrangements, also illustrations of various temporary sanitary expedients, &c.

Poisons.

Poisons.

Signs of poisoning. Medico-legal inquiries on these points.

Signs of death.

Death from violence.

II.

Clinical and Military Medicine.

Clinical and Military Medicine.

This Course will consist of two parts:—

1. Clinical Instruction in the Hospital.
2. Systematic Lectures on the Diseases of Armies.

The Professor will give instruction at the bedside, more especially on the more prevalent diseases of armies. He will exercise the pupils in drawing up accurate histories of cases of disease under treatment. He will examine and practise them in the various methods of diagnosis, by auscultation, the use of the microscope, and by the application of chemical tests. He will also deliver clinical lectures on the cases under treatment. In this part of the course the Professor will have an opportunity of illustrating the management of Hospitals, as to cleanliness, ventilation, nursing, &c., and of indicating the Hospital diets in different diseases and stages of disease, and during convalescence.

The method of drawing up Hospital Reports will also be properly taught in this part of the course.

The Professor will deliver lectures on the following subjects:—

History of Military Medicine, with notices of the more important writers on the subject.

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* Whenever possible, the Student might be allowed to acquire practice in keeping Statistics in the Statistical Branch of the Army Medical Department.

The general character, habits, and duties of the soldier, and the influence of these in modifying his diseases.

General view of the diseases to which soldiers are most liable, from exposure, fatigue, intemperance, &c., in different climates.

General view of the medical history and management of yellow fever, remittents and intermittents, dysentery, cholera, scorbutus, phthisis pulmonalis, venereal diseases, &c., in different countries and climates.

Lectures and Clinical Instructions on Mental Diseases.

Medical history of the more remarkable epidemics which have occurred in the British and other armies.

Nature and medical management of the more prevalent diseases in different climates, in the British Colonies, and other places where our troops may be stationed, as in the Mediterranean, West Indies, coast of Africa, East Indies, &c.

Beneficial effects of change of air and of climate on invalids, and in convalescence from disease or wonnds, and in deteriorated health arising from long residence in unhealthy climates. Attention to this of great importance in maintaining the efficiency of troops serving in tropical climates.

Advantages of frequent medical inspection of troops, particularly in unhealthy stations, with the view of detecting the commencement of disease.

Hospital regulations, books, and forms.

Regulations regarding recruiting, sick certificates, and invaliding. Principles on which sick certificates should be granted to officers, to prevent invalid officers from appearing on effective musters, and to ensure speedy recovery and return to duty. Importance of change of climate in cases where convalescence is arrested.

Instruction in Hospital duties.

III.

Clinical and Military Surgery.

Clinical and Military Surgery.

This course, like the preceding, will be of a special and practical character, and will have constant reference to Clinical instruction in the Surgical wards of the Hospital. The instructions and lectures will comprehend the following subjects:—

1. History of Military Surgery. Measures adopted by the Military Powers of Europe to improve the Art of Military Surgery.

2. Surgical Anatomy, including Regional Anatomy, with special reference to wounds. Operations on the Dead Body, especially such operations as are required in the field.

3. Lectures on Inflammation; its immediate importance and constant relations to Military Surgery, as a morbid and curative Agent.

4. Burns and Scalds. Ulcers.

5. Hospital Gangrene.

6. Wounds, Gunshot, Incised, Punctured, Lacerated, Wounds of Arteries and Nerves. Traumatic Aneurisms.

7. Tetanus.

8. Wounds of the Head, Face and Neck, Spine, Thorax, Abdomen, Extremities. Fractures and Luxations. Poisoned Wounds.

9. Amputations.

10. Dental Surgery.

11. Ophthalmia.

12. Syphilis, Gonorrhœa, Gonorrhœal Ophthalmia, Gonorrhœal Rheumatism, Strictures of the Urethra.

13. Dracunculus, or Guinea-worm.

14. Furunculus, or Boil.

15. Feigned and Factitious Diseases.

16. Application of Bandages and Splints.

17. Transport of Sick and Wounded; fitting up of transports, and hospital ships; the use and selection of Ambulances. Proportion of sick and wounded in Armies.

18. The Examination and Selection of Recruits.

19. The Examination and classifying of Invalids.

20. Proportion of Medical and Surgical means and Appliances to Corps and Divisions in different Climates.

21. Surgical arrangements on landing on an enemy's Coast: on taking the Field; and during and after a general action. Surgical arrangements with an advancing Army; with an Army in retreat; with a besieging Force. Trench duties and arrangements.

22. Surgical arrangements within a besieged town or fort.

IV.

Pathology and Morbid Anatomy.

Lectures and Demonstrations in Pathology and Morbid Anatomy.

Lectures and demonstrations on Morbid Anatomy, illustrated by specimens, selected from the Museum, and aided by accessory methods of observation, such as carefully recorded Clinical Histories of Cases of the more important and severe Diseases prevalent at the Military Stations abroad.

1. A series of specimens to illustrate the Morbid Anatomy of Dysentery as it has existed in the East and West Indies; in the Peninsula; in the Crimea.

2. Specimens illustrating the Morbid Anatomy of the Liver in connection with Dysentery.

3. Specimens illustrative of the lesions which occur in Fevers, similarly considered, especially of Typhus Fevers, and of Malarial, Littoral, or Paludal Fevers.

4. Specimens illustrative of the Morbid Anatomy of Cholera.

5. Specimens to illustrate Scorbutic States and Types of Disease.

6. Specimens illustrating the nature of Parasites and of Parasitic Diseases, such as Tape-worm, Guinea-worm, and the like.

7. Specimens illustrating the general Morbid Anatomy of Parts, independent of Zymotic Diseases.

8. Specimens illustrative of the Morbid Anatomy of Wounds and Injuries.

9. These topics might be also illustrated by recent specimens of Morbid Anatomy, obtained from post-mortem examinations of patients dying in the Hospital.

Practical instruction will also be conveyed—

1. By the opening of dead bodies, when special instruction will be given as to (*a*) how post-mortem examinations are to be made; (*b*) how the viscera are to be examined; (*c*) and how the results of disease-processes are to be distinguished from post-mortem changes and other pseudo-morbid appearances.

2. In this practical work of manual labour, dexterity would be acquired by the student. Special instruction will be given to each individual as to how he should use the various means and instruments of research by which departures from the state of health may be appreciated, as for example, the determination of the absolute and specific weights of the solid organs, membranes, and fluids in health and in disease, the determination of the bulk and capacity of parts and cavities.

3. A full course of practical instruction in the use of the Microscope, and its application in determining the nature of diseased conditions.

This Microscopic Course will embrace instruction—

(1) In the arrangement of the instrument, and how it is to be manipulated.

(2) In the various methods of examining objects by it, of drawing the objects seen, and of measuring the dimensions of the objects examined.

(3) In the examination of tissues and morbid products, and the application of chemical agents for their analysis under the microscope.

(4) Instruction in the preservation of microscopic objects.

One lecture, or series of lessons, weekly, till the topics are exhausted, will be sufficient for the microscopical instruction.

Practical instruction will also be given as to how specimens illustrative of Disease, Comparative Anatomy, or Natural History, are to be preserved, and sent home from abroad.

Section III.

RULES FOR THE EXAMINATION OF ASSISTANT-SURGEONS PREVIOUS TO PROMOTION.

Examinations for Promotion.

This examination is intended as a test for promotion, and may be taken at any time after the Assistant-Surgeon has served five or more years.

When Assistant-Surgeons have served the requisite time they will be examined in the following manner:—

A series of printed questions, prepared by the Examining Board, will be sealed and sent by the Director-General to the Principal Medical Officers of Stations where Assistant-Surgeons may be eligible for examination. It will be the duty of the Principal Medical Officer of the Station to deliver these sealed questions to the Assistant-Surgeons, and to see that they are answered without the assistance of books, notes, or communication with any other person. The answers are to be signed, and delivered sealed, to the Principal Medical Officer, who is to send them unopened to the Director-General, together with a certificate from the Surgeon of the Regiment, or other superior Medical Officer, that the Assistant-Surgeon has availed himself of every opportunity of practising surgical operations on the dead body.*

The Assistant-Surgeon will also be required to transmit, together with his answers to the Director-General, a Medico-Topographical account of the Station where he may happen to be at the time, or of some other Station where he may have been resident sufficiently long to enable him to collect the necessary information for such a report. Failing this, he will send a Medico-Statistical Report of his Regiment for a period of at least twelve months.

If the Examining Board is satisfied with the replies to the questions, and the Director-General is satisfied with the certificates and with the Medico-Topographical or Statistical Report, the Assistant Surgeon will be held qualified for promotion.

The nature of this examination in the Indian Medical Service will be the same, except that the questions will be

* The Assistant-Surgeon may see this Certificate before it is sent to the Director-General.

prepared and issued by the Director-General in each Presidency, and the replies and reports will be returned to him.

The Assistant-Surgeon will thus be subjected to three separate examinations within the first ten years of his service, each examination having a definite object. The FIRST, to ascertain, previous to his admission into the service as a Candidate, his scientific and professional education, and to test his acquirements in the various branches of professional knowledge. The SECOND, after having passed through a Course of special instruction in the Army Medical School, to test his knowledge of the special duties of an Army Medical officer; and the THIRD, previous to his promotion, to ascertain that he has kept pace with the progress of Medical Science.

SIDNEY HERBERT.

War Office, October 17, 1859.

ADDENDUM.

At a meeting held at the War Office on 31st March 1860, the Senate of the Army Medical School was constituted by the Right Honourable Sidney Herbert, M.P., Secretary of State for War.

The following are the names of the Members of the Senate, all of whom were present:—

J. B. Gibson, M.D., C.B., Director-General Army Medical Department.

J. R. Martin, Esq., Physician to the Council of India.

Thos. Longmore, Esq., Deputy Inspector-General, Professor of Military Surgery.

Dr. C. Morehead, Indian Medical Service, Professor of Military Medicine.

Dr. E. A. Parkes, Professor of Hygiène.

Dr. W. Aitken, Professor of Pathology.

J. R. Taylor, C.B., Inspector-General of Hospitals, Principal Medical Officer, Chatham.

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LECTURE.

I.

If the "noblest study of mankind be man," and if that study be directed to promote his happiness, by removing or alleviating the sufferings of humanity; if it be calculated to awaken the finest feelings and the noblest endowments of our nature, by opening to the mind a vast and varied field for the exercise of the mental powers: it is a study the most delightful to the individual engaged in it, the most beneficial, the most replete with philanthropy to man.

Such is the study of medicine. To behold "how fearfully and wonderfully man is made," is calculated to present the student with themes for the most interesting reflection, to gain his heart to his study, and to open his mind to the purest feelings and sentiments of religion.

Can any man behold the structure of our frame work, and the means by which its different parts are held in juxtaposition and enabled to glide smoothly on each other,—can he study the complicated machinery by which all the actions of our frame are effected,—can he view the curious apparatus provided to give it knowledge of all around us,—the instruments by which it assimilates foreign matter into its "own image and likeness,"—can he survey the Hydraulic apparatus by which it is conveyed to all the parts requiring nourishment, and renovation, and examine the beautiful provision to bring the restoring element without, in contact with the fluids within,—can he view those organs by which new matter is formed, and by which dead matter is removed, new combinations effected and new substances deposited?—In a word, will he study all these things, by which his race is preserved, and perpetuated, and not bow down in adoration

of that "*Supreme Being*" who "so fearfully and wonderfully made us"?

There may be minds so constituted that a study, such as I have described, will lead to scepticism and to infidelity, but they are few, when compared with the thousands who have been led "to look from nature up to nature's God."

A proper *Medical Education* should comprehend all and every thing that sheds light on its own different departments. The basis of this education therefore must necessarily be *Anatomy and Chemistry.*

As they receive but little aid from the collateral branches of medicine, and as they are the most elementary and isolated departments of a course of medical study, a sufficient knowledge of them is as essential in the study of medicine, as a key-stone is in the construction of an arch, or a foundation stone is in the structure of a building.

Anatomy must be understood in order to a knowledge of the healthy structure of our frame; and this forms the basis of *Morbid Anatomy.* It is also the key-stone of Surgery. It would be as ridiculous to expect a man, unacquainted with Anatomy, to be a Surgeon, in the true sense of the word, as it would be to expect a person unacquainted with the mechanism of a watch, to be a watch-maker. Chemistry again is the foundation of *Pharmacy,* and equally essential to the study of medical Jurisprudence and Physiology. Even *Anatomy* derives from Chemistry a knowledge of the composition and nature of the elements entering into the structure of the human body. A *scanty* or a *superficial knowledge,* therefore, of these two great sciences, is most injurious, as no man can practice with credit and satisfaction to himself, and with benefit and success to others, unless he has a *competent knowledge* of them.

The "practice of medicine" to a person not understanding these, is a perfect mystery. He neither can, nor will be able, to understand the action of remedies on a structure he does not understand, for he is ignorant of their nature and

properties, as well as those of the "*vital powers,*" and organs of the human body.

The *want of this knowledge,* among the native medical Sub-assistants in this Island, *has long been felt as a serious evil,* an evil pregnant with consequences the most important to its inhabitants. When we reflect that in many parts of this Island the lives of his Majesty's Civil Servants, the King's Officers, and the lives of the Burgher and Native population, are entrusted to the care of persons whose medical knowledge and acquirements are of the most meager and slender description, surely the evil is one of magnitude, and one that ought not to be suffered to exist one hour longer than circumstances will permit.

For a length of time my mind has been directed to this subject, and now I have resolved to forego all my prospects, however bright, and to devote a portion of my time to the medical education of the present Sub-assistants, and those who may hereafter choose the study of medicine as their profession.

That the course I intend to pursue will be attended with difficulties of no ordinary character I am well assured; but if patience, diligence, and perseverance on my part, can insure success, they shall not be wanting; and having resolved patiently to encounter, and grapple with all obstacles, I hope to overcome them, and to be able to say with Caesar "Veni, Vidi, Vici." "The race," however, as the Scriptures beautifully express it, "is not to the swift, nor the battle to the strong:" but as my chief object is *public good,* and as my motives are pure (without a view to self-aggrandizement or emolument) I trust that Being, without whose aid nothing is "Holy, Just, and Good," will crown my humble efforts with his blessing.

To some it may appear presumptuous, that a man whose standing in the profession does not exceed *twelve* years, should undertake the important duties of *public teacher,* when others of longer standing, and better qualified, have shrunk

from the task. My reply is, I found the field unoccupied. Light and knowledge are going forth like the rays of the sun, and it is necessary to keep pace with the rapid strides which useful knowledge is making elsewhere.

A similar plan succeeded in the deserts of Arabia, in Classic Egypt under the superintendance of *one man*, the indefatigable and, I may say, immortal Clotbey. Witness the success of the medical school at Abouhazel, and a similar native medical school at Calcutta (certainly under more favorable auspices than mine is likely to be) which is attracting the attention, and exciting the admiration of the world. Why should this favored Isle stand alone? On the subject of my own personal and professional qualifications it would be extreme bad taste in me to speak; my testimonials speak for themselves, and are open to the inspection of my professional brethern. The medical officers under whom I have had the honor to serve for *eight* years of my life, (*six* years of which has been spent in the Colonies, *three* in Sierra Leone, and nearly *three* in this Island) will, I have no doubt, do me every justice as far as my merits or demerits deserve: and I may observe, finally on this subject, that abroad and at home, I have (until my arrival in this Island) served in *large hospitals*, and had in several instances, *the entire direction* and *management of them*. This was the case more particularly at Sierra Leone where I held the responsible appointment of "Surgeon to the courts of mixed Commission," and had the entire charge of the *Detachment General Hospital* until ill health obliged me to return to England. Asking forgiveness for this digression on a subject, of all others the least pleasing, namely, SELF, I now proceed to point out my views, and proposed plan relative to NATIVE MEDICAL EDUCATION. Here the subject naturally divides itself into 1st The education of *those who have already commenced their education:* and 2ndly. *Of those who may infuture choose the study of medicine as their profession.*—And 1st as to the present class of Volunteers, Pupils and Sub-assistants I must take them as I find

them; and I am not too sanguine in my expectations as to the amount of knowledge they have already acquired. Want of preparatory education, desultory and loose reading, immethodical and unsystematic course of study, together with an overwhelming conceit in their own powers and knowledge, natural and acquired, are obstacles difficult to be overcome, but which *must be* overcome by those who wish to profit by the opportunity which is now offered to them. Many opportunities for observation have convinced me that the gross ignorance of several of the present class of medical Sub-assistants is partly owing to a false estimate of their own talents and acquirements, combined with idleness and want of proper principle. At the same time it must be confessed that their opportunities for improvement have been *few*, and that very little attention has hitherto been bestowed on their education. These remarks may be deemed severe, but they are true, and are now made with a view, *not to give offence, but to enable you to profit by the failings of others.* Believe me, when I tell you, and that from experience, that a "knowledge of ignorance is the beginning of real knowledge." Close and rigid self-examination is a true test of knowledge. You may fancy that you know, and can do a hundred things, but you will never be convinced until you try. "Remember this," (says the pious and talented Dr. Watts) "that if upon some few superficial ac-
"quirements you value, exalt, and swell yourself as though
"you were a man of learning already, you are thereby
"building a most impassable barrier against all improve-
"ment: you will lie down and indulge idleness, and rest
"yourself contented in the midst of the most shameful ig-
"norance. Multi ad scientiam pervenissent si se illuc per-
"venisse non putassent." To the present Sub-assistants I wish now particularly to address myself, and in the kindest manner I would give them advice; 1st as to what *they ought to do*, and 2*ndly what they ought to leave undone.*

1*st What they ought to do,* let them examine themselves

and discover in what they are deficient. But in order that the examination, may be effectual and searching (for self is extremely deceptive) let them submit to be examined by competent judges, who finding out their deficiencies, will direct and guide them as to the course of their future studies. The real amount of knowledge being thus ascertained, and the deficiency being detected, it will be easy to point out the manner in which that deficiency is to be supplied. In the mean time, however, I would say, tho' it may be "late in the day, and the night at hand," do not despair, but commence immediate reformation in principle and practice, as it regards your *moral* and *intellectual* state. Endeavour to forget much that you have learned incorrectly,—seperate the wheat from the chaff, and be cautious in placing too much confidence in your own powers. If you err, at all, let it be on the safe side; better far be diffident, than full of conceit in your own abilities. Avoid this, and your improvement, though it may be slow, will nevertheless be certain and permanent. Be cautious in adopting the peculiar views of the authors you may read, do not forget the truism "Medical facts medical lies," but let your motto be "audi partem alteram"

"Weigh both sides, let justice hold the scales."

This will lead to the formation of a habit of close thinking and cautious investigation,—the only true way to form a correct judgment of *men* and *things*.

Read, and that carefully, those medical books I shall hereafter point out to you, taking notes on the subject as to the information they contain. Adopt the same system in all interesting medical cases; a few cases, say three or four, are amply sufficient to engage the attention of the early student. These notes should be made in the most condensed manner, but should also be as comprehensive as possible, for they should embrace all the important facts which bear on a case, and these only. This is a valuable habit, and one that I can recommend from experience. With your reading combine close observation; note the symptom of disease, as described in

books, and in point of fact, as they occur at the patients bed side;—mark the difference, and this practice continued, will lead to a valuable collection of facts, which you will find of the greatest importance and utility in future practice. Closely observe remedies, as described in books, and as their effects are witnessed in practice;—their effects in large and small doses; and never despair of any case, until you have given *every remedy* the *fullest* and *fairest trial.*

By this means Dr. Elliotson, professor in the University of London, has found out many valuable properties in medicines they were not supposed to possess. He has established a number of new and important facts hitherto unknown; and thus conferred a lasting benefit on this race, and on the profession of which he is such an ornament, and immortalized his own name. Would that others might be led to follow his example! and why should they despair of equal success?—Lord Clarendon has said, "that there is no art or science that is too difficult for industry to attain. It defends us against all the strokes and assaults of fortune. It is that only which conducts us thro' any noble enterprise, to a noble end. What we obtain without it, is by chance; what we obtain with it, is by virtue."

I shall now briefly mention in what branches of knowledge I propose to instruct those who are now preparing for medical Sub-assistants, and give them some useful and additional advice concerning their conduct.

1*st Anatomy and Physiology.* The former to be taught on the dead subject, and in the dissecting-room; for the Surgeon must be trained to view the dead as well as the living, and dissection alone, for the very word implies it, can teach Anatomy. Physiology to be taught in connection with Anatomy, by Lectures and oral observations on the subject.

2*nd. First Principles of Chemical Science and Pharmacheutical Chemistry;* to be taught by Lectures,—oral observations, and illustrated by actual experiments.

3*rd. Materia Medica and Therapeutics;* to be taught in

the same manner, also, by reference to specimens and plates of medicinal plants.

4*th* *Principles and practice of Surgery and Clinical Surgery,* to be illustrated by operations on the dead subject, and oral remarks at the surgical patient's bed side.

5*th* *Medical Jurisprudence and Hospital practice.* I cannot suffer the former most important branch of medical knowledge to pass without remark; for in this Island, among medical Sub-assistants, it appears to have been totally neglected, and it now demands, as a seperate branch of science, the strict attention of every Sub-assistant in this island.

"Society which developes the powers of man" (says the eloquent and learned Professor Grant of London) "gives refinement to vice as well as to virtue, and in proportion as vice has become more cunning, the searching law has redoubled its energies to hunt it out. Poisoning,—Suffocation,—Burning,—Secret-wounds,—Starvation,—Torture,—Suicide,—Rape,—Hanging—Drowning and Infanticide, are among the prerogatives of our species and the subjects of study to the medical jurist;—alas! how many a victim has sunk unheeded into the grave, and left the *Murderer* to steal unsuspected thro' the rest of life; but now, the carcase gone to shreds can be made to stand up in appalling judgment against the murderer and render him the poison grain for grain"! As far as it is in my power, I shall instruct you in this branch of profession, well knowing that at *out-stations* where you may be sent, you will be called on occasionally to give evidence in such cases, which evidence, if not given in a *clear, concise* and *scientific manner* will prejudice you in the eyes of those before whom you stand, and perhaps, if inconsiderately, injudiciously, and incautiously given, may be the means of dooming an innocent being to a shameful and ignominious death.

6*th* With *Hospital practice, the Principles and Practice of Medicine* will be combined, and the action of medicinal agents explained. Separate Lectures also, will be given on *Clini-*

cal medicine and the nature and treatment of every case of interest pointed out and explained. Lectures, also, on the *Principles* and *Practice of Physic* will be given, which shall contain a *precis* of all that is *known*, and that has *been written on the subject*. I had thought to obviate the necessity of this; but when I reflect on the *number* and *extent* of the works on this subject, I see it cannot be avoided. Without this, the student's mind would be bewildered, and his imagination entangled, amid the labyrinths of medical disquisition, discursive argumentation, and discrepant opinion. Hereafter, if I am supported by the liberality of Government, I desire to found a *Native Lying-in Hospital* capable of containing twelve beds, with a nursery attached to it, on the same model as the Lying-in Hospital in Edinburgh, where respectable women may be instructed and qualified to act as *Nurses* and *Midwives* (in ordinary cases,) and where the steadiest, the most moral and respectable of the Pupils, may be taught Midwifery, and the diseases of women and children,—an important desideratum in this island. Let me now come to the last division of this part of my subject.—viz. "*Advice as to what you ought not to do.*

This of course refers to your *moral conduct*. Let all your actions be governed by correct and upright principles. Maintain this in all your dealings; for no man can be honest and open one day, and dishonest and deceptive the next. Let proper motives and good desires be your guide, at all "outstations" where you may be sent, however remote the place. Do not deceive yourselves, for example, by making "*False Returns*" and thinking to pass them as true ones.

There is such a thing (Lawyers tell us) as a witness "proving too much," and to my knowledge this has been the Touchstone by which not a few in this Island have been tested, and "found wanting."

Do not pretend, therefore, that you have been zealous and active in the service, when, in fact you have been lazy, idle, indolent and neglectful. Be strictly moral, as it regards your

intercourse with the inhabitants wherever you may be stationed.

More than one case has come to my knowledge, where a Sub-assistant's utility has been injured by *immoral conduct.* Next let me impress on your minds the necessity of *active* and *passive obedience* in the service for which you are preparing. I do not mean, however, that you should tamely submit to acts of oppression. There is a point where passive obedience becomes criminal: I mean when the rights of man are trodden under foot. These rights are defended by all Laws, Civil or Military, and therefore those "dressed in a little brief authority" may not transgress them with impunity. My advice is, in all such cases *obey first;—protest after.*

It has been well said, that "no man is fit to command until he has first learnt how to obey." Never question, therefore, the propriety of the orders you may receive from time to time, but obey them with cheerfulness and promptitude, resting satisfied that your seniors in years, rank, judgment and experience are the best judges of what you ought to do, or to leave undone. This of course refers to all lawful orders, properly so called.

Avoid a sordid and grasping disposition. "Freely ye have received, freely give." The native population in this Island are (many of them) nothing but a mass of misery, squalidness and extreme suffering. Among these you will find disease assuming the most horrible features: And is it from these objects of pity, sympathy and compassion, that you would extort "filthy lucre" No!,—that heart must be hard indeed, hard as "a nether millstone," that would add one pang to the distress of suffering humanity by such unfeeling conduct.

If you are not sympathetic naturally,—if you have no kindred feeling for the distresses of others,— *you* are the objects of pity and I would exhort you to pray, "Teach me to feel anothers woe," until you do feel it. Tell me not of the apathy of the natives; they are no more apathetic than any

other "people, kindred or tongue" would be, if placed under similar circumstances; I mean, plunged in poverty and wretchedness.

My experience among them contradicts what I am disposed to consider a gratuitous assertion unsupported by facts; namely, that "the Singhalese are apathetic." Those who love their offspring, with a love like the Singhalese, cannot be apathetic; and those that have that feeling will not be ungrateful. That cases do now and then occur, evincing the blackest ingratitude, there can be no doubt; but those are exceptions to the general rule, "multos ingratos invenimus, plures facimus."

I have seen the tear of gratitude suffuse the eye, and moisten the cheek; I have witnessed emotions that could not be simulated, all bespeaking the liveliest, the most heart-felt gratitude; and this in the "apathetic Singhalese"!!! Again, be courteous and affable in your manners, and intercourse with the natives. Give yourselves no foolish airs of importance, for they ill become you and the profession to which you belong. Avoid all puppyism, in manner, tone of voice, air, and gesture, for it evinces a weak intellect, and in your rank of life is truly preposterous. I would not have deemed it necessary to touch on this point were it not that, at this moment, I have a Sub-assistant in my mind's eye, who is a perfect *fac-simile* of the *character* I have given. Endeavour to remove native prejudices by reasoning calmly with the natives, and pointing out by example the safety and success of European practice when compared with the native; convince them it is their good alone you have at heart, and act up to this profession, and you are sure to succeed.

It is natural for them to question, the purity and sincerity of your motives, and to view you with suspicion and distrust, therefore act openly, and frankly, and avoid all mystification, which is sure ultimately to lower you in their estimation and to bring you into deserved contempt.

It is often urged by Sub-assistants that "natives do this and

the other thing," to frustrate Vaccination among them. Now, making every allowance for native prejudice, I greatly fear that in several instances the fault has originated with the vaccinator.

It is strange, that the best, the most zealous and successful vaccinators, are the very persons who experience those difficulties in the least degree.

I have traced a few of those complaints to their sources, and found several of them to have originated in the improper conduct of the vaccinator himself; or in a desire to indulge in indolence at the expense of principle and decorous conduct.

I could illustrate this example but I forbear. I cannot avoid however mentioning a few instances, without reference to *names*. A vaccinator reported to me, that at such a station, he was foiled in all his attempts to promote vaccination. I enquired into the circumstances and found that it originated in the complainant's own immoral conduct, so that the natives (very properly) refused to allow him to see their wives and children.

A second example occurred in the same wretched, immoral, unprincipled man. A complaint was made similar to the above. On enquiry, I found the unprincipled man had no *vaccine virus*, but merely walked the distance to charge for travelling expences, pricked the arms of the children with his lancet, and came back again quite satisfied with his days work. These things did not come out until the party was beyond my jurisdiction; but I venture to prophecy, he will at last meet with his deserts.

Let us view the other side, and here, from observation and sure information, I am happy to say, that in the service there are those, and I trust not a few, who do perform their duties conscientiously.

One individuals name I am proud to mention, not only on account of his services at a time when this Island was scantily supplied with medical officers (during the Kandyan war) but also subsequently. I allude to Mr. De Hoedt, formerly

Acting Assistant Surgeon in this Island, but at present Sub-assistant. I am told that this *veteran vaccinator* has the confidence of the natives. He goes among them in the most friendly way, caresses their children, enters into familiar discourse with their parents, and thus, secure in the good will of parent and child, attains his object, and promotes that greatest of blessings to the human race "Vaccinaton." Follow his example—"Go thou and do so likewise." Finally, on this part of the subject, let me advise you *as to your deportment and demeanour to your superiors.* Your superiors will treat you with civility, and address you with courtesy; but do not presume to pass the line which separates respectful obedience from presumptuous familiarity. In fine, always act as if a superior's eye was fixed upon you, and by so doing you will form correct and proper habits,—prove a credit to those who have educated you,—useful to the Community in general,—command the esteem and respect of those who know you,—and above all, possess that peace and serenity of mind which stands unmoved "amid the wreck of matter and the crush of worlds," and which, "the world cannot give, nor take away."

TO THE

PARENTS AND GUARDIANS

OF THE

RISING GENERATION,

AND THE

FRIENDS AND SUPPORTERS

OF EDUCATION AND SCIENCE

IN CEYLON,

THIS LECTURE ON MEDICAL EDUCATION

IS RESPECTFULLY INSCRIBED,

BY THEIR WELLWISHER AND FRIEND,

THE AUTHOR.

LECTURE.

II.

GENTLEMEN.

My last Lecture was chiefly addressed to those who had already embarked in the study of the profession. My present Lecture will be principally addressed to the parents and guardians of those who may choose to study medicine under the new auspices.

As the education of youth is one of the most important subjects that can occupy the human mind,—as it is the basis of individual happiness, and public utility,—as it developes and trains up those mental powers which distinguish the "lord of the creation" from "the brutes that perish,"—as it stamps the age in which we live;—in a word, as it is the foundation of individual happiness and public good:—an extensive and well directed general education forms a valuable introduction to professional pursuits, and lays the foundation for *future medical fame.*

Formerly a difficulty existed in this respect in this Island, but it no longer exists; and your children, instructed by the Rev. Mr. Marsh, will be prepared to receive and to acquire the highest branches of medical science.

To candidates, therefore, destined for the future medical School, I would recommend in the strongest manner, that they acquire a sufficient knowledge of the Latin and Greek languages.

Let the student but recollect that the one is the tongue he must daily employ in his prescriptions and practice, that it is the language from which the technical terms of Anatomy, Surgery and one half of medical science are derived, and

that by training his mind to understand its structure and combinations, he is also accustoming it to Analytical and Synthetical investigation;—a species of discipline of the utmost importance in Physiology, Chemistry, Pharmacy and Medical Jurisprudence.

Let him not forget that the other tongue (the Greek) is the language from which the nomenclature in Chemistry, Botany and various branches of Physical Science is taken, and that its simplicity, copiousness and euphony, admirably adapt it for these important purposes; and last, not least, let him reflect that the Fathers of medicine wrote in this language. Finally, as there is no language that a student is more likely to forget than his own (I am supposing it to be English) let him read the best, the most chaste, and classical writers of it.

In a study like medicine, so full of subjects for conjecture and speculation, that precision of thought which the science of Physics, or Natural Philosophy teaches, is most valuable.

Thus Mathematics, Acoustics, Mechanics, Hydraulics, Hydrostatics, and other branches of physical science, are so necessary, in order to an acquaintance with the laws by which the animal machine is governed, and by which all around us "moves and lives," that it forms an important branch in the Elementary education of a student of medicine.

Without the aid of these collateral branches of medical science things will be wrapped in "darkness visible,"—Physiology will be misunderstood, and the beauty and symetry, "the impress divine," of the animal structure of man will be undiscovered.

From the time of the Father of medicine, (Hippocrates) there never was a period when correct and scientific reasoning was in greater request than in the present age. Opinions the most discordant,—speculations the most visionary and wild,—and statements the most unfounded, are frequently met with in those crude and undigested works, which of late years have inundated the medical world.

How necessary then, that as a safe-guard, the student's mind be trained to think and reason on men and things correctly.

In practice too, our acquaintance with the abstract Sciences is not unfrequently tested, yea demanded. Instance medical statistics, and medical police, an important part of medical jurisprudence.

An acquaintance, therefore, with those general departments of knowledge should be obtained at the same time that the student is acquiring Classical knowledge, and I shall have no objection to lecture occasionally on these abstract sciences when the plan of the future College is fully matured and fixed.

It is now time to lay before parents and guardians a Prospectus of the projected Medical School; and the curriculum of medical study required of the candidate before he obtains a testimonial or Diploma as to his fitness to practice medicine and surgery.

I—It is proposed, that an Institution, to be called, THE COLOMBO COLLEGE OF MEDICINE be founded as early as possible, and that it be in conjunction with the present preparatory school, conducted by the Rev. Mr. Marsh, as far as preparatory studies are concerned.

II—That there be three classes of pupils (as far as the study of medicine is concerned): viz.

1*st* Those who are desirous to obtain the highest honors in the profession, or who wish to qualify themselves to practice the profession in all its branches.

2*ndly* Those who desire to qualify themselves to act as Apothecaries, and to practice the minor operations in Surgery; as,—Venesection, Cupping, Arteriotomy, making Setons and Issues,—opening superficial abscesses,—Dental Surgery, —Bandaging and Bone-setting.

3*rd* Those who study with a view to become operative Chemists and Druggists.

III That the time for medical study, for the *first class* of

pupils, be not less than five years, during which time candidates may also avail themselves of the preparatory school; and that such a course of study be rendered imperative, in order to a sufficient knowledge of the classics, and the elementary branches of knowledge.

IV—That the period of study, for the *second class* of pupils, be limited to three years, during which time they also avail themselves of the Rev. Mr. Marsh's assistance in order to a sufficient preparatory education; and that the *third* class of pupils, or those who study with a view to become operative Chemists and Druggists, study for at least *two* years, and obtain a good elementary education, preparatory to commencing their medical studies.

V—That the course of study, to be pursued by candidates of each class, be as follows:—

First class—1*st* Year—Anatomy, Physiology, and Pathology, with Dissections and demonstrations; also, Chemistry and Pharmacy illustrated by chemical experiments or practical Chemistry.

2*nd* Year—Anatomical Lectures and demonstrations with practical Anatomy, Physiology, and Materia Medica, Therapeutics and institutions of medicine.

3*rd* Year—Dissections of the human body,—principles, practice and operations of Surgery on the dead subject,—clinical and military surgery.

4*th* Year—Hospital practice,—principles and practice of medicine and clinical medicine.

5*th* Year—Midwifery, and diseases of women and children,—medical jurisprudence and Toxicology; also, diseases of the *eye*,—the *skin*,—the *ear*, and mental diseases.

During the period of study of the 1st and 2nd classes, it is intended that the pupils should be present at the hour of hospital *visit*, to learn the symptoms and treatment of disease; in order that no time may be lost in making themselves acquainted with their future profession.

VI—That the medical education of the *second* class of

pupils or Apothecaries be conducted as follows;—1st year,—Anatomical Lectures and demonstrations, with Dissections, Physiology and Pathology, also Chemistry and Pharmacy, theoretical and operative.

2*nd* Year, Anatomical demonstration,—Materia-Medica, Therapeutics, and medical-botany and practice of medicine.

3*rd* Year, Minor operations in Surgery, Hospital and Dispensary-practice,—medical jurisprudence and Toxicology.

That the *third* class,—or those who study with a view to practical Chemistry and a sufficient acquaintance with Materia-Medica, be obliged to attend Lectures on Chemistry for two years, to perform the experiments in practical Chemistry, and Pharmacy, and to serve that time in a Chemical laboratory and dispensary in order to a full acquaintance with the *material of Materia-Medica;* and further, that they study medical Botany.

VII—That a Board of examiners be appointed, to consist of a president and two members, with power to confer on successful candidates for the highest honors, the degree of "*Master in medicine and surgery of the Colombo college.*" That this diploma be received as a License to all possessing it to practice each and all the branches of medical science in this Island.

That the second and third class, also, be examined as to their proficiency to practice as Apothecaries, and pursue their avocations as operative Chemists and Druggists; that they likewise, on passing a satisfactory examination, be furnished with some testimonial as to their qualifications to act as Apothecaries, and Chemists and Druggists.

VIII—That after such a date, as the Governor in Council may think fit to appoint, no person be allowed to practice in this Island, whose qualifications, and medical testimonials are not sufficient, or who will not submit to be examined by the aforesaid Board, or by any Board His Excellency the Governor may appoint.

IX—That the *courses* of Lectures be for six Months each year; and the time for lecturing be an hour each day, on each subject, for five days per week, and that Saturday be the day for examination, as to the amount of knowledge acquired during the week by the pupils.

X—That all pupils be amenable to discipline, and in cases of improper conduct, and a representation to the Board (the usual admonitory advice in such cases having been unattended to) be sufficient to expel them from the College.

You will naturally ask, How, and by what means all this is to be effected?—I answer, by entrusting to my management and direction the *Civil* hospitals; such as the Pettah,-the Leper and Small Pox hospitals. The *Pettah Hospital* is, I consider, well adapted to be the basis of a medical School,—as it contains a sufficient number of wards, and beds in each ward. It is also complete in its offices of every description. The only thing required to complete it, as a medical school, is the construction of a chemical Laboratory, and a Lecture Room, with a few well ventilated rooms for the purposes of Anatomy: all these can be added at a very trifling expense to Government.

Such is an outline of the plan proposed as to the foundation and regulation of a medical college, and the *curriculum* of medical education to be pursued in it;—a plan after the most approved model,—"the University of London."

Any thing lower than this, would not answer the demands of this Island, and would not ensure the respectability of the profession.

But by this plan of professional study (which comprehends and embraces each and every collateral branch of medical science,) the course of study is facilitated,—made respectable, and tends to elevate the diligent,—attentive and well-behaved student to the highest honors of the profession.

While on this subject I cannot do better than advert, to the future bright prospect, that such a system of medical education unfolds to your children.

The profession of the *Law* is now open to every diligent, close-thinking, reading and observing man. You know, and can well appreciate the boon.

The *medical profession* on the contrary, *has been* in a manner, *shut up, owing to the want of system,* and the *low attainments required* of those, who were employed.

That this was owing to the force of circumstances, and that the medical officers did (several of them,) all in their power to *lessen the evil, they could not remove,* I well know, and would have pleasure in mentioning the names of those who devoted a part of their *own time* to this beneficial and philanthropic purpose, did I not know that a selection, however just, would appear invidious, and would not be in keeping with their good taste and kind intentions.

But such liberal and generous conduct cannot be hidden,

"It shines, like the moon on high"
"When the sun, and the day in the ocean lie."

Your children will now be respectedly educated, for the standard of qualification proposed, is as high as any in "the known world;" and being sufficiently educated, they will be able to take charge of important outposts in this Island, and the Island will be rendered in a great measure independant of foreign medical assistance.

This of course will lead, as a necessary consequence, to their advancement in rank, wealth, and the position they shall hereafter occupy in society; and it cannot be supposed that young men thus scientifically educated, will be indifferent as to the development of the internal resources of their "Native Isle;"—The immense mines of Botanical,—Geological and Mineralogical wealth, that have heretofore lay hidden, and which require only development, will be ransacked, and their value fully known. Hence we may naturally suppose, as no man can "be great" in all branches of knowledge, that some will pursue Chemistry with the unwearied patience and indefatigable zeal of a Davy, a Lavoisier, or a Brande or a Faraday.

That some will dissect with the zeal and success of a Monro, or a Brooks. That others will pursue Natural-Philosophy, with the attention and devotion of a *Leslie* or a *Brewster*. Others, perhaps, develop, the resources of the vegetable world, with the talents and success of a Brown,—a Hooker,—a Greville, a Lindley, an Arnot,—a Bentham and (tho' last, not least,) a Wallich and a Wight.

Viewing these probable, and by no means ideal or imaginary, results of an extensive and liberal education, of what immense importance to this Island, in a moral, political and intellectual point of view, are its advantages?

I shall now, in conclusion, advert to the immense importance of those studies, the *plan* of which has already been laid before you.

That *Anatomy* and *Chemistry* are the Corner-stones of medical science, cannot be denied; and that the study of these is attended with an interest and delight, rarely to be met with in other sciences is, I think, equally certain.

The complex structure of man, the truly wonderful adaptation of the mortal to the immortal structure, of the outward fabric in which it "lives, moves and has its being," to the undying, eternal essence of Deity, are all subjects calculated to lead the student to "wonder and adore."

But when compared, in point of magnitude and splendour, to the Heavens above and the Earth beneath, they are adapted to humble us, "for dust we are and to dust we shall return."

Let but the mind of the student travel from Earth to Heaven,—let him study the heat and light of the comet that seems to start from its starry sphere,—the heavenly meteors,—the artillery of the skies,—the atmosphere of the globe,—the waters that bathe its surface,—the solid earth itself and "all that in it is;"—Let him direct his thoughts to its hidden recesses, its innumerable Laboratories, where the laws of nature are in full operation and go on from day to day, unseen and undreaded; until the "earth quakes, the rocks are

rent, and the very sea itself gives up its dead;" or nature appears convulsed, and the earth cleaves in sunder and vomits—"fire, brimstone and smoke,"—'T is like the "destroying angel," it no pity shews,—but spreads death and devastation around.

Let the thoughtful mind but contemplate, and can it help exclaiming at its own insignificance, when compared to the mighty beings and intelligences that surround us, "When I "consider thy heavens, the work of thy fingers, the moon "and the stars, which thou hast ordained; what is man, that "thou art mindful of him? and the son of man that thou visitest him?"—The student's mind, once familiarized with his own structure and species (which he must learn amid the decaying remnants of mortality; death and corruption) now begins to look around, and to see that tho' called "lord of the creation" he is but an isolated being, and that to know himself is only half-knowledge; and that comparison cannot be called into active exercise, until he knows not only himself, but also the beings by which he is surrounded.

When we reflect that our species is only one, of a half million, of created and organized beings, how much we ought "to read, mark, learn and inwardly digest" the scale of being, from man in "the image and likeness" of his MAKER, to the ephemeral fly that breathes and dies. From the all powerful, and half-wise elephant, to the meanest animalcule:—in a word, from the simplest form of organization, (the almost invisible monad,) to the complex structure of man.

The structure of animals, and all created beings, throws much light on the physiology of man; and the anatomy of, and experiments performed on, the lower animals, has tended greatly to establish, what was before conjectural:—for example,—the discovery of the circulation of the blood, the lacteal vessels,—the thoracic duct—the lymphatic absorbents, the principle of Galvanism,—the functions, the nerves, and several others.

Passing from the animal to the vegetable world, new

subjects for study and investigation present themselves to our view at every step. The early development of the organs of vegetative life,—and the very phenomenon of life itself, in the organization of vegetables,—the nature and uses of the vegetable tissues and vessels,—the circulation performed in them,—the motion of the sap,—the respiration in the leaves, —the signs of sensibility, and the wonders of fructification and germination, are all calculated to enlarge the mind of the student, and to excite in it a deep and a lively interest. The physiology, therefore, of plants and animals, sheds much light on human and comparative anatomy; and, using the lights of natural philosophy and chemistry, we examine and determine how far they contribute to the general result, not only in defining the functions of each healthy organ, necessary to life, but also in a state of disease, or what is called *Pathology*.

It is an acknowledged fact, that *accident* and *experiment* have pointed out more peculiar, and extraordinary powers in mineral—vegetable—and animal substances, than the reasoning, conjectures, and visionary projects, (for their detection) contained in Tomes, and hundreds of Tomes of books, written on the subject. While on the subject of *experiment*, I cannot but advert to the numerous and valuable discoveries in physiology, made by Majendie and others, by a series, of well conducted experiments and operations, performed on the lower animals. People may talk themselves hoarse, and rave until they go mad, but I ask, does this alter the fact.?

That much light has been thrown on physiology, and consequently *much good* been done to *man*, by the practice cannot be denied. Away then with false sensibility, for such it is, and learn from the mouth of the great Creator himself, that to man was "given dominion over the fowls "of the air, the fish of the sea, over the cattle and over all "the earth, and over every creeping thing, that creepeth on the "face of the earth;" and I ask, can this "dominion" be better exercised than in alleviating the sufferings of the "Creator's

image and likeness,"?—Where are these "*Pseudo-philo-caninosts?*" Let me see the man among them, who struggling with disease and death, is told, that there is reason to believe, that such and such powerful remedies will renovate and rescue him from the "grasp of the grim monster," but that it is necessary, in order to ascertain the precise amount of power contained in the remedy, to test it by experiment on the lower animals, and those, that most nearly resemble him in point of structure. Say this to the dying lover, and protector of Brutes, and what answer will he make?—Will it not be, "lose no time, commence your operations and experiments immediately, relieve my sufferings, and save, O, save me from death!!" My friends, there is much difference between acts of *wanton cruelty*, such as we see but too often practiced on the poor dumb, unresisting creatures that God has given us, and what I have described; but that heart must be hard indeed who can practice it; and the man that is cruel and unfeeling to the poor unrepining beast, that serves him, will be so to his own species, if he is so unfortunate as to possess power and wealth. Look at the early vices of Caligula and Nero!! Finally, it is not too much to suppose that, as at present, the whole "creation groaneth and travaileth in pain" on account of man, that *hereafter*, some recompense in a future state will be made them, for their present sufferings, and this idea appears in accordance with the scriptural account of the goodness of the Deity, and his gracious designs to every creature his hands have created: vide Romans viii chap. verses 19. 20. 21, 22. and 23.

Chemistry is, undeniably, one of the key-stones of medical science, and in proportion as the student's attention is directed to practical purposes, it will change *mere empiricism* and *vile quackery* to *scientific and successful practice*, and give him an additional, and a new interest in the study of the animal, vegetable, and mineral world.

We must not forget Anatomy, and that the lecturer is fully alive to its immense importance, you must have seen ere this.

"The student (says Professer Grant) who has seen all the "parts of Human Body demonstrated and described, and, "in his private study, has diligently kept pace with the pro- "fessors of the elementary departments, is prepared to take "the scalpel into his own hand, and, under the guidance of "the demonstrator, to print in his own mind, by actual dis- "section, the *form, structure, appearance,* and *relations* of "every part."

"In the dissecting rooms he studies not merely the parts "prepared by himself, but those of all his companions. The "Anatomical, Physiological and Surgical relations of every "part are practically demonstrated and are repeated by a "continuous course of demonstrations, so that by this most "valuable part of his studies, he is not only prepared to fol- "low the minutest details of Surgery, Pathology and the "higher branches, but is enabled to satisfy himself regard- "ing all obscure points, which may be the subject of discus- "sion in his other classes or in his private reading."

Anatomy being understood, the foundation for morbid anatomy is laid; and it is a department which obviously tends to substitute demonstration for speculation, in the theory of morbid changes; and to lay the best foundation for rational and successful practice.

It is alike important to the Surgeon, the Apothecary,—the Physician,—and the medical juris; for a knowledge of the healthy structure will not only teach the Surgeon and Physician *how to operate,* and *to treat disease,* but WHEN *to operate with success and to treat with science;* he can only learn from the nature of the diseased structure itself.

Further—It is true, that a wise prescription of remedies, internal or external, may and does, often change disease into health or the natural functions of the organs. But when, as it not unfrequently happens, disease resists all such means; and the sufferings of the patient loudly call for the removal of the offending part or organ;—it is then that the boldest triumphs of surgery are made manifest; for the surgeon be-

ing trained to know the *living* and the *dead*, the *healthy* and *diseased*, with equal self-command, no longer hesitates as to the course he ought to pursue; but resolves with firmness and performs with equal promptitude and dexterity. Can it be otherwise? in the dissecting room he is taught to examine and understand Structure, and to be familiarized with his instruments, and the manner in which they ought to be used. Hence with the utmost self-possession and calmness he possesses himself, gives confidence to his patient, and removes disease from sound structure.

Do not tell me of the disgust and unpleasantness of morbid anatomy.

If this exists at all, it is among the mere Tyro's of the profession, and ought to be conquered. There is an interest inseparable from the study, and where the *mere novice*, sees nothing but the hideous forms of death and corruption, the pathologist sees changed structure,—the cellular tissue different in size, color, and appearance,—increased action of the absorbents,—of the vascular system,—inturgessence of the veins,—depraved secretions of the capillaries,—non-descript appearances,—rare specimens,—and beautiful confirmation of some favorite theory,—and the *philosophic calmness* which he possesses is most valuable to *himself*, and his *patient*, at a time *when death surrounds his knife*, and he is trying to direct all his knowledge to its *edge and point*.

Think but for a moment of the *value*, and the enjoyment which a successful operation gives rise to;—a bosom friend snatched from death,—a valuable member restored to society,—a patriot to his country, and the confidence inspired in the hour of battle.

This last is not ideal, witness the confidence with which the French soldiers fought when they knew that the celebrated Ambrose Pare was among them.

To those unacquainted with the study of medicine, many diseases produce "no outward or visible sign," but the experienced practitioner reads in the posture of the body, the

color and expression of the face, the eyes, the tongue, the lips, the skin, fetor of breath and so forth, that disease has commenced, even at a time when the patient merely says, he "does not know what is the matter with him." Vision, sound, hearing, feeling, smelling, and tasting, are the means by which we discover the insiduous enemy, prepare for his advance, counteract his plan of attack,—turn his own weapons on himself, and seeing a vulnerable point dart upon him, and drive him from the field; hence the necessity of close observation.

In a manner separated from physic, and surgery, yet largely partaking of both, is the province of the Accoucheur, Midwifery and the diseases of women and children. This department of the profession requires the utmost patience, and self-command; the firmest nerve and quickest decision; it involves the nicest knowledge of Anatomy and Physiology, the boldest operations in surgery, and the most perplexing and exhausting cases of surgery and medicine. And this is the study, that has been abused, and stated to be only fit for the other sex, below the "dignity of the profession," that it is founded in "imposture, and only fit for old women."

The opposers of midwifery, and their coadjutors in corruption and abuse of power, may rave themselves mad by abusing what they have neither the tact nor talent to practice; but the value of midwifery remains unaltered, and the very fact, that its subjects are the fair and weaker sex, and the helpless and feeble infant, gives it an interest, in every feeling breast, that may be felt, but cannot be described. It is therefore the most gratifying department of the profession, but at the same time, in practice the most trying to the heart, the mind, and the body.

I have now only to allude to *Medical Jurisprudence* and *Toxicology*, and I have purposely left it to the last, as it is the highest branch in the *curriculum*, and requires the most extensive and varied attainments. It is a department of

comparatively modern date, and closely connects medicine with legislation, and which has arisen like laws from the vices of men.

"The vices of Nero, Caligula, and Caracalla have been surpassed by the refined enormities of our days;" there is hardly a news-paper we read, but contains the detection of some secret murderer, by means of medical jurisprudence. Medicines are many of them poisons of the most virulent and powerful nature, and in skilful hands are invaluable: for they can be made to act on the most stubborn constitution like magic, and to produce effects alike satisfactory to the practitioner, and beneficial to the sufferer; but when administered by ignorance and crime, they prove mortal doses; and hence the necessity of Toxicology, or the study of poisons.

I regret to say, observation has convinced me, that in this Island, and thro' ignorant and unprincipled native practitioners, many a life is lost; and that poisoning, under the denomination of "*Native Medical practice,*" prevails to a fearful extent.

That it is owing, in many instances, to the sheer ignorance of those, who pretending to a full knowledge of the medical plants, with which this Island abounds, yet are culpably ignorant of their nature and properties, I am well assured; and would therefore charitably hope, that the sudden deaths we hear of, are chiefly owing to the practitioner's ignorance of the powers of the remedy he is employing, and not "malice prepense."

Still, however, the subject calls for strict investigation, and such characters ought not to be allowed "to do evil that good may come." When we come to this part of the course, I hope to be able to lay before you a clear and succinct account of the result of my own experiments performed on the lower animals, with a view to ascertain the nature and powers of the animal and vegetable poisons of Ceylon.

By this means, we shall be able to detect their presence before, and after death, and to counteract their virulence during life.

I cannot too forcibly impress on your minds the importance

of medical jurisprudence, nor can I do it better than in the words of Dr. Grant, (Professor of Comparative Anatomy in the University of London.)

"In medical inquests on the dead body, when the life of "an innocent accused is often at stake, the nicest acquain- "tance is often required, to distinguish the natural effects of "disease, or incipient decay from the consequences of recent "injuries, or the morbid changes produced by poisons; and "the detection of poisons under such circumstances, often "demands the profoundest knowledge of chemical analysis." "Indeed from the importance and variety of the subjects, "which came under the cognizance of the medical jurist, he "requires not only the greatest professional knowledge and "experience, but great presence of mind and candour, and a "judgment *clear, ready* and *unbiassed.*"

I have now touched on every point, and shall conclude this Lecture by advising my future pupils to attend to the following particulars:—

1st *Attention.* Let me have your strict and undivided attention *whenever* and on *whatever* subject I may lecture. My reading has been extensive, and my opportunities for observation and practice not a few, during the last twelve years; my Lectures shall, therefore, contain a digest of all that is valuable for you to know, all that is important for you to avoid, and all that I would wish you to become; namely, scientific, and successful practitioners.

Do not attempt, therefore, to recollect mere words, but grasp new ideas, and endeavour to understand clearly the object and design of the Lecturer; and should you not succeed, I shall be most happy, after the hour of Lecture, to explain and illustrate, any obscure point.

2nd *Combine* with close attention, *the practice of taking notes*:—This is most valuable; for by it you have a *precis* of the Lecture, and the very act brings with it associations which stamp it indelibly on your minds, besides it will save you much time and extra-reading.

3rd *Meditation.* This is an exercise of the mind of vital importance to your future success. It is by this we draw inferences, and establish principles, this involves comparison, and calls into active exercise judgment: "It is by meditation," says Dr. Watts, "that we fix in our memory whatsoever we "learn, and form our judgment, as to the truth or falsehood, "the strength or weakness of what others speak and write."

4*th Observation,* of men and things. Acquire the habit, and its advantages in after life are incalculable; by it I mean what Mr. Locke means, by sensation and reflection. This also includes experiment, which is nothing more than methods of trial, as to the nature and properties of beings; the effects being closely watched; for example, if we throw a bullet into water it sinks, but if thrown into quicksilver it swims; the same bullet beat out into a thin hollow shape like a dish will swim also. Hence, all those things which we see, hear, and feel, and which we seem to know and to acquire, without much exercise of our reflecting faculties or reasoning powers, may be included in the definition.

5th *Conversation and Reading.* Beware of Books, for the world is full of them; and thousands of them so ill written,—so ill arranged,—and the matter of them, so crude and undigested, that it is a loss of time (to say the least) to read them. Whatever books, however, are recommended to you by competent judges read with care, study with attention, and form a digest of the author's subject and views in your mind.

Test your knowledge of the author by conversation. If it be obscure, inquire his meaning. If difficult, get some friend to unravel or cut the gordion knot; but do not pore upon knotty points in secret, for books cannot speak; hence they cannot explain their meaning. Besides this, a mere man of reading, a "bookish man," is at best but a literary Hermit, whose soul "is covered o'er

"with dreaming study and pedantic rust."

I might add also, "dust," for it obscures and defiles bright parts and useful powers; but friendly converse brushes off

the dust, and the diamond of knowledge shines forth in its native lustre.

Lastly, *Examination.* This is the test of knowledge, and so fully am I alive to its importance, that Saturday in each week shall be devoted to it; and the subjects of the five preceding Lectures elicited, recapitulated, and explained, "viva voce," by my pupils;—thus meritorious and diligent students will be distinguished from mere "idle drones;" but I trust, and hope to have none such. A life of learning is not one of indolence and ease, but when the mind is properly disciplined, and useful and correct habits acquired, it is the delight and joy of life, and the student can say,

"Labor ipse voluptas."

Examine yourselves, therefore, at the close of each day, as to the amount of knowledge and useful information acquired; and ask yourselves, what you know today, that you did not know yesterday? Think of the principles and practice of a celebrated painter, "*Nulla dies sine lineâ*;" and with the Pythagoreans, let it be a sacred rule with you, to run over thrice the actions and affairs of the day; examine your conduct and see what you have done,—what you have left undone.

"Nor let soft slumber close your eyes,
"Before you 've recollected thrice
"The train of actions thro' the day;
"Where have my feet chose out their way?
"What I have learnt, where'er I've been,
"From all I've heard, from all I've seen?
"What know I more, that's worth the knowing?
"What have I done, that's worth the doing?

FINIS.

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Deputy Inspector General Longmore
F.R.C.S.

ARMY

MEDICAL REFORM.

LETTER

FROM A

MEDICAL OFFICER OF THE INDIAN ARMY.

INVERNESS:
PRINTED AT THE COURIER OFFICE.

1855.

PRINTED AT THE COURIER OFFICE, INVERNESS.

TO J. R. MARTIN, ESQ., F.R.C.S.,

LATE OF THE BENGAL MEDICAL STAFF.

My Dear Sir,

The following letter was written in India, in the latter part of the year 1854, when, under the pressure of sickness, the result of nearly seventeen years of uninterrupted public service, I was about to embark for Europe. It has since been submitted to the perusal of the highest authority in India, who directed a copy to be kept for reference in his office, in case it should be in his Lordship's power to take up this neglected question of Army Medical Reform, even at the eleventh hour.

On my arrival in London, I was fortunate enough to make your acquaintance. It was natural that I should seek to know personally one who has distinguished himself, not only as a medical officer of the Indian army, but also by the manly and disinterested manner in which, almost single-handed, he fought the battle of his absent brethren. As you are of opinion that some good may result from printing this letter, I now do so; and trust that all who may be induced to peruse it will turn, in corroboration of my statements, to your admirable evidence on the question given before a Committee of the House of Commons.

It is well known that Lord Dalhousie, impressed with the defective organization of the Medical Departments in the three Presidencies, contemplated a searching remedy. It is much to be feared, however, that this distinguished Statesman and great Administrator, will eventually leave India without having carried out his intention. During the whole of his Lordship's Administration, nothing was more remarkable than the zeal with which merit in every department of the public service was sought out and rewarded, without respect to other considerations. Following the footsteps of the Earl of Ellen-

borough, who, in this by no means unimportant part of Government, set a bright example of "Administrative Reform," before that phrase became a popular cry.

The prizes in the Medical Department are few and far between; but during Lord Dalhousie's Government, such of them as were at his Lordship's disposal were, without exception, bestowed on the most distinguished men; and I speak of what I know, when I say that a healthful stimulus was thereby diffused throughout the department, of which it stood greatly in need.

When the following pages were written, the Author, in common with all in India, was ignorant of the fearful scenes then passing in the Crimea. Every reflecting man must now see that those disasters, so keenly felt by the nation, were the natural consequences of the neglect into which the Army Medical Department had fallen, and of the miserable system on which its affairs had been conducted.

Justice has not yet, and probably never will be done, to the noble exertions of the great bulk of the executive medical officers of the army in the Crimea. They will be left, as of old, to seek for their reward in the approbation of their own consciences, which, God be praised, men in office can neither give nor take away.

Let us hope that the noble Lord who is about to succeed Lord Dalhousie will take up this question in an enlightened and liberal spirit. Army Medical Reform has now assumed the magnitude and importance of a great public question, deeply concerning, not merely the interests of a class, but the well-being of an army and the honour of a nation.

I remain,

My Dear Sir,

With sentiments of cordial respect and regard,

Most sincerely yours,

THE AUTHOR.

September 4, 1855.

LETTER

FROM

A MEDICAL OFFICER OF THE INDIAN ARMY

TO A

MILITARY FRIEND,

On Army Medical Reform.

My Dear ——

Before entering on the important matter which is to form the subject of this letter, I wish to guard myself against the supposition that in my remarks I seek to disparage any particular individuals. I beg of you to believe me when I say, that I desire as much as possible to avoid even the appearance of anything of the kind. My criticisms shall be directed, not against individuals, but the system on which the department is organised and conducted.

I need not take up your time in arguing on the necessity of a medical department as an essential element in the constitution of every army that professes to be something better than an armed mob. The necessity granted, it follows, as a matter of course, that the department should be so officered, trained, and organized, as best to secure the end in view, viz., the health and physical efficiency of the army in quarters and the field.

Cæteris Paribus, the army best provided with military hospitals, properly organized and administered, enjoys such an advantage over one defective in this particular as must exercise a powerful influence on the result of military operations.

The writings of Baron Molkte, Colonel Chesney, and others, have demonstrated that the most decisive achievements of the Russian army have been effected, for want of an efficient medical department, at a cost of human life and suffering without a parallel in the history of modern war.

The British army, at the commencement of the French Revolutionary wars, was not much better off in this respect than that of Russia is now, as we learn from General Bunbury's detailed account of our miserable failures under the Duke of York in Holland. In-

deed, it was not until taught by the costly and bloody campaigns of Wellington in Spain, that anything worthy of the name of organization was introduced into the department. At the battle of Toulouse, which concluded that war, so glorious to the British arms, the wounded, amounting to 1359, including 117 officers, were in charge of two Deputy-Inspectors-General, ten Staff-Surgeons, fifty-one Assistant-Surgeons, besides subordinates, and exclusive of regimental medical officers present with their regiments: "And the whole," says Mr Guthrie, "worked from morning to night with the greatest assiduity. The surgery of the British army was at the highest point it attained during the war; and this enumeration is given to show the number of medical men required, under the most favourable circumstances, for 1500 men, if they are to have all the aid surgery can give them."

With the organization of the medical service, such as it is, you are sufficiently acquainted. The service, in all the Presidencies, is divided into Surgeons and Assistant-Surgeons. The latter performing precisely the same duties as their superiors. In the Madras Presidency, twenty-four may be taken as the average age at which men enter the service; and, at the present pace of promotion, sixteen years and a-half may be taken as the average period of service in that grade; so that few are promoted until upwards of forty years of age. The majority of our Superintending Surgeons have served thirty years. Fifty-four may be taken as their average age. The senior member of the Board has served upwards of thirty-four years, his colleagues within a few months of the same time, so that their present ages may be taken at about fifty-eight. But at the present rate of progress, the Senior Assistant-Surgeon in the list could not expect to reach the Board until he is sixty-three years of age; and supposing him to remain the full period, viz., five years, he would leave that office at the age of sixty-eight—just two years less than the full period allotted to man here below. The service is presided over by the three senior men on the list, who constitute the Medical Board, and who succeed to that office, if not as a matter of right, certainly as a matter of course, by virtue of their seniority.

We have also, as we have seen, a grade of Superintending Surgeons, one to each division of the army, who also, in practice at least, are appointed to this office in virtue of their standing on the list. Some examples of selection, I am aware, can be quoted; but the above is the rule. It must be observed that when a man is promoted to this grade, he causes no vacancy in the list of surgeons; nor, in fact, does this happen until he quits the service.

Let us now turn to the working of this system. If we had no experience of it, if we had no practical knowledge of its working, we could yet have little difficulty in pronouncing an opinion that a service so constituted, and so administered, could not be in a sound state. It is impossible—unless we could make sure that the qualification test required on admission to the service was of the most stringent kind, and strictly applied, so as to exclude incompetent men, in

the most rigorous way—to expect that a Board so constituted could retain the respect of the Government, of the military authorities, or of its own service. It is useless to waste words in proving what is notorious—the sober fact is, the Board has long ceased to exercise any authority. When consulted by Government, it is merely for form's sake; and whatever may be the theory of the thing, as respects military medical officers, all power has passed into the hands of the Adjutant-General of the army, who is virtually the head of the department.

Practically, the Government is thus left without aid and counsel in all matters relating to sanitary measures. Vast have been the evil results, and beyond measure disastrous. Who can sum up the waste of life and treasure, the plain consequence of the gross ignorance so constantly displayed by our Indian Governments in questions of this nature? Cantonments have been selected in open defiance of the best ascertained facts bearing on health. Barracks have been built, and costly repairs wasted on others that for half-a-century have been mere pest-houses. Our cantonments, for the most part, are to this day in a most disgraceful condition, well-known causes of disease rife and abounding on every hand, and all for want of some person, or body of persons, who can speak out on such subjects so as to compel a respectful attention.

Look, again, at our Madras system of regimental reliefs. It is a disgrace to our age and civilization. This necessary measure is effected yearly at a cost of human life and suffering at which we should stand aghast, or rather leave nothing untried until some measure was hit upon to abate so frightful a waste of life. It has been established, mainly by the researches of Dr Lorimer, that cholera afflicts our regiments on the line of march pretty much in proportion to the length of the journey. It has been shown that, for the most part, when a march exceeds two hundred miles, cholera is sure to appear, and to afflict the wearied soldiers and their wretched families with a severity that bears a direct ratio to the distance over which they have travelled. Yet six hundred, eight hundred, even a thousand miles are common. The returns convey no idea of the loss of life incurred; it is only the fighting men that appear in them; no note is made of the miserable followers, who perish by hundreds, their bodies pollute the air along all our great lines of communication; yet custom has so—I will not say hardened the hearts of our military authorities to this crying evil, but has impressed their minds with the idea that it is one for which there is no remedy. I do not for an instant assert that the great loss of life incurred on the Madras side of India, on the line of march, is to be attributed *solely* to the length of our marches. Far from it; there are other causes, and very obvious ones too, at work to account for it; but this I say, that if this army had a real, and not a nominal head to its Medical Department, this question would have been sifted to the bottom, and nothing left undone until a remedy was found.

If I am told that, although the Medical Board does not hold the position it should do in the estimation of Government, it can yet speak with authority to its own members; that, in a word, it still suffices as a controlling authority for the department—I answer that no Board can do this effectually unless it is so constituted as to command the respect of its juniors. Now, the very reasons that have tended to lower the Board in the estimation of the Government and the military authorities, have operated effectually to diminish its prestige with the service. Now and then, of course, a man of ability makes his way into the Board; but it is difficult for any single man to make head against those influences which have so long been in operation to lower the name and authority of the Board of which he is a member. I have conversed long and anxiously with some of the ablest executive medical officers in the service, and I find that the all but universal opinion is, that, constituted as the Board now is, their criticisms on the practice of the department do not conduce to the good of the service, and are not such as to command the assent and respect of the ablest officers, still less to correct the careless, and stimulate the zeal of those who do not strive to keep their knowledge up to the level of the science of the day.

I have seen many curious examples of these observations. One came very recently under my notice. A surgeon of many years standing and great experience, with a very responsible charge, during a late epidemic expended in one month four bottles of port-wine in one of his hospitals. The Board demanded an explanation of "this excessive expenditure!" The surgeon explained that an intermittent fever had been epidemic in the lines, that his men had suffered severely, and that the patients to whom the port-wine had been administered had been much debilitated and broken, and pointed to the happy effects that had resulted in the entire recovery of the sick. The Board, in reply, called upon this gentleman, a surgeon of nearly twenty-five years service, to copy out, *in extenso*, the cases of all the men to whom wine had been exhibited—just as an Eton usher would direct a lazy schoolboy to commit so many hundred lines of Virgil to memory. The object of solicitude here, it will be observed, was not the patients, but the wine. And so it is throughout—the Board on the one hand, and the Superintending Surgeons on the other, seem actuated by a morbid dread of "excessive expenditure." They cut and pare down until the interests of the sick are lost sight of. I cannot speak with any authority as to the state of the case in Bengal and Bombay; but on the Madras side of India, the fact is notorious that our military hospitals are not supplied in such a way as to give the sick all the benefits they have a right to expect from the present state of medical and surgical knowledge. The supply of that invaluable drug, the sulphate of quinine, to our native regiments more especially, is scandalously inadequate. The nervousness of our Superintending-Surgeons, on this head, is perfectly ludicrous. I have on the table before me

some amusing examples of their excessive care of the public finances. One gentleman forbids the officers under him "to prescribe more than three grains at a time to any patient," and this when a severe remittent fever was raging in the station. It is useless to add that, in such doses, the quinine might as well have been cast into the sea. Seriously, this limited supply of quinine demands the attention of Government. That it is an expensive drug, I am well aware; but so effective is it when judiciously used, not only in curing fever, but also in preventing and even removing many of the evil consequences resulting from them, that I am confident, and the opinion is shared in by many of our most judicious officers, that a large saving in the pension-list might be effected by the additional expenditure of a thousand pounds or so on this drug. But it is not in this only that our hospitals are deficient. There is not such a thing in any native regimental hospital under this Presidency as a proper fracture-splint. Of the many simple, cheap, and admirable mechanical contrivances of this sort, not one is to be found within the reach of our surgeons. Indeed, I am certain that few even of our depots are supplied with them.

I may take as another example of the defects of our present no-system—the state of our Medical Depots.

If there is any part of the Madras army likely to be called on suddenly to act offensively, it is the Hyderabad subsidiary force. This is in effect a field force. It is in the close vicinity of the city of Hyderabad, where there are never less than from five to six thousand Arabs. "We," said an Arab Chieftain to Major Malcolm, the Assistant-Resident, "have always endeavoured to avoid coming into hostile contact with the British; but the time no doubt will come when it will be your object to turn us out of Hyderabad. Well, you will probably do so: great is your power, and great is the luck of your Government—but on that day the streets of Hyderabad will run red with blood!" If we pay a visit to the Arsenal, we find everything prepared against the day of need: the ammunition for every gun is prepared and ready to be placed in the tumbrils. Nothing is left to chance, or the mercy of a moment. What, let me inquire, are the surgical preparations for a struggle that the merest accident may precipitate any day in the course of the following week? They just amount to nothing at all. Four or five hundred casualties may reasonably be expected as the probable, certainly the possible result of such a conflict, with desperadoes who never ask, or expect, or give quarter—whose custom it is to die resisting to the last. Let this conflict come, and even supposing the most perfect success to crown our arms, I predict a scene of confusion in the hospitals most painful to think of; and, in the event of such a turn in our affairs as to render our position within the walls for a time untenable, disastrous results to our wounded officers and men that would deepen the disgrace of a repulse a thousand-fold. This is no imaginary difficulty. Some years ago, General Fraser, the then Resident, suddenly took possession of a

quarter of the city to overawe, *not* the Arabs, but the "Line-Walluhs." No conflict ensued; but every one knew that the least want of discretion on the part of officer or man might have brought the British troops and Arabs into conflict. Now, on that occasion, although nothing was more probable than such a result, there absolutely were no medical arrangements at all. I have no doubt that every regimental medical officer entered the city with a resolute determination to do the best he could for his wounded; but there were no general preparations, such as should be made on the eve of a great battle. No Staff-Surgeon was appointed, no field-hospital was organised, no preparations at all were made. I ask any one familiar with war, with the wants and requirements of even two or three hundred wounded men, to picture to himself what must have followed from such arrangements, or rather no arrangements.

Again, it is often made a reproach to the medical officers of the Indian army, that they have not contributed a fair quota to the general stock of knowledge and experience. I do not think the reproach well-founded. The fault, at all events, lies at the door, not of individual medical officers, but with the medical authorities. The shelves of our Board office groan under a load of information of the deepest interest, which is turned to no practical account at all. Even were it otherwise, many of our returns on this side of India are so faulty, so far below the level of the science and the more rigid statistical requirements of the age, as to be almost worthless.

If we turn to the Superintending Surgeons, we find that nearly the same observations are applicable to them as to the Board. They exist and exercise their functions in virtue of their seniority. Of course, it more frequently happens that we have an able Superintending Surgeon of a division or force, than three able men in the Board. But whatever may be the theory of the matter, in practice a Superintending Surgeon is merely a channel of correspondence, and an officer whose chief duty it is to keep down expenditure, to check indents, and assist the Commissariat Department in making our hospitals as ineffective as possible. They take tithes of mint and cummin, but neglect weightier matters. I am no advocate for vexatious meddling with the practice of executive medical officers; indeed, the interference of a crotchety superintending officer would be a nuisance past all endurance, and would not conduce to the good of the service. Still, the want of a real, judicious supervision is one of the crying wants of the service —to encourage and support the hands of the diligent and painstaking, and bring him to the notice of authority; to rebuke the careless and stir up the slothful. In the present state of our affairs, as a general rule, they fare pretty much alike—the most indolent man, one who knows nothing, and cares less, about what has been done in his profession since he left the schools, is not worse off than the man who labours hard to keep up his knowledge to the

requirements of the day. A man—it is no imaginary case—may have so sunk in the estimation of his brother officers, that not one of them in the regiment will consult him, or seek his aid for his family; may be so grossly ignorant as to salivate a child nine years of age for a fever that would have yielded, and that did at last yield, to a grain or two of quinine; or to give calomel and laudanum to a teething infant, who had not a symptom demanding such treatment, without inquiry and without rebuke; and so long as he goes through the routine of his daily duty, and commits no offence "contrary to good order and military discipline," may retain a charge more lucrative and more important than his neighbour, who would in any place be esteemed an ornament to his profession. If our Superintending Surgeons were in reality what their designation indicates, such things could not be. It is plainly the duty of the superintending authority, when such a case comes to his knowledge, to investigate all the circumstances, however disagreeable the duty may be. It may be in his power to show the discontented officers that their objections to their medical man are unfounded, and to restore peace and confidence; or, on the other hand, gross incompetency and carelessness would thus be brought to light, and justice done to all parties. As the matter stands, our executive medical officers on military duty look to the Adjutant-General of the army, and "make interest" in that quarter for their advancement. Now, the Adjutant-General cannot be, and, I presume, does not affect to be, any judge of the professional merits of the medical officers whose position he determines. I make no doubt that, when left to himself, he does the best he can for the service. He knows something of the general character and conduct of every medical officer in the army; the confidential reports of commanding officers give him information of this sort, which he will value according to the confidence he happens to repose in the veracity, judgment, and capacity of the reporting officer. But it is obvious that a medical man may be, as regards all military points, blameless, and yet be in every point of view inferior to another who is yet compelled to give place. And thus it happens, that where the right man is to be found in the right place, we have to thank accident, or "interest" for once and away honestly directed.

In the foregoing remarks, I have not scrupled to expose our sore places and the defects of our system. My task would be but half completed if I did not touch on other matters relating to the condition of the service, without a thorough change in which it can never be in a sound state.

There, perhaps, is no body of men in the service of the Government of India, as a class, so thoroughly discontented as the medical officers of the Indian army. I make this assertion advisedly, and will go so far as to say that it is universal and profound. The causes are not difficult to find. There exists, and always has existed, a feeling in the minds of military men in authority hostile to the Medical Department as a body. Whenever it is possible to

place a medical officer in a disadvantageous position, it is done. Whenever it is possible to make a distinction between a military and a medical officer to the disadvantage of the latter, it is done.

Every one who knows anything of war, knows that medical officers share in all the fatigues, privations, and many of the actual dangers to which military officers are exposed, and many more which are peculiar to their own duties; and yet when the honours of war are distributed, how rarely are the services of military surgeons rewarded. In fact, army medical officers are in a most anomalous position—they are military men, and they are not. Whenever it is to their disadvantage to be considered so, they are forced to be soldiers; when otherwise, the notion is practically scouted. They have, in fact, no military rank at all.

If a surgeon of twenty-five years' service, who has grown grey in the service of his country, has to serve on a committee with military officers, the beardless ensign of yesterday takes precedence of him. Time would fail me were I to enumerate half of the humiliations to which military surgeons are hourly subjected. Nominally, they are on a footing of equality as regards rank, pay, and privileges of leave; practically the most decided distinctions in all these are made. One example is worth fifty vague assertions. The writer's brother happens to be a field officer in the Bombay army, and, at the period of which he is about to speak, held a civil appointment in Scinde. His health and the author's happened to break down much about the same time. The military officer went on sick certificate to the Cape for two years, retaining his appointment and half of his allowance as a matter of right. The other went to the Neelgherries, losing the whole of his staff-pay from the hour of his departure until that of his return. At the end of six months' absence, his appointment, by a rule only applicable to medical officers, was declared vacant, and he owed its restoration, not to any feeling of right, but to the kindness of a distinguished military friend in high office, who was wounded near him in action, and to whom it was his good fortune to render assistance. On being re-gazetted to his appointment, although already deprived of all his staff-pay, the author instantly fell into the hands of the military Auditor-General, and was subjected to a still further reduction of his *military* pay, on the score of his "not having joined." When a respectful remonstrance against this additional deduction was forwarded through the proper channel, a sharp rebuke was all that followed. The rule under which the writer suffered remains in full force to this day, at least in the Madras side of India.* Take another example of this animus. When the new furlough regulations were promulgated, a medical officer, about to proceed to England on sick certificate, applied to take advantage of them. He was instantly told that medical officers were not included in

* Since this was written, the order in question has been cancelled by the Governor-General in Council.

the supposed indulgence, and a circular to that effect was addressed to all Superintending Surgeons.*

I might swell out this letter by many other examples of the same sort, all illustrating the same narrow and ungracious spirit. But the subject is painful and most distasteful. Suffice it to say, that, by every man of proper spirit, by every one who has an atom of self-respect, or regard for the honour of his service and profession, these things are keenly felt. If there be a man in the service who does not feel them, Government may rest assured that they could well dispense with his services.

The medical officers of the Indian army spring from the same class as their brethren, viz., the upper ranks of the middle classes; they are the brothers, sons, and relatives of the more favoured rank; they are gentlemen by birth and education. They have rendered, and are daily rendering great service to the State. They spend, and are spent daily in their country's cause, and have never been backward to shed their blood and lay down their lives in the execution of their duty. Such treatment is not only unjust, but it is impolitic in the highest degree. If men in authority would only reflect for a little, they would see how much such a system tends to keep men of ability and high attainments out of the service. If it is argued that, as a body, we have not much to complain of as regards emolument, and should therewith be content; I answer, that "man does not live by bread alone." I would say to our rulers, "If you teach us to look for the reward of our services in money and nothing else, you have done your best to degrade us, and to destroy our efficiency." That in the face of all these discouragements we have maintained our courage, and for the most part done our duty, under a high sense of personal honour, "as unto God, and not unto man," I say it redounds greatly to the credit of our service. If you wish to see the consequences of this system of degradation carried out to the fullest extent, I ask you to look to the present condition of the medical officers of the Royal Navy. The Admiralty have persisted in their old system of injustice towards the medical officers of the navy, even in the face of a strong resolution of the House of Commons. They saw that young men of superior attainments, who would gladly have served in Her Majesty's Navy if treated as officers and gentlemen, left it as soon as they found out that the very reverse was their fate. The various colleges and great medical corporations long since addressed them, pointing out the growing aversion of properly qualified medical men to serve in the navy, and that unless the present system were revised the supply would be cut off entirely. And so it has happened. The Admiralty persisted in their determination not to treat naval surgeons as they ought to be treated, and they

* I am informed by Mr Martin, late of the Bengal Medical Service, that the very same thing happened in Bengal, when the new regulations on the subject of retirement were promulgated.

have been driven to set up an examining board of their own, and to lower the standard of qualification. And so it has come about, that when England has sent out the noblest fleets she ever equipped to maintain the honour of her flag on every sea, her officers and seamen, so far from meeting with the skill they have a right to expect when maimed in battle, will, in this respect, in this year 1854, be worse off than their fathers who fought and bled at Trafalgar.

I would earnestly and respectfully ask our rulers to think on these things. We hear a great deal of the flood of talent to be let in upon us under the new rules for the admission of Assistant-Surgeons. With all my heart I desire that the most entire success may attend the measure. Of this, however, I am sure, men of this stamp will not be content to serve under the present system. One of two things will happen—a large portion of them will leave us in disgust, or they will make known in the great schools from whence they came, the false promises under which they entered the service and gave up a home career; and thus the supply of such men will be cut off at the source, and the authorities will, like the Admiralty, have to make their choice between a redress of grievances, or to lower the standard of qualification to that dead level of incompetency now obtaining in Her Majesty's navy.

The remedy for our wants and abuses are few and simple. I would abolish the Board at all the Presidencies as a worn-out and effete machine. Government do not require to be told that consideration must be shown to their old servants. Although all are not fit to preside over a department, good and faithful service should not go unrewarded. In place of the Board I would appoint a single responsible medical officer to the head of the department, with ample and well-defined authority. *

He should have two efficient secretaries—one to carry on the correspondence of the office, the other to be a medical registrar, to superintend the returns and to prepare annual reports exhibiting the actual state of the army in all its branches as regards health and disease.

* If it be said that recent events have shown that the plan here suggested, of a Director-General, has failed at home, I answer that the experiment has never in reality been tried at all. The Director-General of the Army Medical Department was so merely in name. He was miserably paid—his emoluments being less than those of a man in second-rate business in a country town. He had, at least, four masters, had little influence, and no authority. The experiment here suggested has never, in our mind, been tried at all. And it is to be feared that Government contemplates having recourse, in this country, to the old contrivance of a Board, at the very time when in India experience has demonstrated the worthlessness of such a machine in every department of the public service.

There is one part of our Indian system which I would very earnestly commend to the notice of the noble Lord now at the head of the War Department—and that is our Subordinate Medical Department, a class of non-commissioned but carefully trained men, whose duty it is to act in the hospitals under the orders of the medical officers. It is not too much to say that, if the overworked Medical Staff of the army in the Crimea had been so supported, many of the miserable disasters which so profoundly agitated the public mind would never have occurred at all.

I am not prepared to advise that the office of Superintending Surgeon should be abolished, but measures should be taken to make the principle of selection real and effective, not, as now, nominal. In justice to the service, when a man is promoted to this grade, an Assistant-Surgeon should be promoted to the rank of Surgeon. I would strongly urge the establishment of a new grade of Staff-Surgeon, to act under the Superintending Surgeons of each division. For officers of this rank there is abundance of work, and, if due care be exercised in the selection of individuals, I am sure great good would result. It would be their duty to visit the different stations within their range, to exercise a judicious supervision over the hospitals, to report on the sanitary condition of the different stations, and in the event of any sickness appearing in the lines of any regiment within their circle, it would be their duty to proceed at once, and to investigate its causes on the spot, calling to their assistance such medical officers at the station as they may deem best qualified for the duty. Should more than one regiment take the field, it would be their duty to accompany the force, and to superintend the medical arrangements. I would abolish at once and for ever all the vexatious distinctions now made between military and medical officers, putting them on an equality as regards pay and allowances, leave privileges, and so on. The pretence on which real rank is withheld from medical officers is on the score of military command. To this medical officers make no pretension, and it would be very easy so to word their commission as to make any mistake on this head impossible; while, at the same time, a real military position is given, to prevent those vexatious and degrading humiliations to which military surgeons are hourly exposed. And I would strongly advise that a fair share of military honours should be given to those who have distinguished themselves on service.

Believe me,

My Dear ——,

Yours most truly,

——

No. 20.

MEDICAL REFORM;

BEING

THE SUBJECT OF THE FIRST

Annual Oration,

INSTITUTED

BY THE BRITISH MEDICAL ASSOCIATION,

AND

DELIVERED AT THE SECOND ANNIVERSARY

OF THAT SOCIETY.

BY

A. B. GRANVILLE, M. D., F. R. S.

&c. &c. &c.

LONDON:

PUBLISHED BY SHERWOOD & Co., PATERNOSTER-ROW;
AND TO BE HAD ALSO AT THE ROOMS OF THE ASSOCIATION
IN EXETER HALL, AND OF ALL THE BOOKSELLERS
IN TOWN AND COUNTRY.

1838.

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FOR 1838-9.

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EXETER HALL.

Council Meeting, Sept. 18, 1838.

Resolved unanimously, —

"That an Annual Oration be instituted, the first of which shall be delivered at the ensuing Anniversary of this Association."

Resolved unanimously,—

"That the subject for this year be 'MEDICAL REFORM,' and that Dr. A. B. Granville be appointed to deliver it."

BRIDGE-HOUSE HOTEL.

Anniversary Meeting, Sept. 28, 1838.

Resolved unanimously,—

"That the Oration just delivered be adopted by the Association, and that it be placed in the hands of the Council, with full power to determine on the best mode of making it public; and that a vote of thanks be given to Dr. Granville for the same."

EXETER HALL.

Meeting of Council, Oct. 9, 1838.

Resolved unanimously,—

"That the Annual Oration delivered by Dr. Granville at the Anniversary Meeting be published at the expense of the Association, and that Dr. Granville superintend its progress through the press."

C. H. ROGERS HARRISON,

October 13, 1838. *Secretary.*

AN ORATION

FOR

MEDICAL REFORM.

MR. PRESIDENT,

GENTLEMEN, Members of the British Medical Association;—

IT was a wise and a proper measure on the part of the Council of our Association, that of instituting an Annual Oration, to be delivered before its members assembled to celebrate the Anniversary of the Society. Nor will the Council, I conceive, be less commended (considering how and for what purpose we are at present constituted into a Society) for having chosen (as the Report has just stated) the consideration of MEDICAL REFORM in Great Britain, for the subject of the first annual oration.

But equal praise, I fear, will not be accorded to them, for their choice of the individual who is this day brought forward to address you on so momentous and all-important a subject. For, though old in professional life, I am but young in the Society; and am but little known to you who are the founders of the Association, though I may not be altogether unknown to my medical brethren in general. Surely there were among us men whom, upon every ground,

it would have been more to the advantage of the great cause I have this day to plead, to have selected as your orator ;—men of science and great erudition ; of long standing in the profession, and skilled in the art of expounding intricate questions, and of doing them justice. This I feel most sincerely, and it is fitting I should say so ; but, at the same time, it would be an act of affectation on my part, were I to conceal, that, since the choice has fallen upon me, I have experienced pride and gratification at the honourable distinction which such a choice confers ; and I have applied myself, in consequence, to make an adequate return to my colleagues for their goodwill towards me, by exerting, to the utmost, the slender faculties I possess, in responding to their invitation.

Unfortunately the question is vast, while the time allowed for its discussion is short. I have had but a few days to prepare myself for my honourable task ; for which reason I beseech you, that where I fail in impressing you with the magnitude and just bearing of my subject, you impute the failure rather to my lack of talent and opportunity, than to any inherent weakness or unworthiness of the cause itself. Thus far I will be bold to say, that I shall perform my task without studied personalities, or vituperative allusions to the motives or actions of men ; as I deem such unbecoming the character of an orator, and not desired by his audience.

Gentlemen,

Perhaps one of the greatest political phenomena that has been witnessed in Europe in the last half

century, has been the rise of Great Britain to a degree of almost unparalleled power and influence as a nation, during the prevalence of many public abuses, and the not unfrequent violation of those rights which appertain to the citizens of a country by inclination, as well as constitution, free. Proclaimed by one of the parties in the state; denied, to a certain extent, by another; and defended, on the plea of expediency, by a third,—the reality of corrupt practices in the general, as well as in the municipal, government of the country, at the time in question, seems to be proved by the very conflicting testimonies which are adduced in respect to their existence.

But how much more singular, as contrasted with such a state of affairs, must not the supineness of the nation under it appear, during a period of many years! Was it mere passive endurance, required by the circumstances of the times, that sealed the people's lips during that period, on the subject of their wrongs? Or had the war against a powerful and threatening enemy, in which the nation had for more than twenty years been engaged, silenced all other feelings save that of wishing to repel foreign aggression? Perhaps, too, the triumph over that enemy abroad blinded the people to their false position at home! Perhaps the lavish distribution of public money, easily raised, prevented the murmurs of the discontented! Perhaps, too, the intense ignorance into which the larger masses of the people were plunged in those days, (as we learn from parliamentary documents,) served to conceal from the nation their own true interest in domestic matters, and precluded all chances of their seeking and obtaining redress.

Now, however, after more than twenty years of peace, the picture is reversed. The encouragement given to education, and, consequently, the facilities of obtaining it, having increased beyond calculation, (as the Journal of Education has taught us,) people's minds became more reflective. The middle and industrious classes, more enlightened than heretofore, as well as more numerous, began at length to show dissatisfaction at their actual position. They saw the abuses around them, and wished to redress them. They observed how gradually, yet how effectually, many of their privileges as freemen had been swept away, and they loudly called for REFORM. That cry once raised, could not be silenced by favours or prosecution—by places or dismissals: for while the public treasury, on the one hand, nearly exhausted, had lost its means of influence; the weight of public authority in the government, on the other, had, at the same time, greatly diminished. And thus all power to silence a murmuring people, either by bribes or threats, had passed away.

At this conjuncture, a few chosen men who had in vain, but with constancy and for a long period, aimed at what the people now wanted, taking advantage of the changed circumstances, urged forward, more effectually than they had been able to do at any previous time, the favourite object of their public life; and, with the mass of the people now with them, they successfully accomplished at last that great political act, Reform, which they had for so many years striven to obtain.

Gentlemen! We must follow their example; for mighty as that Act has been, it has left yet untouched

many haunts of corrupt practices, and many features of deformity, among which the medical bodies-politic in the three kingdoms of these realms appear conspicuously prominent.

Like the great charter of Political Reform—our own will come at last: but it must be sought for and obtained by the like means—the general voice of those who require and are to be benefited by its accomplishment. The whole, or the larger part, of our medical brethren must join in the demand.

Without this general support no such act will ever be obtained. Some few individuals there have always been, even among medical men, in this country, as was the case with the politicians, anxiously desiring, and struggling to obtain, the abolition of abuses, the rectification of errors, and the removal of corruption; and those individuals belonged to the better-instructed classes of the profession. Within the last fifty years, physicians and surgeons, some single-handed, others combined, though in small numbers, have appeared, from time to time, in the pursuit of those cherished objects. But those single individuals, and those select few, had to cope with the influence of patronage and high offices, which silenced every expression of cordiality in the many. They had to cope with the power of bestowing places, and with leaders who made themselves strong in the support of influential and easily-deceived patients occupying the first charges in the state. They had to cope with the disinclination felt by the largest number of their order, against interfering with any existing arrangement; as well as with the indifference of the thousands of their brethren whom a prolonged war had provided

with bread and pay in the army and navy. They had to contend, in fine, against the apathy of ignorance, which, until the last few years, prevailed among the masses of the lesser classes of medical men in this country. Is it wonderful, then, that, like the single-handed leaders of old, in the great political struggle for Reform, they also should have as often failed and been shipwrecked?

But times and circumstances have now changed for us, as they changed for them. The power of bribing has either been taken away or has lost its influence. The still prevailing spirit of exclusivism, and of dogged adherence to corporate abuses on the part of some heads and members of the medical corporations, no longer receives the support of government. Those heads have lost the countenance of patients exercising influence in the state; or if some of them retain it still, the mischievous effect of such an alliance of power and error is nullified by the good sense of the public at large. The disinclination to assist in the uprooting of abuses, on the part of the thousands who were formerly provided with comfortable places in the two public services, but who have since been treated with injustice and neglect, has given way to a desire totally different. Finally, the apathy of ignorance has almost wholly yielded to the advancement made in general knowledge among the lesser, and by far the most numerous sections of the profession; for it would be idle to deny that those sections have, of late years, been distinguished by a superior professional education, which makes them feel the galling, the anomalous, the degrading, the unbearable condition of thraldom in which they and

we *all* of the same profession are still kept; when almost every other institution around us has broken its chains, and stands free and erect!

Such, Gentlemen, are the elements now rife for effectually working out the great problem of Medical Reform in this country; and with such elements, success in our cause is as certain as it proved to be in regard to the still greater act of political reform, at which Great Britain is now rejoicing. Let but the elements be worked prudently, vigorously, and opportunely.

All that is required for the accomplishment of the great end is a picked body of men who will devote their time and energies to the proper use of the existing elements of medical reform. They must be—(as one of her Majesty's ministers observed to a deputation from amongst us)—they must be able and willing—unawed by opposition—and ready to be lashed to the mast, rather than yield during the stormy struggle that must follow, until they see the bark harboured in safety. Above all, they must lay aside personal differences, petty jealousies, and every childish adherence to frivolous distinctions. They must cast behind them the consideration of their own individual interest, and look stedfastly at the goal of their efforts, which should be the general good of all the profession, and, by a natural consequence, the good of the commonwealth. They should prepare all the classes of their brethren for the important act of reform in the education and government of the medical profession, by instructing them touching the true nature of their interests, and the respect which they

owe to themselves, and to which they are entitled from others. Lastly, they must *agitate* the question of medical reform in all its bearings, in all parts of the realm, and among all classes of people; that the necessity, as well as the importance, of a general change in the present condition of the medical world in Great Britain, may be well comprehended and admitted by all.

This picked body of men, then; and these principles which should guide them; and these elements with which they will have to act—I behold in the British Medical Association.

The momentous task it has undertaken it will fulfil honourably and zealously:—as it stands pledged to do. And we may rest assured that success will crown our united and persevering efforts, if we but follow one uniform and systematic plan of operations, having the same object always in view.

That object is MEDICAL REFORM;—by which is meant an Act that shall place the medical faculty of the three kingdoms on the firm and honourable basis of perfect equality of character, privileges, and prospects—founded upon an equality of knowledge, personal deserts, and moral worth.

It is the consideration of that Great Act, which, as I have already stated, forms the subject of the present Oration; and in order to treat such a subject with that clearness which alone can convey truth to the mind, with the certainty of its being received and adopted,—it is essential that we should view the question in its three natural divisions, namely,

1. What is there to reform?
2. How far has reform hitherto proceeded?
3. What yet remains to be done for the accomplishment of a total reform?

The time allotted for the delivery of my argument before this assembly being necessarily limited, it will be but lightly that I shall be able to comment on each of these three topics; although I should have preferred to have availed myself of the opportunity afforded me by my honorary appointment of this day, to give to all of them a more complete examination. Still I will not shrink from the responsibility of testing existing institutions and regulations, and of proclaiming them either defective or otherwise, as I shall find them; nor will I, on the other hand, slur over my subject so imperfectly as to appear unmindful of the many efforts made by others before me in the pleading for reform. Both these duties I shall endeavour to perform with strict impartiality, though I shall be much restricted in my remarks by the consideration of the convenience of my auditors.

1st. What is there to reform?

Although, at the very first view of this question, many are the purely medical objects, which present themselves as standing in need of reform in this country, yet the medical incorporated or chartered bodies appear the most forward. There was a time when the examination of these by the reformers was a task of no inconsiderable difficulty, and one the invidious nature of which made people shrink from embarking in it. Facts there were plenty, either

observed or felt, to enable people to come to a right conclusion as to the necessity of reforming those chartered bodies. But as facts, unless proved, or admitted by those against whom they are alleged, could be only of feeble service in convicting the offending parties,—they were often disputed or denied. Gross obloquy, in the mean while, was thrown on those who had been bold enough to *divulge* the facts; and even persecution was threatened against them. We have, at present, no such fears or obstacles to deter us. The facts which are to form our judgment regarding those incorporated bodies, are on record where their reality cannot be disputed. They have been drawn from the mouth of the very parties to whom and to whose institutions they refer. They have been admitted; and now stand as parliamentary evidence of the character, worth, and efficiency of those institutions. When upon any previous occasion the defects and vices of those chartered bodies were publicly noticed by some spirited individual, or by that part of the medical press which honours itself by its independence,—it was made a subject of loud complaint against the accusers, that their charges were the mere phantoms of vile dissension, discontent, and mortified ambition—that the authors of such accusations, in fact, were worthless individuals, and deserved censure rather than attention. But now no such complaints can be raised, either to thwart or to blunt the keen edge of those very accusations against the same chartered bodies;—for we find them once more exhibited to the world, in the three ponderous volumes of parliamentary evidence now before us, not only as individual confessions drawn from the governors of those

bodies by a skilful and searching examination ; but also under the form of reciprocal recriminations of one chartered body against another. No volumes that have been written by medical reformers against the two Colleges, or the Company of Apothecaries, can offer a more humiliating picture of their real constitution, and, at the same time, of the degradation of all things connected with medical education and government as at present existing in this country, than is afforded by the three volumes in question—for the publication of which the medical reformers of England stand indebted to the parliamentary committee of 1834—an era that will be for ever after memorable in the history of British medicine.

Here then, in these very volumes*—without uttering a single syllable of personal disrespect against individuals in office—am I content to search for an answer to our first point of consideration, as to "What is there to reform in medical affairs?" Here, in these very volumes, which only await the analytical and logical hand of the chairman of the committee, to be at once and by all admitted as pointing where the plague-spot lies, that must be seared with the hot iron of reform—here am I satisfied to find wherewith to prove the necessity of that reform, as regards the following objects :

* Report from the Select Committee on Medical Education, with the Minutes of Evidence and Appendix. Ordered by the House of Commons to be printed, 13th August, 1834.

Part I. Royal College of Physicians, London, question 1 to 4702—and 25 pages of documents.

Part II. Royal College of Surgeons, London, question 4703 to 6988—and 87 pages of documents.

Part III. Society of Apothecaries, London, question 1 to 1081—and 4 pages of documents.

A. Medical Education.
B. Medical Government by Chartered Bodies.
C. The Management of Medical Charities.

A.

It would be an endless task, and not a pleasing one withal, were I to enter in this place into the enumeration of the incongruities, the irregularities, and the absurdities, which, at every page of these pregnant volumes, meet the eye of the most impartial reader, touching the past and present history of medical education in England. The most incredulous would startle, for instance, at the fact, that even in the definition of what medical education should be—what length of time it should occupy—of the qualifications it should impart—and of the rank or importance it should confer on individuals; none of the three officers at the head of their respective chartered bodies in 1834, examined by the committee, could agree.* And what a pitiable sight, indeed,

* Questions 350, 351, but especially 352, 353; also questions 466, 467, 468, 469, Part I.

Questions 4770, 4813, 4832, 4837, 4838, and many others, Part II.

Question 5728. "You observed in a previous answer that the two courses of study required by the College of Surgeons and the Company of Apothecaries worked ill together."—Answer. "Very ill indeed." (B. C. Brodie.) The president had already stated that they worked admirably together! 4943, Part II.

On the other hand, when the master of the Company of Apothecaries is asked as to the advantage of uniting the two colleges with their society, for objects of general medical education, that officer replies thus:—"I do see many objections to such a course, which objections would be less if there was a better understanding between the three branches of the profession. At a board, these three bodies would be generally disputing and wrangling amongst themselves," &c. (*cum multis aliis*, which are better omitted.) Answers 212, 213. Part III.

must those officers have afforded to the assembled members of the parliamentary committee, with their selfish and narrow-minded views respecting questions which, as they regard the public more than individual interest, ought to have been treated with boundless liberality!—How pitiable a sight, I repeat, must it not have been to behold one officer after another, of those chartered bodies, clinging with a pertinacity worthy of a better cause, to the defence of abuses and irregularities, and even of the violation of prescriptive rights, (for of such the evidence of 1834 affords sundry examples,) after the existence of such abuses, irregularities, and violations had been established by the skilful agency of cross-examination! What impression upon the examining committee must that distinguished individual have made, during his examination, who, being at the head of one of the colleges, declared that a doctor of medicine, while practising surgery, or belonging to the College of Surgeons, was not a fit person to be admitted into his college*—that the powers granted by parliament to the Apothecaries' Company to examine candidates in physic were to be lamented†—and that an obstetrical practitioner ought not to enter the royal college as a fellow, though a doctor of medicine, because "midwifery was an act foreign to the habits of gentlemen of enlarged academical education;" ‡—concluding at last by asserting that the principal use of his college

* Questions 236, 237, 238, 239, Part I., and 243 above all.

† Question 219, Part I.

‡ Extracted from a reply of the president of the College of Physicians to a note addressed by the Obstetric Society of London to the Secretary of State for the Home Department, previously to the parliamentary inquiry.

to the public was, that the latter looked at it as a tribunal by which persons properly educated are admitted into the profession !* As if the thousands in the profession who neither seek, nor care for such an admission, were to be considered as improperly or imperfectly educated ! As if he, the head of that college, had not known that many who had practised or now practise surgery, have been or are, by education and science, able to prescribe as physicians ! As if he had not been fully aware that, at the very moment of his delivering his evidence, and now, there were and are, in London and the principal cities in England, physicians exercising the branch of midwifery, who, by their acknowledged university and preliminary education,—their standing in society and the profession—and the estimation in which they are held both at home and abroad for their writings—were more likely to do honour to his college than to lower it in the opinion of the public !

But these are not the only strange things uttered by the head of the college alluded to, in his evidence. Being asked why certain privileges of his college were restricted (that is, before the enactment of some very recent regulations) to the graduates of the two English Universities,—he replied that those were persons who had undergone a moral and intellectual trial in the universities from whence they came, to which they are not subject in *foreign* universities !† If any of the members present at the committee had happened to have travelled in foreign parts, he must have smiled at the ignorance of a witness, who, untravelled himself, and wholly unacquainted with the constitu-

* Answer 207, Part I. † Answer 54, Part I.

tion of foreign universities, ventured to compare those of Oxford and Cambridge to them, to the disparagement of the foreign institutions, whether in preliminary or medical instruction!

Without citing the University of France, and those of Berlin, Vienna, and Pavia, (themselves real models of what such institutions should be,) the mere example of the several petty states of Germany, in reference to university education, gainsays the ill-founded and (the distinguished witness must excuse me if I add) the imprudent assertion.

According to the most recent of the published statistical calculations, there are not fewer than 1050 professors attached to the present universities in Germany. They lecture to about 16,500 students, who cannot matriculate for medicine or surgery, without having taken either the degree of doctor of philosophy, or that of bachelor of letters, each of which involves preliminary studies of four years at least; after which the student is as many years more removed from the degrees of doctor of medicine and surgery. It is worthy of remark, that this large number of professors, dependent on the very necessity of a varied and long preliminary education in the universities of Germany, involves, according to the same statistical accounts, an annual expenditure of money of not less than £600,000 sterling, which circulates within the precincts of these universities —an expenditure which arises from the income paid to the professors, and the money expended by the pupils.* Is this an evidence of inferiority in preliminary intellectual knowledge on the part of foreign

* See Journal of Education, Vols. I. II. and III.

universities, as compared to those of Oxford and Cambridge?

Not to multiply examples, and taking them rather from the smaller than the larger universities in Germany, at which medicine is taught, we find that in five of them alone, namely, Heidelberg, Freiberg, Würtzburg, Herlangen, and Marburg, £37,950 sterling, which is equivalent in England to at least double that sum, is granted by their respective governments every year, for the purpose of instruction. In what corner of Great Britain are there five public schools granting degrees in arts and science, which receive from the government the quarter of that sum of money? or what proportion of money equivalent to the same sum (£75,000) is expended by the colleges of the two universities of Oxford and Cambridge, and from their own funds, purely for the preliminary and medical education of students? I will not waste the time of this Association in descanting on the sentiments of another officer of the same Royal College, as given in his evidence on the same subject. They are refuted by facts and by public opinion.*

If we now turn to the evidence of the head of the second Royal College, we find in it the same pretence to a superiority, or at least to an equality of medical education † in his own class, as was proclaimed by the first witness: although neither the discipline, the length of studies required, nor the examinations, are like those of the first college. Undoubtedly, says the

* Questions 512, 513, 514, Part I.

† Answer 4842, Part II., the meaning of which is this: "*We are the first surgeons* in the world." And in the same answer, "We have taken a minimum of qualification." (!)

head of the second college, in answer to questions to that effect — undoubtedly we prescribe in medical cases,*—we learn and examine in the practice of physic†—we are superior in anatomy and physiology —and we are essentially the best practitioners in surgery:—a surgeon, in fact, does everything.‡ We have, therefore, a right to exercise the medical art generally, barring the dispensing of medicines, which we leave to the Company of Apothecaries.§ "As to that society," observed the president,‖ "it is in a false position under existing circumstances. The society never should have had the power of appointing examiners at all; and it was a gross error on the part of government to have given it to them."—"Had I been president of the College of Surgeons at that time, they never should have had it." (!!)

The apothecaries themselves, on the other hand, nothing loth to stand forward, proclaim through their master,¶ that *they* "form, of all the branches of the medical profession, the most important." An apothecary, observes the said master of the worshipful company, is a person competent to ascertain the nature of a disease, and to treat it.** He must therefore learn the art of medicine.†† He must also learn the art of pharmacy; and we examine our candidates in both,‡‡ adding by our recent regulations midwifery,

* Answer 5268, Part II.

† See the Curriculum in Appendix, Part II.; also, Answers 4964, 4965, 4973, Part II. ‡ Answer 5270, Part II.

§ Answer 4979, Part II.

‖ In answer to question 5289, Part II.

¶ In his answer to question 210, Part III.

** Questions 2, 3, 4, 5, Part III.

†† Appendix, No. 24, Part III. ‡‡ Idem, Part III.

and other branches of natural science,* making them over, afterwards, to the College of Surgeons, to be tried in surgery, which they must consequently have learnt. An apothecary, therefore, is necessarily an accomplished medical man, and as such we license him to practise all over the kingdom. The only difference between him and the members of the two colleges consists in this, that he neither occupies, in the acquisition of his professional knowledge, the same length of time,—nor is he bound to take in the same quantity of each branch of instruction, as in the case of physicians and surgeons.

Admitting all this to be fairly represented by the apothecaries in their evidence, it would go to establish, on their own showing, the singular anomaly of a class of medical men,—forming "the most important branch of the medical profession, (as the worshipful master has described it in one of his early answers;) "the most important," says he, "on account of the larger proportion of sick of the whole community, to which they are required to afford relief;"—being sent out on their important calling with an inferior education!

This is bad enough; but it will appear much worse if we try the qualified apothecary of the present day, as described in the worshipful master's definition, by the tests laid down by the presidents of the two colleges. According to the standard of the first president, the test of capability "in ascertaining and treating disease," consists not only in a variety of medical studies, but in a long preliminary education also: and, according to the standard

* Appendix, No. 24, Part III.

of the second president, a proper examination in surgery is necessary to complete the apothecary. Now, as the court of examiners at Apothecaries' Hall have not strictly the power to inquire exclusively into the classical or preliminary education of their candidates, nor can they make a bye-law to that effect, (although they do try a little their latinity,) it is evident that the licensed apothecary is an inferiorly qualified healer of disease, in the opinion of the president of the College of Physicians. And inasmuch as the said court of examiners at Apothecaries' Hall cannot inquire into the surgical knowledge of their candidates, but turn them over to be examined concerning it at the Royal College in Lincoln's-Inn Fields, (whither, it is admitted in evidence, a very large proportion of such candidates never proceed, from being aware that the said college can neither compel them to do so, nor can prevent them from exercising the art of surgery)*—it follows, that a great many of the licensed apothecaries must be imperfectly qualified, when they take upon themselves afterwards "to afford medical relief to by far the larger proportion of sick of the whole community," in the character of persons "competent to ascertain the nature of a disease, and to treat it." †

Now, Gentlemen, who shall pretend to see clear through such a chaos of deeds and opinions? Which standard shall we adopt of the three laid down by the heads of the departments as the most perfect and efficient for a medical man in this country to be tried by? What shall be deemed the best *curriculum* or mode of education for such a medical man;

* Answer 4898, Part II. † Question 210, Part III.

looking at the diverse and jarring opinions of the three incorporated bodies?

B.

Thus far, then, those chartered bodies have of themselves, and by actual confessions, shown that medical education in this country is in the most anomalous state, to say the least; and that no remedy is to be expected from such corporations, for the evils which naturally flow from such a state of affairs. *They*, therefore,—the Chartered Bodies, and Medical Education,—must be considered as proper and fit objects for medical reform.*

Nor will that conclusion be weakened, when we take into account another view of the nature of those bodies, as suggested by the evidence produced by themselves in 1834;—for that evidence goes to prove that they are both *unnecessary* and *inefficient*. They are unnecessary, because, as they *teach* nothing themselves,† and only undertake to examine people: if a general board should be instituted in London to examine all candidates for medical practice—(and in that point the heads of the corporate bodies have all unwittingly agreed, when asked their opinion on that subject by the shrewd chairman of the committee)—their existence would become useless. They are inefficient, because, in protecting the public from pretenders, impostors, illegal or

* The President of the College of Surgeons, in Answer 902, says that great reform is necessary in the Society of Apothecaries. Another witness is for reforming the College of Physicians, as well as the Apothecaries' Company, but not his own College. (B. C. Bredie.) Answer 5673, 5676.

† "Our business is not to teach physic." Question 314, Part I.

dishonest practitioners, and quacks, the two colleges have admitted, through their respective presidents, that they possess no power:* while the Company of Apothecaries have confessed† that there are more cases of infraction of their own peculiar Act than the society has the means of prosecuting and punishing.

But the inefficiency of the Apothecaries' Company is proved much more strongly by another of their own admissions. Their charter and acts bind that body to visit the shops of general practitioners, to see that no bad drugs are kept, or spurious medicines sold.‡ When asked how often they exercised that duty, the master answers, "During one day, or more than one day, once in two years."§ To a former question the same gentleman had replied, that such visits generally began at one o'clock, and ended at about six; and that, upon an average, each visit lasted, perhaps, a quarter of an hour."‖ How, on the face of this very admission, does the effective nature of the Apothecaries' Company's operations in this matter appear? Here is a body politic desired to watch over an important branch of public safety, who exercise it by limiting their vigilance to about twenty investigations on one, two, or three days, once in two years, among the one thousand general practitioners who, according to another answer of the worshipful

* Questions 215, 279, 282, Part I.; 4865, 4898, 4943, Part II. Also Question 4842, Part II. "The College of Surgeons is a body that has no power." The President's Answer. And again, Answer 4851, "The awkwardness of our situation is, that we have no authority, no power, to prevent an evil of this kind."

† Answer 94, and others, Part III. ‡ Answer 49, Part III.

§ Answer 55, Part III. ‖ Answer 48, Part III.

master, are said to practise in London.* To which we must also add another piece of information, afforded us by the same witness; that although directed by act of parliament to make similar visitations all over England and Wales, they, the Company of Apothecaries, do not comply, and *never have complied*, with that injunction.† Supposing, then, the protecting efficiency of that chartered body to be necessary for the purpose for which it is required by the laws of the country,—is it not at present reduced to a mere nullity?

The chartered bodies, therefore, stand on the records of parliament as self-condemned, ineffective bodies. They also stand there as self-admitted *defective* bodies. The learned president of the first of the two colleges, for instance, (not to allude to several other matters,) admits that they have no power of doing their duty as the guardians of the public health in this country—their influence extends only to a few miles around the capital‡—and even in that narrow circle it is effectually cramped by the interference of the two other bodies. "We are," says the president, "we are deterred (from doing our duty) by the powers which the Legislature has given to apothecaries and surgeons."§ Is this not a glaring defect in the constitution of his college? In another place, reverting to the distinctions of two classes of members existing in his college under the appellations of Fellows and Licentiates, he contends that for every practical purpose they are one and the same grade,‖

* Answer 13, Part III.
† Answer 57, Part III.
‡ Answer 329, Part I.
§ Answer 282, Part I.
‖ Ans. 122, 131, 132, Part I.

and that no particular advantage appertains to the fellowship.* Then we might ask, why keep up such a glaring defect in the constitution of your body, as that of a distinction which, in your opinion, is merely nominal, but which, in that of many of the parties concerned, is considered as insulting and degrading,—especially since the introduction of a new and recently adopted mode, of nominating the members of the inferior class to a place among the alleged superiors? That mode consists in propounding a chosen list of names, prepared by a committee from the catalogue of the licentiates, to the whole college, who, in their turn, scratch in, or scratch out, (I know not which,) such of the names of the licentiates as the college desire to see created fellows. This method of selection, *by scratching*, places the College of Physicians on a level with an ordinary club; so that henceforth (whatever may have been the case hitherto) it will no more be an honourable distinction to belong to the College of Physicians, as a *fellow*, than it is to belong to the Reform or the Conservative Clubs as a member. More than this,—the example set to the licentiates by Doctor Arnott, illustrious for his science and as a physician, and by Doctor Clutterbuck and Sir James Clark, not less eminent for their writings and as medical practitioners, of the value they attach to the distinction of fellows of the Royal College, by declining it when offered to them—has made it an honour to belong to the class to which those distinguished members (with a consistency much to be commended) adhere; and has rendered it doubtful whether, in quitting that class for the sake of entering the other, which such men

* Answer 120, Part 1.

have repudiated, a licentiate does not surrender more than he can acquire.

As to the defective nature of the constitution of the second college,—the admission peeps out at every answer from the loyal and frank president of that body, who was examined in 1834. It is acknowledged to be defective in the mode of electing the council of rulers.* It is acknowledged to be defective in the selection and composition of the court of examiners.† It is acknowledged to be defective in its not being able to insist on all who pretend to practise surgery in England and Wales to appear before the college, and prove their proficiency in that art.‡ It is acknowledged to be defective, because its proceedings are secret.§ It is acknowledged to be defective, because the possibility of abuses taking place is also acknowledged.‖ In fact, the whole structure of the college is defective, as part of the governing faculty of medicine in England.

Viewed in a similar manner, as one of the elements of the governing medical faculty of this country, the Company of Apothecaries appears, in the parliamentary evidence, equally defective with the other two corporate bodies. It is a defect that a trading company should be made to govern twelve thousand practitioners in medicine and pharmacy; particularly as the dealings are in drugs, and the governors may, at

* 4824, 4730, and *passim*, also 4750, besides Sir Benjamin's Brodie's answer, 5647.

† Answer 4816, 4818, Part II.; also 4824 and 5692.

‡ Answer 4842, 4851, 4898, 4900, Part II.

§ Answer, 4750 and 4892, Part II.

‖ See, for a single example, Sir B. C. Brodie's answers, 5700, 5701, Part II.; and also answer 5347, 5348, 5349 and 5358, 5359.

some future period, have to sell those drugs to the very candidates whom they have examined and licensed to practise.* It is an enormous defect that the authority and power to inquire into the capabilities, intellectual and professional, of young men destined to exercise an art which requires both learning and science, should have been delegated by Parliament to a corporation standing on a level with the rest of the liveries in the city, the fishmongers and the curriers.† It is of very little use to say that practically, and in our time, we have had, as rulers of such a livery, estimable men, men of education, of character, and I firmly believe of irreproachable honour also. The stigma, the incongruity, the anomaly of the thing, is still there : for it exists in the system, and not in the men.

Besides these individual defects peculiar to each medical chartered body, as at present constituted, there is one, the enormity of which is admitted on all hands, and of which the three chartered bodies partake in common. The members here assembled no doubt anticipate that I am about to allude to the total want of power or inclination, on the part of those public bodies, to interfere with one of the most glaring and crying evils connected with medical practice—namely, that of the sale of drugs, or the compounding and dispensing, or even the prescribing of medicines, by the ordinary chemists and druggists.

Is it not monstrous that these people should not only never have been examined as to their fitness for the

* See charter of Apothecaries' Company, Appendix, Part III.

† The present Society of Apothecaries is descended from the "Freemen of the mystery of Grocers," and by charter are constituted into a body corporate and politic, "after the manner of other companies and fellowships." See charter, Appendix, Part III.

office they take upon themselves to perform; or have been licensed to do so after examination; or, in fact, controlled in any way; but that, on the contrary, they should be permitted to sell any drug, insignificant or the reverse, and to deal out poison to any extent, to facilitate the dark and foul deeds of the murderer, or the insane wanderings of the suicide,—without being checked by any regulation of the three chartered bodies, who ought to be the protectors of the public health?

Is it not passing strange that the College of Physicians and the Company of Apothecaries should be invested with the power of examining, from time to time, the drugs themselves, but not the dealers and the compounders of them under any circumstances?

The candidate who solicits admission into the College of Physicians, either as a fellow or a licentiate—another candidate who presents himself for a diploma before the College of Surgeons—neither of whom may ever require, in the course of their practice, to see a single drug, but may rest satisfied with knowing its pharmaceutical powers only—each of these is to be examined, according to existing regulations, as to his technical acquaintance with the natural characters and physiognomy of drugs, and is to name and describe each drug presented to him by the examiners; while the man who is to select the good from the bad drugs in the market, who is to use them for compounding medicines, who is to prepare and retail them to the public, or to the patients of physicians and surgeons—that man's capability of doing all these things is *never* investigated! What other parallel example of an absurdity so gross can be found in the history of civilised societies? In what other country than Great Britain is such an example to be met with?

If we turn now to the consideration of matters of a pecuniary nature, connected with the chartered medical bodies, we find abundant admissions in the parliamentary records, to show the absolute necessity of revision and reform in the constitution of two at least of those bodies.

In money matters, as in other matters, the College of Physicians stands so low, that were it not for the private subventions of members, (according to the statement of their president, and the appendix to his evidence,*) the corporation could not proceed; neither could the respectable appearance of the college be maintained. It is due to them to state, that whatever service, their officers consider it to be the duty of their station to afford, in behoof of the general corporation,—some of them perform it gratuitously, while others take the very smallest rate of remuneration.† There are, indeed, one or two snug appointments, said to be lucrative, to which the members of that corporation have hitherto held themselves exclusively entitled; such, for example, as a commissionership of lunatics: but such pecuniary features in the College of Physicians are really too trifling to detain us.

Not so with regard to the corporation of surgeons, or that of apothecaries. Their transactions in money are much more serious, and, being thoroughly investigated in our parliamentary volumes, present ample grounds for radical amendments. Thus, with reference to the last-mentioned corporation, it appears from their evidence, that in the three years preceding the 31st of July, 1834, the Company of Apothecaries had touched the sum of £6,847. 16*s.* 11*d.* from per-

* Questions 271, 272, 273, Part I. † Question 276, Part I.

sons licensed by them to act as general practitioners,* of which sum about the half, or £3,340. 0*s.* 9*d.*, had found its way into the pockets of twelve examiners!

On the other hand, the College of Surgeons admit of an incidental income of £10,230. 10*s.* from examinations in the year 1833,† (taking a single example for our purpose from their evidence,) all drawn out of the pockets of the candidates examined by them, whether admitted or rejected. Of this large sum, over which the general contributors have not the smallest control, how much does the Association imagine was devoted to the conducting of the mere machinery of the college for that same year, including the *douceurs* in cash, and dinners to the counsellors and examiners? Their own evidence‡ answers that question, and states that more than the half of that sum, namely, £5,127. 13*s.* 3*d.*, was devoted to the machinery of the college, out of which amount, not less than £3,050. 5*s.* found its way into the satchels of *ten* examiners, and £425. 5*s.* into those of *twenty-one* counsellors!

Surely, after such an authentic exposition, the very able president who made the admissions, and did his best to justify them, cannot well wonder that the constituency of his college should look with a jealous eye at, and desire to reform, their well-paid and well-fed would-be representatives.

Nor will the whole of the medical incorporated bodies of London, taken collectively, appear to require

* Appendix 10. Part III.

† Extract of Receipts and Expenditure of the Royal College of Surgeons for 1833-1834. Part II. Appendix, p. 5, 8.

‡ Appendix, p. 6, Part II.

that great political measure less; if we look at the apathy which they evinced on a recent occasion, when,—instead of coming to the rescue of the several members of the profession, ground down by that systematic degradation and injustice with which they have been lately visited, through the application of the poor-laws to them,—those incorporated bodies stood aloof, and extended neither help nor sympathy to the oppressed.

C.

Here ends what concerns medical education and the chartered bodies, with reference to reform.—But in order to complete the consideration of the first topic of my present oration, namely, "What is there to reform?" I ought properly, now, to pass to the examination of the medical charities and foundations in the metropolis, as well as in the provincial towns, and inquire into their management. I ought likewise to ascertain whether the London and large provincial hospitals, the infirmaries and dispensaries, are in reality productive of all the benefits to the community which their founders or benevolent supporters anticipated or desired. But the field is too vast for me to enter upon, until an equally solemn investigation has taken place with regard to those charities, before that same tribunal which has made known to the world the real state of medical education, and of the medical corporations in England. Such an investigation is due to the public, and will be undertaken. Some information on so important a subject has indeed been already collected, but no part of it has yet acquired publicity. To make any remarks, therefore, or to pass

comments on the structure, efficiency, and administration of medical charities in England, in the absence of all printed evidence and documents, would ill become the office of your appointed orator,—who, in entering upon his present task, prescribed to himself the duty of adhering to truth above all motives, and of preferring to be defeated and to have a verdict recorded against him in his pleadings, rather than to swerve from that truth, even to serve the cause of medical reform.

The question, therefore, of the management of medical charities in England must stand adjourned to another year, when my successor in the honourable office I now hold will probably, with the help of some future proceedings in parliament, make it the subject of his oration, which might properly form a second part to the one I have now the honour of delivering.

It has been asserted, that hospitals and dispensaries, being in their nature private institutions, no one who is an alien to them has a right to scrutinise them. This is a manifest error. Has not parliament, with a zeal and assiduity that do it honour, and during a succession of years, directed a commission to dive into the innermost recesses of all other charities in England, endowed by private individuals for a particular public object? And have not the published results of that inquiry led to the useful reformation of more than one of those much-abused institutions? Are not hospitals and dispensaries charities of the like nature, endowed and supported by *private* benevolence, for a particular *public* benefit; the recovery from disease of those afflicted with it among the community? Then why should their management

escape the searching eye of parliament, if, even in mere appearance, that management should seem to lack revision and alteration?

We now come to the consideration of our second topic:

2. How far has Medical Reform hitherto proceeded?

The first hearty and efficient blow aimed at medical abuses by the axe of reform, was struck by one whom we are proud to number among the members of our Council; one who, in the cause of medical reform, has not only the merit of being the first and most successful pleader, but also the most untiring and the most faithful. By talents of acknowledged superiority; by tact and keenness of observation which fall to the lot of few; by an unsubdued love of independence and the liberty of the subject; and by the fearless expression of his sentiments, this declared reformer gained a seat in the House of Commons, where habits of industry, and consistency of conduct, have secured to him a degree of influence which he has often successfully turned to the advantage of our profession. He it was, who many years since, by the institution of a journal of deep and searching sagacity, well known throughout Great Britain, first exposed not only the most obvious, but likewise, and not long after, many of the more hidden, gross, and outrageous monopolies and deeds of corruption in medical matters. Through the unceasing efforts of that writer, many important changes were soon effected in medical schools and hospitals, and the work of practical medical reform was thus fairly begun. The benefits which have resulted from his endea-

vours, have long been felt and acknowledged on all hands, and are indeed visible in the metropolis, as they are in every corner of the realm where there exists a medical institution.

The glorious work of medical reform was also advanced some steps, from time to time, by the single-handed efforts of a few independent members of the profession, through published essays, orations, and addresses; among which this Association will never forget the eloquent one pronounced by our excellent president, at the foundation of this Society.

It has likewise been forwarded, to a certain degree, by the joint endeavours of a select number of physicians, through their several petitions to the Legislature, detailing grievances and asking for redress, although upon narrow and confined views of the general question. But over the history of some of those transactions I would rather, from the respect due to the medical character, draw a veil; since that history exhibits instances of subsequent tergiversation, and of succumbing to the seduction of honorary distinctions, which are alike disgraceful to those who have been guilty of such acts, and humiliating to us all, who labour in the same vineyard.

Medical reform has been also partially promoted by one or two medical journalists; and among these the Association cannot refuse a meed of praise to that senior quarterly medical journal, which, in exposing corporate abuses, and in desiring their reformation, has ever been consistent. This, and two or three other journals in the two sister countries, or in the provincial towns, have been and will be more than sufficient to break up the paltry influence attempted to be established by certain periodical writers, some

of whom, in their weekly lucubrations, affect to uphold a system of medical toryism, in hopes to secure the snuggeries of the actual Medical Government to their patrons: while others, through their quarterly rhapsodies, flippant and smacking of ignorance both of British and Foreign Medicine, strive to pull down the hard-earned reputation of their betters, whom they never can hope to emulate.

Another and a mighty step in the paths of medical reform was made when that all-important parliamentary investigation of 1834, to which I have largely alluded in the early part of this oration, was undertaken. The evidence then collected, and afterwards widely circulated and eagerly read, has left an impression on the mind of medical men, and of laymen even, in the provinces, which cannot fail to prepare them for reform. The developement of the complicated machinery of English medical corporations, which that investigation brought about; and the unwilling disclosures extracted from the mouths of some of the advocates of all that is faulty in those corporate bodies;—again, the futility on the one hand, and the injustice as well as mischievous tendency on the other, of the bye-laws which regulate those corporate bodies, exhibited according to their own witnesses; — lastly, the insufficiency of the present system of medical education, the confusion of ranks in the profession, the anomalies of privileges, and the want of uniformity in the medical constitution of the kingdom;—all these things, being shown and proved to exist in this country, their subsequent proclamation through the records of parliament has been a giant step towards reform.

Next we have, as a promoter of medical reform,

that solemn and momentous inquiry, likewise and very recently carried on before parliament, in which this Association took so prominent a part, and which will form, truly, one of the *Fasti* of our body, in the history of the present year. That investigation (and I allude of course to the evidence taken before the select committee on the poor laws amendment act) has led to conclusions and results, the excellent prospective bearing of which on medical reform it is hardly possible at this moment sufficiently to estimate. And here, again, we see the same master-hand at work, which first applied the axe to the tree of medical abuses, tracking the line of inquiry through that new labyrinth of a shamefully perverted legislation.*

Surely such a parliamentary exposition as the one alluded to, must and will rouse the most indolent and apathetic in our profession to co-operate with us in the cause of reform, when it has shown that, left to their own paltry power, placemen, under the poor laws amendment act, will put their heels on the neck of medical men, and press them down to the level of shopkeepers dealing by *tenders* and *contracts;* while (as I have remarked in a former part of my oration) not one of the corporate bodies, which declare that they exist but for the honour and protection of the medical profession, will be found ready to throw itself between the insulting authority and the numerous prostrated fellow-labourers in the field of practice.

* Mr. Power's evidence and Mr. Wakley's cross-examination as to Poor Laws Medical Clubs. Report (14) Select Committee, House of Commons, March 1838. Also Reports 44, 45, 46, from Select Committee on the Poor Law Amendment Act. (Medical Inquiry.) Ordered, June 1838.

Lastly comes, as a stirring agent of reform, whose efforts in the cause we may, without overstepping modesty, suppose to have produced a movement forward, our British Medical Association. Young, yet vigorous; slender of dimensions, yet ambitious; scoffed at by the corruptionists, yet inspiring dread in their hearts; determined, united, unflinching: our Society, which may be viewed as one of those meteors that are said to precede great and vital changes, is likely to be the mainspring in the final accomplishment of that great and glorious consummation, Medical Reform.

In the drawing up of this rapid sketch of what has hitherto been effected towards obtaining the end we have in view, accuracy requires that I should, for a moment, silence those feelings of reserve, which are at all times so praiseworthy when *self* is in question, and that I should declare in this place, (since I see the subject fully investigated in the parliamentary volumes,) that I consider the proceedings of the Obstetric Society of London, which I had the honour first to establish, as likely to have assisted in promoting the cause of medical reform. When those proceedings, which lasted five years, first began, two of the medical corporations spurned the society,* and refused a seat among their members to those of their professional brethren (even though physicians and surgeons legally qualified and acknowledged) who practised a highly responsible, often difficult, and generally complicated branch of

* Question 224. "What reason did the College of Physicians assign for not paying attention to the representation of the Society of Accoucheurs?" Answer. "I have not the reasons by me. I remember they were well considered, and were thought satisfactory." Part I.—This is a mistake of the worthy president. The reasons were *not* deemed satisfactory, and the sequel has shown it.

medical art—*obstetricy*—in addition to other branches of the profession. The distinguished president of one of those corporations, forgetful of what was due to a body of men equally enlightened with himself, and among whom he was pleased to acknowledge some personal friends—unmindful, too, that those men were pursuing a legitimate object in their correspondence with the Secretary of State for the Home Department—permitted himself to use expressions (in answer to an official note I had been directed by the Society to write to that minister) which I have quoted elsewhere, and which that distinguished president must have regretted ever after having uttered; since he never repeated them throughout his subsequent hostile evidence before parliament, while objecting to the introduction of obstetricians into his college.*

The not less eminent individual also, who presided over the second of the two medical corporations alluded to—not a whit more friendly to the introduction of practitioners in midwifery into the councils of his college—alleged his reasons for his opinion, at great length, before the committee of 1834; † which committee, be it remembered, framed all its questions touching the anomalous state in which the practice of midwifery was then and is still placed in this country, from the book of minutes of, and the important documents supplied by, the Obstetric Society.

* The hostile evidence of the distinguished president alluded to is to be found at full length in Questions and Answers 231 and 232, in the latter of which occur these words, in reference to midwifery: "I think it would rather disparage the highest grade of the profession to let them engage in that particular practice." Part I.

† Answer 4801, 2, 3, 4, 5, &c. Part II.

We persevered in our measures, nevertheless, and the result has been the abolition of the degrading and unjust bye-laws of exclusion complained of by us.* First, a celebrated obstetrician, president of the Obstetric Society, being raised to the dignity of doctor of medicine, was made licentiate, afterwards a fellow, and as such admitted into the sanctuary of the elect. Next, a second accoucheur came, and a third and a fourth, "on to the crack of doom:" and thus, the very president of the Royal College, who, with all his amiable and social qualities, had so far forgotten his own dignity as to designate those who exercised the art of midwifery, as being scarcely gentlemen by profession, was compelled,—through the persevering acts of the Obstetric Society, and the public opinion awakened by that society, to sit by their side — at the same board—in the same council chamber!

Little as I am disposed to value such a conquest, achieved by a body of able men whom I had been first instrumental in bringing together; yet, as an example of what, even in an insulated branch of reform, can be effected by perseverance in a good cause, on the part of a few determined individuals,—this assembly will perhaps agree with me in viewing the successful accomplishment of the object of the Obstetric Society of London as worthy to be mentioned in this part of my present oration.

But with all this already accomplished—with all

* Question 225, Part I. "Does the statute of the college still exist, that none engaged in the practice of midwifery shall be admitted as fellows?" Answer. "Certainly." Question 231. "Would it not be desirable to repeal such a by-law?" Answer. "No, I do not think it expedient." (1834!) But in two years more it was done!

the efforts of societies and individuals already enumerated, particularly those of the last fifteen years, in the cause of medical reform—there remains yet much more to be accomplished, in order to reach our end: and this brings me to the consideration of the third and last point of my present argument.

3. What yet remains to be done to accomplish a total Reform?

On this concluding part of my oration, time will only allow me the utterance of a very few words. But, though brief, I shall endeavour to be explicit, that we may be neither misunderstood nor misrepresented by the enemies of medical reform.

To accomplish this great, this all-important act, England, as one of the great national families of Europe, has only to place itself on an equality with the most enlightened among those nations. At present she stands alone, in the chaotic condition of her medical institutions. In no other part of Europe is the life of a fellow creature, when invaded by disease, committed to the charge of three differently educated and differently qualified medical practitioners. Let him be poor, or let him be wealthy—lowly of condition, or sitting on high—the victim of disease, in all parts of the Continent, is sure to have by his bedside an attendant to whom an uniform system of education has imparted the utmost knowledge in his profession which a wise government could provide for him. And as for any distinction of rank among such attendants, the laws having prescribed the same education for,

and granted the same qualifications to all—leave it to public opinion to establish it. In order to obtain readily results like these, the continental governments have provided one central medical faculty for the whole kingdom; with one or two branches where the territory is too vast, as in France for example. That faculty is directed to apply the same and the maximum test of examination to all who desire to practise the healing art. It is, moreover, invested with the power to recognise all persons who have proved themselves able to practise, and to grant to all such the same privileges, to be enjoyed by them in every part of the kingdom, unmolested by any secondary or delegated power. That such a measure of equality and protection on the part of the regent faculty may be justified,—the nature and length of education, preliminary as well as medical, of *all* the candidates to be examined in the healing art, have been defined by special laws, which are not made subject to perpetual and capricious variations on the part of subordinate authorities. On the other hand, education itself is made accessible to the most moderate fortunes; and the final examination or inquiry into the proficiency of the students and candidates for degrees takes place in open courts, and not in a private conclave. The examiners do not elect and perpetuate themselves in secret; neither are they remunerated by the fees of candidates. Hence two sources of abuse or corruption are avoided. There may be corruption where there is secrecy, self-perpetuation, and irresponsibility on the part of the examiners. There may be corruption when, by secret proceedings, large sums of money are obtained from the many for distribution among

the few. But, according to the continental system, such species of corruption cannot obtain.

After these preliminary observations, I proceed to offer to the members of the British Medical Association the opinion of their fellow-member who has had the honour of addressing them on the present important occasion, regarding the best mode of effecting their wishes; but I do not call upon them for a pledge of their adhesion to it. That opinion goes to declare that the great Act of medical reform in England will never be thoroughly accomplished, until the following great points shall have been conceded to the profession, and their execution secured by parliamentary statutes.

1st. A maximum degree of education, theoretical as well as practical, both preliminary and professional, obtained either at the existing colleges, or through authorised private teachers, for all medical students.

2ndly. The same, uniform, and the highest possible test of qualification, for all who intend to practise the healing art, no matter in what branch: the said test to consist of practical as well as theoretical demonstrations of the candidates' abilities, exhibited at one or more public examinations, to be carried on in writing as well as verbally.

3rdly. One and the same rank and title in the profession bestowed on all who have proved themselves capable to exercise the healing art by the highest possible test of qualification: whether the candidate chose afterwards to practise as physician, or as surgeon, or both, or as one and the other comprising obstetricy, and any other subdivision of the art

and science of medicine:—according as his own taste or inclination, or the strength of circumstances, and the situation he may be placed in, or the opinion of the public, may induce him to act:—thus affording to the poor, and the moderately affluent, as well as to the rich, (the lives of all of whom are of equal value in the eyes of humanity and the laws) the same means, and those of the highest character, for resisting the fatal inroads of disease.

4thly. An equal enjoyment of all the privileges and benefits appertaining to the highest degree of education and qualification as certified in a diploma, by every one possessing such a testimonial, in whichever part of Her Majesty's dominions he may choose to settle as a practitioner.

5thly. The establishment of One Faculty in the capital of each of the three realms—to be governed by the same laws—to be similarly constituted—and to be endowed with similar powers of qualifying candidates to practise in every part of the empire. As each of the capitals has its university for instructing and examining and granting degrees to students in every branch of educational knowledge, their privileges and rights should be left undisturbed in every respect, except as to the right of examining and conferring degrees in the medical art,—which must be surrendered to the medical faculty.

6thly. The medical faculty in each capital should consist of a certain number of eminent practitioners and public teachers, no matter to what particular branch of the profession they may have deemed it convenient or useful to confine themselves. By this provision, candidates would be certain to be examined

in all the branches of medical art and science, by persons known to be thoroughly conversant with those branches. The members should be remunerated by a fixed salary, and not by fees dependent on the number of examinations; and to the post of member of the faculty all medical practitioners should be deemed eligible, either by open election or by competition.

7thly. The medical government should be centralised in the three faculties, so as to form but One Body, acting together in the framing and promulgation of the laws which are to regulate the profession—in defending the rights and interests of the latter—in superintending the medical police of the country—and in protecting the public from the ignorant and the pretender. The faculties should also have the power to establish, with the concurrence of the respective committees of governors, new and uniform regulations for the management of hospitals and the attendance of the medical officers and students, as well as for the appointment of the former, which should in future be open to competition on a public trial of skill.

8thly. The establishment of a Board is likewise absolutely necessary, to consist of members of the faculty most conversant in chemistry, botany, and natural history, for the purpose of examining and licensing the venders of drugs, and compounders or dispensers of medicines. The same board should be empowered to fix, and from time to time to alter, the regulations by which the operations of the vending chemists and druggists ought to be governed.

9thly. A general registry of all who have been admitted to practise the healing art, as well as to sell

and compound drugs, should be strictly kept at the faculty's offices, open to public inspection: so that in case of impostors or unqualified persons, (whose names of course would not appear in the said registry,) being found engaged in practising medicine in any of its branches, or in administering or compounding medicines, or in vending drugs, whether simple or compounded, with any reference whatever to health or disease—a *common informer* may be able to prove the fact by a mere reference to the registry, and convict the transgressor before a magistrate, who shall be empowered and bound to treat the case summarily, and by such pecuniary or other punishment as is awarded in cases of misdemeanor.

10thly. A law should also be enacted by parliament to prevent the sale of poisonous substances, and of all potent medicines by the licensed chemists and druggists, except on the prescription of a well-known medical practitioner.

11thly and lastly. Those parts of the acts or charters under which the present medical corporated bodies or colleges claim the right to examine candidates, before the latter can be authorised to practise either physic, surgery, or pharmacy; and all such other acts in existence as interfere with the carrying out of the principles of legislation laid down in the present scheme of medical reform,—should be annulled. But in no other respect should the said medical corporate bodies be disturbed, nor any of their vested rights encroached upon. Their interference with the medical education, qualifications, degrees, and right to practise, of individuals, being once put an end to, the colleges should be permitted to continue the

career for which they were originally intended,—that of promoting medical science, through and with the assistance of their halls, their libraries, and their museums. And inasmuch as the said colleges, whether in London, Edinburgh, or Dublin, or elsewhere, were founded for public and not for private benefit; and some of them are even now, or have been, supported by grants of public money; their respective establishments for the promotion of science should be thrown open to the public.

The best and wisest measure which the three corporate bodies in London can adopt under such circumstances, is to form themselves into a Royal Academy of Medicine, divided into three great classes, of medicine, surgery, and pure pharmacy. No doubt but that their example would be followed by the chartered medical bodies of the other capitals and cities. Each class should be limited in its numbers, and have a simple form of government; and all the members of the profession should be deemed eligible to a place in the academy, by election. This academy might become the medical consulting Board of the Government in matters of medical science.

Such are the fundamental outlines of a scheme for a total reform in the medical affairs of this country, which, after an experience of two-and-twenty years' practice in the metropolis—after watching what has been passing around me in the medical world during that period—after reflecting long and deeply on so important a question—after having examined and seen at work the system of medical instruction and

medical government in most of the foreign states,—and lastly, after perusing the voluminous evidence of the parliamentary committee of 1834*—I can conscientiously offer to the consideration of my fellow-members of the British Medical Association. I lay the scheme before them, without in the least wishing to pledge any one of the members, either to the whole or to any part of it, as being the best or most complete that could be devised for the purpose. Deputed by the Council to maintain and defend before this Association the argument in favour of medical reform, my task would have been deemed incomplete, had I not propounded at the same time my own notions respecting the most eligible mode of accomplishing so desirable an end. Hence my present scheme; and right glad shall I be, if it prove a source of practical hints, or an useful groundwork for some other and superior plan of operations.

In the scheme here propounded, it will have been noticed that the existence of all the medical corpora-

* I acknowledge with pleasure that I found some of the suggestions thrown out by two or three of the witnesses before Parliament to be coincident with some that are contained in this scheme. I must especially single out the just and liberal remarks of Sir B. C. Brodie, Sir Charles Bell, and Sir Astley Cooper; (See answer 5764 with regard to three faculties, and an uniform protection; also 5732, 5754, 5757, and 5904, 5916.) Nor must I forget the particular observations of the master of the Company of Apothecaries, in reference to summary conviction and the punishment of unqualified practitioners, as well as to a general register of those qualified to practise. This coincidence shows the conviction of the said witnesses as to the necessity of reforming medical affairs, and goes some way to prove that the medical reformers of England are neither fantastical nor utopian.

tions as scientific bodies, with the possession of all their present belongings, is maintained, provided that their resources be applied to the public good under wise regulations. The members of this Association are taunted with being *destructives*. We are not so: but neither are we *conservatives*. The title we aim at is that of RE-CONSTRUCTIVES; since we desire nothing more sincerely than to see re-constructed, on better and more solid foundations, and with architectural characters more suited to the genius of the age, the whole edifice of the medical profession in England. The only vested right of which we seek to deprive those chartered bodies, is that of interfering with the examination and the licensing of candidates for medical practice. We cannot respect any longer that right which the chartered bodies have declared themselves incapable of exercising with full effect, and which is daily and reciprocally encroached upon by their own acts and deeds. The defence of such a vested right, set up by the members of those chartered bodies, some of them high and liberal-minded individuals, cannot maintain its ground against the effect of an impartial investigation into it, and ought not, therefore, to stand in the way of our determination.

If it be contended that each of the chartered bodies is to maintain intact its privilege of examining and licensing candidates, then each of them should strictly confine the exercise of that privilege to an examination of the candidates into the particular branch of medical practice which the title of their individual charters implies, and no more. The College of Physicians should alone examine in physic—the College of Surgeons in surgery—and the Com-

pany of Apothecaries in the art of knowing, compounding, and dispensing medicinal substances on the prescription of a physician or surgeon, and in nothing else. Their respective train of examination should not, in fact, encroach on the province of the other two ; for such an encroachment would be looked upon as an act of injustice by one against the rest. Yet such is the state of the case at present ; and the men who actually respect least and infringe most the vested rights of medical chartered bodies, are, in good truth, the medical chartered bodies themselves ;—as the volumes of parliamentary evidence have abundantly shown. We therefore, the medical reformers of England, are not the *destructives ;* but the *self-conservatives* are so.

Take, again, another view of this pretended vested right of the chartered bodies : for we will not dismiss cavalierly the defence of it set up by their friends. Let us suppose that right to be respected as sacred by each of them ; and each of them to possess it as strictly defined as I have shown that, on every principle of justice, it ought to be, according to their own individual pretensions :—what benefit to the candidate would the preservation of such a vested right at the present time produce ? A single example will suffice to answer that question.

The Crown has recently thought proper to institute in the metropolis a general board or senate, which, among other important duties, will perform that of examining candidates in all the branches of medical knowledge, and authorise all such of them as shall be found competent, to practise under the seal of a diploma. If the vested right of examination in all the

three incorporated bodies, strictly exercised and without any reciprocal encroachment, is to be maintained —and the candidate who has been qualified to practise by the London senate be desirous of settling himself as a general practitioner, (according to the present meaning of that denomination found in the parliamentary volumes,)—the ordeal which that candidate would have to go through, ere he could legitimately carry his intention of settling into effect, would be not a little harassing. First he would have to obtain, after an appropriate examination, the diploma from the metropolitan senate, as before stated. He next would be, summoned to undergo three distinct examinations, in three consecutive months before the College of Physicians, in order to exhibit his knowledge of medicine;—the president having declared in his evidence that neither of the other two medical boards ought to meddle in such matters. Again, he would have to appear on a particular Friday at the college in Lincoln's-Inn Fields, to give proofs of his skill in surgery. And lastly, the Company of Apothecaries would insist on his showing how far he was competent to purchase, know, compound, and dispense all medical substances. Then, and not till then, would the labours of the exhausted candidate, and his empty exchequer, be rewarded with a license for administering medicine to the sick, practising surgery on the lame, and preparing medicines for either physicians or surgeons. Is it likely, we demand—is it just—is it in accordance with the common honesty of public legislation, that so absurd, expensive, dilatory, inconvenient, and, for some of the parties implicated, perhaps ruinous arrangement, should be tolerated?

But we may be told in reply, that no candidate for medical practice, who chooses to exercise the art of surgery and pharmacy with that of medicine, need appear before the London senate. What! was it only for the making of physicians, or, in other words, for qualifying medical men to exercise their art after having been tried by the highest possible test of examination, that the London senate has been chartered? If so, then the other three chartered medical bodies ought not to step in afterwards, and presume to test further the qualifications of such medical practitioners. As examining bodies, therefore, the corporations would be extinguished; and thus we come again to the same conclusions for which we contended in framing our scheme of medical reformation.

But that reformation—observe some over-nice and scrupulous members of the profession on the part of the chartered bodies,—should come from themselves. Their own conviction of the false position in which they stand, and not the pressure from without, nor the hostile and confederated acts of any set of medical men, should induce those bodies to adopt reform. Let us hear what the author of the History of Scotland—(a work which displays more knowledge of mankind, and more sublime yet unaffected eloquence, than is to be met with in any equally modern historian)—let us hear what that author says on the subject of self-reform. Methinks we shall not be tempted to trust to *such* an act for the accomplishment of our wishes, after perusing the following beautiful passage.

"To abandon usurped power," observes Dr. Robertson, "to renounce lucrative errors, are sacrifices

which the virtue of individuals has, on some occasions, offered to truth ; but from *any* society of men no such effort can be expected. The corruptions of society, recommended by common utility and justified by universal practice, are viewed by its members without shame or horror ; and reformation never proceeds from themselves, but is always forced upon them by some foreign hand."

GENTLEMEN,

The times are propitious ! Many are the circumstances around us, which seem to invite us to urge onwards the great cause. Even the most bigoted begin to see the necessity of some change ; and many men who have seats in parliament, however devoted on principle to ancient and existing forms, are beginning to admit the probable usefulness of such a change : for it is to their interest, and that of their families, that it should take place. Even the managers themselves of the objectionable incorporated bodies, seeing the inevitable approach of the hour of redress, make a show of introducing wholesome alterations in their institutions ; that when the day of reckoning comes, they also may appear to have been busy in the general cause. Thus foes as well as friends conspire to render that cause successful.

A bill or bills, based on the great leading principles enumerated in this division of my oration—sanctioned by the Legislature, and enacted without any retrospective view as to the medical men of various denominations who are in actual practice at this moment, but immediate in their effect as concerns the establishment of one uniform and the highest medical

qualification, and the centralisation of medical government—are the means which alone can secure the boon, to promote which, this Association has been principally, I may say *specially*, instituted; and to that point should our whole efforts now be directed.

The encouraging words of Her Majesty's Minister for the Home Department,—whose demeanour and courteous address to the deputation sent to his Lordship by this Association made a lasting and a deep impression on my mind, ought to be a stimulus to our exertions; and if by agitating the question, with *firmness* yet with *fairness*, for one, two, or three years, we succeed not in our object,—why then let us agitate a fourth, a fifth, and a sixth year; and the mighty boon will assuredly come at last.

Let us stand at the helm until the great bark has reached its port in safety.

"Una navis est jam bonorum omnium, quam quidem nos damus operam ut rectam teneamus—utinam prospero cursu! Sed quicunque venti erunt, ARS NOSTRA non aberit."—*Cic. ad Famil. Ep.* 25, *lib.* xii.

THE END.

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THE PRINCIPAL OBJECTS FOR WHICH

The British Medical Association

WAS FOUNDED IN 1836-7,

ARE:—

To obtain a national system of medical government; to procure wholesome changes in the constitution of the medical corporations or colleges; to press for the adoption of a higher and uniform standard of medical education; to insist upon an equal enjoyment of professional rights and privileges, and an equal protection from the laws; to remove and oppose all professional grievances, and all abuses in medical affairs; to uphold the dignity and respectability of the medical profession; to form a *Benevolent* Fund for distressed brethren, their widows and orphans; AND to promote union and good fellowship among all professional brethren, by inculcating kind, friendly, and honourable feelings towards each other.

BRANCH PROVINCIAL ASSOCIATIONS

Have been formed, and are in progress, to aid in the above praiseworthy objects.

The principal By-laws of the Association are these:—

1. All legally qualified practitioners in the medical art are eligible to be members, and are entitled to be elected on proving to the Secretary, by letter or otherwise, that they have a legal claim to the title they assume.

2. The election takes place at all the meetings of the Council and of the Association; and the names of the elected are immediately registered.

3. A member pays ONE GUINEA on his admission, and every year after, as long as he continues a member; or he may compound at once by the payment of TEN guineas.

4. A third part of all subscriptions is set apart to form a Benevolent Fund.

5. The Association meets, generally, twice a year; and the Council on each Tuesday of the second and fourth week in every month, at seven P.M. The meeting of the second Tuesday is open to all the members at nine o'clock, to bring forward any business they may have to propose.

6. The second general meeting of the Association in the year is the anniversary of the Society, at which the Council are bound to report their proceedings to the body at large, and an Annual Oration is delivered. This meeting takes place on the 30th of September.

7. All meetings of the Association and Council, except the anniversary meeting, are held at Exeter Hall, where communications to the Society may be addressed to

C. H. ROGERS HARRISON,
Joint Honorary Secretary.

D. Sutherland

10

With Sir John Halls Compliments

SIR JOHN HALL'S REJOINDER

TO

DR. SUTHERLAND'S REPLY

TO HIS

OBSERVATIONS

ON

THE REPORT OF THE SANITARY COMMISSIONERS,

AT

THE SEAT OF WAR IN THE EAST,

IN

1855 AND 1856.

LONDON:

PRINTED AND PUBLISHED BY

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1858.

REJOINDER.

It is neither my wish, nor my intention to enter at length into the Reply which Dr. Sutherland has made to my remarks on the Report of the Sanitary Commissioners in the Crimea; but, as some of his observations, if allowed to remain unexplained, would give an erroneous impression to the reader, I feel called on to advert to them, and in doing so, as the Doctor has disclaimed all idea of personality, I beg he will receive what I am about to say with the same feeling of charity that his own remarks were written in.

No one, I believe, undervalues the importance of sanitary arrangements either on service in the field, or in the fixed abodes of man; and few, I think, would deny the advantage of admitting a course of instruction on public health into the curriculum of education of all medical men, whether civil or military. But if Dr. Sutherland means it to be inferred, from what he states, that knowledge of this kind is confined to a few individuals, the profession at large, I imagine, would demur to such a doctrine, for no one can study the medical profession properly without becoming acquainted with the laws of health, as well as of disease; and the technicalities of what is termed sanitary science may be easily and readily obtained from the epitomised editions of the Health of Towns Report, and the suggestions arising therefrom, which individuals have favoured the world with in popular forms. It was to these I referred in my observations, and I am sorry they do not meet with the Doctor's approbation, which I thought they would have done, considering the apparently extensive use he has made of them, and of the writings of military authors, in his sanitary recommendations.

So much importance do I attach to sanitary instruction, that I would not only admit it into the curriculum of medical education, but I would make it obligatory on all staff officers of the army to attend a course of such lectures; and, I think, a plain code of instructions for the management of health might be drawn up with advantage for the guidance of the private soldiers, as, I understand, is the practice in some of the continental armies.

These instructions should be read and explained to the men by their officers, or, what would, perhaps, answer as well or better, they might be printed in their small account books for easy reference.

This discussion, however, is not of any importance. The main question, and the one which interests the British public, is whether the labours of Dr. Sutherland, and the other highly paid Sanitary Commissioners, with their expensive train of inspectors and scavengers, who were sent out to the East in 1855, were essentially necessary to the welfare of the army in the Crimea, and whether the sickness and mortality of the troops there were in any appreciable degree affected by their labours. I say no, and in this opinion I think I shall be joined by most men who served there.

The Commissioners arrived at Balaklava at the end of March 1855, when the difficulties the army had laboured under during the winter were being rapidly surmounted, and when health was returning to its ranks with the genial weather of spring; and, in my opinion, the result would have been equally favourable had they never set foot there. Their labours were confined principally to Balaklava; and with plenty of time on their hands, and means placed at their disposal, it was not not very difficult for them to give a creditable detail in their Report of so many basket or hand-barrowfuls of dirt taken from one place and thrown into another, of so many stercoraceous deposits scented out on the hill sides, behind old walls and buildings, and in the neighbouring ravines, and of so many paunches of animals fished out of the harbour and disposed of. In fact, when the Commissioner mounts his sewage cheval he rides full tilt, and won't even look at the humble labours of his neighbours.

Dr. Sutherland, in his reply to my observations, is cynical about my recorded sanitary labours; but I beg to remind him that many suggestions are made by the principal medical officer of an army on service in the field to the general in command, which are never committed to writing, and he forgets that the daily detail of management and supply of all the hospitals in the Crimea, which at one time amounted to nearly 100, had to be attended to by me. This duty occupied much of my time, and was a constant source of toil and anxiety to me; and if he will permit me I will contrast it with his more agreeable position, as detailed in the following extract from a letter, written by a gentleman who was intimately associated with him for some time after his arrival in Balaklava:—"I look on Dr. Sutherland and the Commission as the same body virtually. Having messed and

associated with that individual for some weeks on his first arrival in the Crimea, I am enabled to give some of his impressions with respect to the sanitary state of our army. I judge from what dropped from his own lips, in conversation with myself and others. When well, he was talkative and communicative, with a disposition to look upon matters in rather an exaggerated and sentimental light. He was so engaged in writing in his cabin on board the 'Walmer Castle' when the cholera broke out and gave just cause for alarm, that even the captain and officers of the ship exclaimed—'Of what use is this man?'

"The weather was fine in April, when I and others used to take our evening walk to Kadekoi, and stroll over the ground where Dr. Sutherland says that he saw human bodies buried almost in water, and so sparingly covered with earth that even their remains protruded through the surface. This statement I condemn as a —— ——, and an insult to our common sense feeling of decency, and I cannot conceive how Dr. Sutherland could dare to publish it in his Report."

Dr. Sutherland, at page 31 of his reply, states that the Sanitary Report does not say anything about the burial of the dead from the hospitals in the British burial-ground at the head of Balaklava harbour; but as that was the burial-ground of all who died in hospital there during part of the winter of 1854-5, if the Report does not allude to them, to whom does it allude?

Again, at page 22, he says, "The Military Board of Health alludes to the unhealthy condition of the Turkish burial-ground above the head of the harbour, but does not mention the far worse condition of the British burial-ground."

The Military Board of Health did not advert to the British burial-ground in their Report, as they, like many thousand others who passed along the road close to it daily, failed to discover what Dr. Sutherland has described in his Report; and, I think, few men would have hazarded so bold an assertion as that given at the close of the above sentence. The Turkish burial-ground at the head of the harbour had been the subject of a special inquiry on account of its offensive condition, arising from the number of bodies deposited in it, and the superficial manner in which they were buried, and it was ordered to be closed, and the graves covered over with additional earth mixed with quick lime, which was carried into effect before the arrival of the Sanitary Commissioners, though I see they take credit for doing something of the same kind, without making any allusion to the previous labours of the military authorities. It is but fair to assume, had the British burial-ground been in the condition described by

Dr. Sutherland, it must have attracted the attention of either the Board of Mixed Officers appointed to inquire into the condition of the Turkish graveyard, which was not more than 150 yards from it, or the Special Military Medical Board of Health, as neither of them had any object to attain by concealing the circumstance, if the graveyard were in the state described by Dr. Sutherland.

This graveyard, which is put so prominently forward in Dr. Sutherland's Report and Reply, was a slip of ground by the road side at the head of the harbour, distant, I should say at a guess, about 250 yards from the general hospital. It was of small extent, and was only used during part of the winter, as the dead were buried at the foot of the vineyard, in front of the general hospital, when the army first took possession of Balaklava; and early in the spring of 1855, they were taken to a new burial-ground, about a quarter of a mile beyond the village of Kadekoi.

The piece of ground at the head of Balaklava harbour, in part of which the dead from the hospital were buried, and on which the Sanitary Commissioners expended so much of their labour, did not measure more than about 100 yards from the water of the harbour to the bridge over the small brook up the valley, and about as many from the road on the eastern side of the valley to where the brook discharged itself into the harbour originally, but a more direct course was cut for it afterwards to drain the valley of Balaklava. This piece of ground, which formed a truncated cone, was miry for some distance from the water of the harbour, and required an immense amount of labour and material to render it fit to erect wharves and storehouses on, which was eventually done, and they were of great convenience to the commerce of the port, but of insignificant importance to the health of Balaklava. The main trunk drain originally recommended by me—recommended again by the Military Board of Health, and finally cut the whole length of the valley to Kadekoi, was a measure of greater sanitary importance to the neighbouring camps than the petty sewage of the small village of Balaklava, to which the commissioners devoted so much of their time and attention, and from which Dr. Sutherland draws such exaggerated and erroneous conclusions, as I shall make manifest by and by.

BALAKLAVA,

which has been raised to the dignity of a small town by the Sanitary Commissioners, is a mere fishing village, the male inhabitants of which fled on its being taken possession of by the English, and the women and children were removed shortly after-

wards, by order of the Commander-in-Chief. Balaklava had the defects of all Eastern villages; and during the wet weather of the winter of 1854-5, the main street and quay, which were unpaved, became, from the constant traffic of men and animals, almost impassable.

Dr. Sutherland says, a sanitory police should have been established for the health of the troops in occupation, immediately the *town* was taken possession of. Now, as there were no troops in occupation of the place in the first instance, beyond a few invalids encamped near the general hospital, and as not a single soldier could be spared from his immediate and proper duty in front, and there were no civil inhabitants in the place, I should like to ask him how he would have managed to carry the measure out had he been there? I admit the advantage of a sanitary police in towns, but there was no means of carrying it into effect at Balaklava during the winter of 1854-5. It is true I might have made a written representation to the Commander-in-Chief, and put on record, as the term then was, my opinion on the subject; but knowing Lord Raglan's disposition to do all in his power for the good of the soldiers under his command, and knowing his inability to spare a single man at the time, I did not think it right to embarrass him by doing so.

In November, the sick of the Turkish army took possession of a number of houses in the village, and an effort was made to obtain Turkish soldiers for the sanitary affairs of Balaklava, and some were granted in November by the Pasha in command of the nearest Turkish camp; but the men were disgusted with the employment, and the prejudices of their faith rendered it still more irksome to them under Christian command, so that little good was effected by the measure. Any one who has ever served with an allied army, where the supreme command is not vested in one person, will readily understand the difficulty that was experienced in dealing with that part of the village which was occupied by the Turks; but after the arrival of the 71st Regiment, in Dec. 1854, some progress was made in repairing the streets and quay, but it was slow work, as the men had neither hand-carts nor barrows, and they were compelled to carry the stones in their hands. Fortunately, the cold of winter prevented any injurious effects from the filthy state of Balaklava; and when the Turkish sick were removed out of the place, immediate steps were taken to purify the houses they had occupied by lime-washing. About this time the railway navvies began to pull down houses to form the line of rail which ran through two-thirds of the village, and when the Sanitary Commissioners arrived at Balaklava at the end

of March 1855, these operations were in progress. The streets and quays were being repaired by the debris of the houses pulled down by the railway navvies, and Lieut.-Colonel Hardinge, the active and intelligent commandant of the place, was using energetic means to remove the accumulated dirt, not of six months, as stated by Dr. Sutherland, but of years, and in due course of time it would have been accomplished, and wharves would have been built, and other improvements carried out if the Commissioners had never arrived.

Dr. Sutherland himself must have been impressed with this idea, for when applied to in his capacity of Sanitary Commissioner about an accumulation of dirt near some huts that were occupied by native drivers and railway navvies, he referred the applicant to the commandant, observing, to the amazement of several persons who were present, that he had nothing whatever to do with the removal of nuisances. At a subsequent period the commandant, I was told, had even to remonstrate with the Sanitary Commissioners concerning the filth which had been allowed to accumulate in the immediate neighbourhood of their own dwelling.

At page 28, in his reply, Dr. Sutherland states, "That the bad sanitary condition of the town and harbour of Balaklava and their vicinity, was the cause of much sickness in the town, on board ship, and in the neighbouring camps." This is a broad assertion of the doctor's, which is unsupported by experience, for it is well known that the troops encamped around Balaklava were infinitely healthier than those in front during the whole of the winter and spring of 1854-5, and at that period the place was certainly in its worst sanitary condition, so far as mud and other impurities were concerned, but the cold of winter rendered them in a great measure innocuous, so that the statement may be taken as a mere assumption on the part of Dr. Sutherland; and to prove that privation, exposure to inclement weather, and excessive duty, were the main causes of disease in the British army, one need only contrast a division encamped in front with one encamped in the immediate vicinity of Balaklava during the winter of 1854-5. Or what would be still more to the point, the 71st Regiment might be taken as an example, the reserve battalion of which, 417 strong, arrived from England at Balaklava about the middle of December 1854, and was landed and encamped at the head of the harbour for nine or ten days, when it was brought into the village, and quartered in houses and tents near the general hospital. In February, the 1st battalion, 473 strong, joined at Balaklava from Corfu, and the whole regiment was hutted in a

ravine above 250 yards above the head of the harbour, leading to the eastern heights of Balaklava, and remained there until the month of May, when it embarked with the expedition for Kertch. During the months of December 1854, and January 1855, only two deaths are returned in the regimental monthly sick returns, and as these were both from cholera, I apprehend their sick must have been treated and accounted for in the general hospital at Balaklava.

In February 1855, when their own regimental hospital was established, the surgeon returns 87 admissions and 5 deaths, out of a strength of 890 men; in March, 143 admissions and 5 deaths; and in April, 101 admissions and 4 deaths. In May the regiment embarked for Kertch.

The improvement in health of the brigade of Guards, which was brought down from the plateau in front of Sebastopol to the western heights of Balaklava, towards the end of February 1855, was very marked indeed; but as the health of the whole army was at that time beginning to improve, the same importance cannot be attached to this instance as to the cases of the regiments that were encamped near Balaklava during the whole winter; and I will merely give as an example the admissions and deaths in the Guards during January 1855, the month before they came down to Balaklava from the plateau in front of Sebastopol, and during the month of March, the month after their arrival on the western heights of Balaklava.

			Strength.	Admissions.	Deaths.
On Plateau before Sebastopol.	January, 1855,	Grenadier Guards .	415	268	26
	„	Coldstream Guards	429	182	35
	„	Fusilier Guards .	530	169	34
			1374	619	95

Being a ratio of Admissions to strength per month of 45·05 per cent.
And of Deaths to strength „ 6·91 per cent.

On Western Heights of Balaklava.	March, 1855,	Grenadier Guards .	325	68	0
	„	Coldstream Guards	326	101	10
	„	Fusilier Guards . .	725	106	2
			1376	275	12

Being a ratio of Admissions to strength per month of 19·98 per cent.
And of Deaths to strength „ 0·08 per cent.

The sickness and mortality in the Coldstream Guards were increased during the month of March by their occupation of some huts at the head of the harbour, near the Turkish burial-ground, which had been objected to by me, and there some cases of spotted

typhus fever occurred amongst the men before they were removed to the heights above.

The health of a wing of the 2nd battalion Rifle Brigade, which was quartered on the eastern heights of Balaklava during the winter, was comparatively good, while the other wing, which was stationed on the plateau in front of Sebastopol, suffered severely. The wing above Balaklava, which was 321 strong, lost only two men by disease during the quarter ending 31st March, 1855. One, a case of dysentery, and the other a case of apoplexy.

The light division, (which was encamped on the plateau in front of Sebastopol, had a fair share of the toil and privation which the army underwent during the winter of 1854-5, and was not more unhealthy than its neighbours,) may be contrasted with the cavalry division which was encamped in the Kadekoi valley, and two troops of horse artillery, one of which was encamped with the cavalry division in the Kadekoi valley, and the other close to Balaklava.

In the month of December, the cavalry division, consisting of the 4th and 5th Dragoon Guards, 1st, 2nd, and 6th Dragoons, 4th and 13th Light Dragoons, 8th and 11th Hussars, and 17th Lancers and C and I troops of Horse Artillery,

Out of a strength of		2586	Admitted	750	and Lost	16	by Death.
1855	January	2434	„	537	„	16	„
„	February	2328	„	330	„	20	„
„	March	2268	„	274	„	11	„
		9616		1891		63	

which gives a ratio of 78.66 per cent. of admissions to mean strength, and of 2.62 per cent. of deaths to mean strength, during the four months; but it must be borne in mind that these regimental returns merely embrace the medical transactions in the Crimea, and do not include the deaths in general hospital at Scutari. The same rule applies to the following statement, regarding the light division for the same period.

Regiments:—7th Fusiliers; 19th Regiment; 23rd Fusiliers; 33rd Foot; 34th Foot; 77th Foot; 88th Foot; 90th Foot; left wing 2nd Battalion Rifle Brigade; and, in February and March, the 97th Foot.

December, 1854	Strength	5090	Admitted	1663	Died 258
January, 1855	„	5061	„	1742	„ 305
February, „	„	5337	„	1327	„ 182
March, „	„	5391	„	851	„ 97
		20879		5583	842

which gives a ratio of 106.95 per cent. of admissions to the mean strength, and of 16·13 per cent. of deaths to mean strength.

I have entered more at length into this subject than may be deemed necessary by some; but I was anxious to show that dirty as Balaklava was, it was not, even during the very worst period of its wretchedness, the focus of disease that has been represented by Dr. Sutherland in his Report and Reply. Nor can I believe he could ever have seriously thought it was so, or he would never have permitted the Army Works Corps to place one of their hutted encampments in the bed of the Balaklava valley, not more than 200 or 250 yards from the head of the harbour, and close to the Turkish and British burial-grounds, which have been so graphically described by him. It was not only near to these two burial-grounds, but close to, if not partly on, the burial-ground which was used by the Turks for a time after that at the head of the harbour had been closed in consequence of the Report of the Mixed Board which was assembled to take its condition into consideration. The encampment of the Army Works Corps was, in my opinion, placed in about as objectionable a site as it was possible to select; and I remember recommending the medical officer in charge to protest against its continuance. The medical officers of the Army Works Corps were not placed under my direction, nor did they report to me for the Commander-in-Chief's information, until March 1856, and beyond supplying their wants from the general medical stores of the army, I had no control over them; but on one occasion I recollect the medical officer in charge of the encampment complaining to me of the amount of sickness in the division, and my remarking I was not surprised at it from the site of their camp, which was in every way objectionable, and he ought to protest against it.

Now, it may be fairly asked, what could the Sanitary Commissioner have been thinking of to permit such a contradiction to his own expressed opinion to be carried out under his very eyes? I challenge him to produce anything more at variance with the laws of sanitary science in the whole army arrangements than this was; and in this case there was not even the plea of necessity to be advanced, as the Army Works Corps were not, like the army, compelled to be placed wherever military reasons required them.

At page 24 of his Reply, Dr. Sutherland says, "The country occupied by the allied forces at the commencement of the siege operations had been several times described by travellers and residents as peculiarly unhealthy, and their descriptions would certainly have led civilians to have adopted more than ordinary sanitary precautions in such a country."

This sentence must have been written for mere effect, as Dr. Sutherland cannot surely mean seriously to assert, that the ground occupied by the allied army before Sebastopol was peculiarly unhealthy. He knows, or ought to know, perfectly well that it was not so; and lamentable as the condition of the British army encamped there was in the winter of 1854-5, it was not owing to locality, or want of ordinary camp sanitary arrangements, which were enjoined by General Order, and in force when the army took post there, but to the depressing effects of constant exposure to wet, inclement weather, want of proper clothing, fuel, and shelter, and excessive duty, and insufficient means of cooking the rations which were issued to the men. These were the true sources of disease in the British army in the Crimea, and they were pointed out by me to Lord Raglan as early as November 1854, in as forcible language as I could use. I not only pointed them out, but I ventured to predict the result that would probably ensue if immediate measures were not taken to remedy them. I received for answer, through the Adjutant-General, "that Lord Raglan was as well aware of the condition of the army as I was," and General Estcourt added, "there are only two courses open to us in our present position, either to abandon the siege altogether for a time, or to conduct it with a certain loss of human life until the defects you mention are removed." During the hardships of the winter of 1854-5, when it was a bare struggle for existence with every one, ordinary camp regulations were to a certain extent overlooked in the general misery, and perhaps this was a circumstance of little importance so long as the country remained locked up in frost and snow; but immediately there was an appearance of open weather, I deemed it expedient to call attention to the necessary sanitary rules in camp, which were in abeyance, and the letter of the 24th January, 1855, to the Adjutant-General, at which Dr. Sutherland sneers, was written.

The doctor says, that as the country had been described by travellers and residents, as peculiarly unhealthy, more than ordinary precautions should have been taken. I admit this, if it had been found to be so on our arrival, but such was not the case. I had no means of access to the works of travellers. I was not certain the army was going to the Crimea until near the period of its embarkation, and I had no time to spare from important daily pressing duties, to draw up theoretical instructions to meet imaginary contingencies; but I did what was a better thing, I placed at the disposal of the medical officers of the army the following works, which had been considerately sent out for their instruction by the Director-General of the Army Medical

Department, and I informed them by a department circular memorandum, in November 1854, that any officer who chose to apply at the medical store, would be supplied with a copy of any one, or all of them :—

"On Premonitory Diarrhœa in Cholera, by Dr. M'Lauglin."
"On the Diseases in Turkey, in reference to European Troops, by Dr. Shulkof."
"On the Personnel and Materiél for an Army of 30,000 men sent out to Turkey."
"On some Specialities in the Remittent Fever of the Levant, by Dr. Bryce."
"On the Prophylactic Influence of Quinine, by Dr. Byrson and Mr. Drummond."

It must be borne in mind, when the army landed in the Crimea, it was generally believed that an attempt would be made to carry Sebastopol by a *coup de main ;* and when it broke ground before the place, no one supposed the town would hold out more than a week, and until after the battle of Inkerman, on the 5th of November, few had any idea the army would have to winter on the plateau in front of Sebastopol. It was certainly very inadequately provided for such an undertaking; even the elements warred against the enterprise, and the result was very disastrous. I was absent from the Crimea from the 1st to the 23rd of October, 1854, but Dr. Dumbruck, an active, intelligent, and very energetic officer, who officiated as principal medical officer in my absence, did all in his power to further the sanitary concerns of the army; but the power of military medical officers in such matters, as is well known, is limited to suggestions and recommendations. They are not accompanied by engineers, inspectors of nuisances, and scavengers, as Dr. Sutherland was, or they would in all probability have effected as much as he did, had they been invested with the same power; but even he, I suspect, would have accomplished little, had he arrived in the first bustle of disembarkation and military preparation, when every man in the army was fully occupied with his own duties, and civilians could not be obtained for either love or money; indeed, judging from what I saw of Dr. Sutherland in comparatively quiet times, I think he would have been as helpless as any man breathing under such circumstances.

At page 21, Dr. Sutherland says, "The next sanitary proceeding was in some respects a remarkable one, both as regards the time when it took place, and the result of it. The commission of Sir John M'Neill and Colonel Tulloch, with the Sanitary

Commissioners, arrived at Constantinople on board the French mail packet, on 6th of March, 1855, and on the 8th Dr. Hall recommended Lord Raglan to appoint a Board of Health, to consider the sanitary state of the army." The inference here implied I do not object to. It is a legitimate deduction from what was stated in my observations, but it is not correct for all that. Sanitary matters had, long previous to the appointment of that board, been the subject of official correspondence with the Director-General of the Army Medical Department, and of consultation and correspondence with the military authorities on the spot, as far back as August 1854. It was in consequence of the conflicting opinions of medical officers, elicited in collecting material to enable me to furnish the statement Dr. Smith requested in January 1855, that I came to the conclusion, the general and uniform sanitary arrangements of the army would be most effectually secured by a board of superior medical officers assembled by order of the Commander-in-Chief, the proceedings of which, if approved by him, would have the support of his authority. Under this impression, my letter of the 8th of March, 1855, was written; but at that time I was not aware of the arrival of the Sanitary Commissioners at Constantinople on the 6th of the month, nor indeed, do I even think that I had then heard of their appointment, so that their arrival at a distant port could not possibly have influenced my application to the Commander-in-Chief. In my observations at page 52, there is an error in the date of the arrival of the Sanitary Commissioners at Scutari, which I beg to correct; it ought to have been the 6th of March, 1855, instead of the 26th, as printed in the observations.

At page 18, in his Reply, Dr. Sutherland makes a greater mistake than this, about the period of signing the armistice with Russia, and in his anxiety to convict me of error, he departs from his usual courteous and guarded style of writing, and indulges in stronger expressions than the case exactly merits. I stated in my observations, "that it appeared the privies themselves at Scutari were left in their original state, until March and April 1856, when, after the armistice with Russia had been signed, and it was known to all the world that peace would be proclaimed, they were fitted with patent water-closets, which was a wanton waste of public money." Dr. Sutherland says, this is "simply contrary to fact." "The original state of the drainage was improved twelve months before, by temporary means well known to sanitary engineers, and the first soil-pans were put up in February 1856, while the real fact being, that the armistice was agreed to in the middle of March." Unfortunately for the

doctor's *real fact*, the armistice was agreed to early in February 1856, and was officially notified to the army in the Crimea on the 28th of that month. My observations had reference solely to the privies within the hospitals, and not to the hogsheads placed outside the walls of the building for flushing the drains, and it scarcely merited the harsh term applied to it, as I meant one thing and Dr. Sutherland another. With regard to the patent water-closets, I admit having overlooked the following observation in Mr. Unsworth's Journal, of work performed at Scutari, during the month of February 1856. "Some of the private quarters, at the barrack hospital, were provided with soil-pans and flushing cisterns, and *six* soil-pans were also fixed at the south-west angle of the barrack hospital, with a supply of water from the Turkish cistern." These, though overlooked by me, were not put up until after the armistice had been agreed to, on the 1st of February.

In his Journal for March 1856, Mr. Unsworth says, "At the barrack hospital thirty-six soil-pans with new seat boards, and six urinals, were put up in the north-east angle of the building; down pipes and stench traps being also provided."

In the month of April 1856, when peace had actually been proclaimed, Mr. Unsworth continues:—"During the month of April, the greater part of the labour at the disposal of the Sanitary Commission was employed *in replacing the Turkish privies* at the barrack hospital with soil-pans, with the requisite fittings, and connections to afford them a good and plentiful snpply of water." If this, considering that active measures were then being taken to remove the sick from the hospital as speedily as possible, without any chance of their being replaced by others from the Crimea, does not prove a useless and extravagant waste of public money, I have nothing further to say.

At pages 25 and 26, in his Reply, Dr. Sutherland says the Commissioners recommended "surface draining of the ground around huts, ridge pole ventilation, and lime-washing all huts externally to keep them cool." "The plan proposed for ventilating huts by louvered turrets, which was well carried out by Dr. Alexander in some hospitals iu the light division, we have described and figured in our Report as the best method we found in use, although we recommended ventilation by raising the ridge boards of the huts instead, as being simpler."

The drainage of huts and tents had been adopted from the commencement of the campaign, and the temporary expedient of piling stones or earth against the huts when they were first erected, was to prevent them from being blown over by the wind, and

perhaps more importance has been attached by the Commissioners to this plan than it merits, for the interior of the huts was influenced more by the surface drainage, than by this expedient, which was continued to the very last without much detriment to the men's health. This plan of external protection to the huts was not only continued, but during the winter of 1855-6 it was much extended, and many huts were cased with rough masonry up to their very eaves, to the comfort, not detriment, of their inmates.

The plan of lime-washing the huts, recommended by the Sanitary Commissioners, was mischievous in its results, as it destroyed the texture of the felt covering, and rendered them leaky. Having this probable result in view, and conceiving that the temperature of the huts depended as much on the free circulation of air through them as on the colour of their roofs, I made that objection to the Commissioners' plan, when it was submitted for my opinion by the Quarter-Master-General.

The louvre turreted plan of ventilation, which was carried out in the light division by Mr. Alexander, and figured in the Commissioners' Report, was recommended by the Military Board of Health, and the ridge board plan, which Dr. Sutherland says the Commissioners recommended to be adopted, was also actually in use on their arrival in the Crimea; and Dr. Jephson, surgeon at present of the 1st King's Dragoon Guards, who suggested it from what he had seen at one of the hill stations in India, will be astonished at the doctor's assumption of credit for a recommendation that is due to himself. It is the more surprising that Dr. Sutherland should have overlooked this mode of hut ventilation, as it was adopted first at the castle hospital, Balaklava, where he had many opportunities of seeing it.

At page 32, in his Reply, Dr. Sutherland says, "The Commissioners are called to account for making certain supposititious statements, in regard to the general hospital in camp, which they are not aware exists in their Report. The condition of the ground and of the huts at the date when the inspection was made, was such as they have described."

This may be true, but the Commissioners must have selected the period when the huts, which composed the general hospital, were in a transition state from barrack to hospital use, and they must have wilfully shut their eyes to their improved condition, whenever they passed them afterwards. Their Report was not published until the spring of 1857, two years after the event described; and although the statement served well enough to make a point in it, it was neither just nor generous to resort to such an expedient, to the prejudice of their professional brethren in the

army; but as they have spoken of the undrained and imperfectly ventilated condition of these huts, we will see what the opinion of the civil surgeons employed in the general hospital was. These gentlemen are all eminent in their profession, they are men of high honour, and have no interest in the question beyond the cause of truth, and they write as follows to Mr. Mouat, who was the principal medical officer of the establishment. Civil surgeon Dr. Macleod says:—"As to the question of ventilation, I may remark, that if by good ventilation is meant a free supply of air, then the arrangement at the general hospital could not be complained of, as though the urgency of the service often forced us to admit into our wards many more patients than any of us would have countenanced, except as a matter of necessity, still by means of the apertures cut in the walls, and the numerous holes and crannies which existed between the planks, together with the high position of the hospital, a deficiency of air was not felt."

Dr. Lyons, pathologist to the army in the East, says, "In reply to your letter of the 11th June, 1857, asking my opinion respecting the condition of the hospital huts of the general hospital in camp before Sebastopol, as to ventilation, I do not know whether I could add anything to what I have already stated in my Report to Lord Panmure (at p. 101). Having had opportunities of observing the arrangements of this hospital after the affairs of the 7th and 18th of June, 8th of September, 15th of November, and all intermediate periods, I cannot conceive that *want of ventilation* should be at all urged as a charge against the huts in question. The fragility of their construction rendered them almost self-ventilating; and independently of this, I am aware that particular attention was directed by you, and all the medical officers of the hospital, to the establishment of free ventilation, by the removal of plankings here and there, and the construction of valvular flaps. By these, and similar means, much was done towards mitigating the effects of the excessive temperature of the hot summer months of the Crimea. I have already borne my testimony officially to the great success attending the treatment of the wounded in the English hospitals, and the absence of gangrene in any epidemic form." Mr. Rooke, civil surgeon, says, "I have great pleasure in answering your questions concerning the efficiency of the general hospital in camp in the Crimea, of which you were principal medical officer. As I was appointed one of the surgeons of your medical staff before any patient had been received into the hospital, and having remained on duty until it was broken up, a period of more than twelve months, I may, without presumption, say that I had the

best opportunity of judging of the arrangements you made for the reception of the wounded,—the measures you adopted for the proper ventilation of the hospital huts, and of the unwearied zeal you daily evinced for the well-doing of the patients. I can bear my testimony to the healthy state, and efficient arrangements of the hospital with the greater pleasure, that being now unconnected with the military medical service, it cannot be supposed that any approbation I may express, is given in order to stand well with the powers that be. I can truly state that you availed yourself of every means in your power to make the huts as suitable as such buildings could be for the reception of the wounded. That the ventilation of the huts was not deficient, is sufficiently proved by the almost total absence of erysipelas in the hospital. After the affair of the 18th of June, I had a larger number of wounded under my care, than any other medical officer. Those whose wounds were not fatal, mostly remained until they were convalescent, a period of several weeks. I had not a single case of erysipelas attacking a wound, or following an operation, nor after the attack of the 8th of September, although my patients were as numerous as those of the other medical officers. The circulation of air through the huts was constant. I never found my wards close or disagreeable, even when all the beds were full." Such is the honourable testimony borne by these gentlemen to the condition of the general hospital in camp, and it may be well contrasted with the Sanitary Commissioners' paltry subterfuge to throw discredit on the medical department of the army. But it is in keeping with the tenor of both his Report and Reply, which are written with a species of special pleading cunning, which is intended to damn by implication, rather than by direct open manly accusation. It was not creditable for the Commissioner to creep into men's confidence, by professions of friendship and approbation, and then to throw them aside when it suited his purpose to do so.

At page 32 of his Reply, Dr. Sutherland says, I have made an unfounded statement about the two letters he wrote to me on the 16th May, 1855, concerning the removal of the Buffs, 48th and 71st Regiments, to new encamping ground, and the early treatment of the diarrhœal stage of cholera. I do not exactly know what he means by using such a term, as I merely stated his letter of the 16th May, 1855, recommending measures that he saw being carried out on the 14th, could only have been written *pro forma*, so far as the removal of the camps was concerned; and as I had mentioned to him the precautions I had recommended on the 30th April, 1855, to be observed by medical officers for

the detection and treatment of cholera in its diarrhœal stage, his second letter, and the only one to which he alludes in his reply, appeared to me to be equally written *pro forma*, as the measures he recommended were inapplicable to the circumstances of the case. At page 35, Dr. Sutherland insinuates that he had been misinformed by me regarding the measures directed to be taken for the detection of cholera amongst the men. I may therefore be permitted to quote part of a Medical Department Order, which I issued on the 22nd July, 1854, when cholera first broke out in Bulgaria. The first portion of the order relates to the distribution and use of cholera belts, which it is not of importance to insert here; but the part which I wish to quote is as follows, and was addressed to the principal medical officers of divisions:—"I beg you will be careful that medical officers of corps, now that cholera unhappily prevails, *make diligent inquiry daily* about the health of the men, and endeavour to impress on them the importance of immediately reporting any looseness of their bowels, and applying for appropriate remedies for checking it." Again, on the 30th April, 1855, when cholera re-appeared in the Crimea, the following circular memorandum was issued by me to all superintending medical officers:—"As cases of spasmodic cholera have occurred in different quarters within the last week or ten days, Dr. Hall requests superintending medical officers will call the attention of regimental medical officers to the subject in a manner not to create alarm, but sufficiently explicit to put them on their guard. It is of the utmost importance not to allow the first, or diarrhœal, stage to pass over without treatment, for if collapse once set in the result is doubtful, whereas in the diarrhœal stage it is for the most part amenable to medical treatment."

There was no reluctance on the part of the men to report their ailments, and the plan, without creating unnecessary alarm, was found to work well,—better, certainly, than that of frequent additional parades for inspection, recommended, I dare say, with the best intention by Dr. Sutherland and others, would have done, for the doctor is mistaken if he thinks suggestions to Government on sanitary matters were confined to himself and the other Sanitary Commissioners. They were not so, and the following extract from a paper of suggestions, sent out by authority, will show that the doctor's own sewage routine is viewed in pretty much the same light that he sees the sanitary labours of the medical officers of the army:—"The public is aware that a sanitary commission has been sent out to investigate the state of the hospitals at Scutari, and to employ scavengers to cleanse the camp at the Crimea. It is not our object to criticise the appointment, but there cannot be

a doubt that in this case, '*routine*,' as in so many other cases, will be likely to mar useful results. The three commissioners have been long accustomed to one certain 'routine' of so-called sanitary operations, namely, *sewers*, *sewer-pipes*, and *sweeping*. We can scarcely expect them to travel out of what they have always practised; and if proof of this be wanted, it is to be found in the fact, that they have specially employed a staff of overseers, selected from Liverpool, who have been always accustomed to remove all nuisance from the streets, &c., by sweeping it up, and carting it away." "Any one who observes a scavenger's operations in sweeping even a paved court or lane, where filth has been thrown, will fully understand that the atmosphere has perhaps more power of producing evil *after the sweeping* than before it." This description, which is more graphic than complimentary, is shown, by their own published Report, to be substantially true of the labours of the Sanitary Commissioners at Scutari and Balaklava. The additional inspection parades, recommended by them and others for the detection of cholera, setting aside the alarm they would have created, must have been made without any consideration, or perhaps knowledge of the punishment they would have been, to men already worn down by duty. At home, in peaceable times, even one additional parade a day is considered a punishment; and I should like to know what any military man would have said to three additional parades a day in the Crimea, as was recommended by one gentleman, in a communication addressed to the Secretary of State for War. And as for Dr. Sutherland's grand scheme, which he takes so much credit to himself for suggesting, of setting men to watch the number of times soldiers obeyed the calls of nature in the open camp, or in the trenches, where about a third of them were daily employed, it is scarcely necessary to characterise it.

No army in this world was ever favoured with a greater number of suggestions from well-intentioned individuals, than the English army in the Crimea was; but, unfortunately, most of them were inapplicable to the wants of the period. For instance, one gentleman recommended vapour baths to be used in the Crimea for personal cleanliness and the destruction of vermin, at a time when there was insufficient fuel to cook the men's food with, and nothing but canvass cover to protect them from the inclement weather of the winter of 1854. Other suggestions that were made were of about the same value, in point of practical utility. And as for the remedies and specifics for cholera that were either recommended, or sent out by parties interested in their result, they were too numerous to mention, and ranged from extract of

arnica to burnt shoe leather! A munificent and kindly-intentioned gift of "Dalby's Carminative" was even included amongst the remedies forwarded for the use of Her Majesty's Army in the Crimea.

At page 35 in his Reply, Dr. Sutherland says I appear to have derived comfort from the comparison drawn between the sanitary condition of Balaklava and certain districts of London and other towns, in his letter to Lord Shaftesbury which was published in the *Times* newspaper. It was certainly a comfort to find such a candid statement, and I have no doubt the impression under which it was written was perfectly sincere, though the doctor seems now to be ashamed of it from the small portion he has quoted in his Reply. In the original, Dr. Sutherland stated for the information of his two friends, for whom he says the letter was written, "It will assist you further to estimate our sanitary condition if I compare it with things at home familiar to you. Balaklava harbour is much sweeter than the Thames, and the town is cleaner than *nine-tenths* of the lower districts of London, Manchester, or Liverpool. Liverpool dock basins smell worse every day than Balaklava did at the worst. When the town itself was held up to the reprobation of the civilized world, from its unburied carcasses and filth, it was not worse than entire villages I could name in our own country; and it was about on a par with the districts where knackers' yards, and private slaughter-houses, and unwholesome trades exist in the Borough, and where cholera was so fatal last year. I think it right to mention this comparison that the truth should be known."

"The same may be said of the sanitary condition of the camp. Putting out of sight the local malaria, the camp is in a much better state than the towns and villages at home, out of which the men have come."

Dr. Sutherland, in his Reply, confines himself to the last part of the first sentence above, which is confessedly the most unfavourable; and he adds that Balaklava, from neglect of sanitary precautions, had descended in six months to the unhealthy position that those at home had only attained after long years of neglect. Oh, Dr. Sutherland, fie! have you no shame in making such a statement?

Scutari.

At page 10, Dr. Sutherland says I ought to have stated that the cleansing and whitewashing of the barrack rooms at Scutari were written about at the request of Lord Raglan, and that there

appears to have been no sanitary advice given by any one regarding the Kulali palace, or stable hospitals.

It is necessary I should state that nearly one of the first things I did when I joined head-quarters at Varna, in June 1854, was to recommend to Lord Raglan that the upper part of the west front, and one half of the south front of the main barrack at Scutari, should be given over to the medical department, in order that the rooms might be purified and fitted up for the reception of sick. I also requested that the hospital at Abydos might be completed, and that application should be made to the Turkish Government for the remainder of the general hospital at Scutari, and for the upper wards of the military hospital at Kulali.

The barrack and riding school hospitals at Kulali were fitted up under the immediate superintendence of 1st Class Staff-Surgeon, Dr. Tice; and those of the stables and Hyder Pasha palace at Scutari, under the supervision, I believe, of the principal medical officer there.

I had no personal knowledge of these buildings, and my duties in the Crimea were so constant and laborious, that, after October 1854, I had no time to visit them; but this was the less called for, as early in 1855 they came under the supervision of an old and experienced officer of my own rank, who, I have no doubt, will be able to give explanations of many things that are stated in Dr. Sutherland's Report. After October 1854, my control over the economy of the hospitals at Scutari was merely nominal, as the principal medical officer reported direct to London; but, in my capacity of principal medical officer of the army, I was to a certain extent held responsible for their condition, and of this I have no right or wish to complain.

The conversation with Lord Raglan, quoted in my letter to Dr. Menzies of the 13th August, 1854, and referred to by Dr. Sutherland, was evidently given to add weight to my instructions; but it can hardly be adduced as a proof, nor would it be so taken by any one acquainted with the forms of official military correspondence, that the idea originated with Lord Raglan, which it certainly did not.

The subject of hospital accommodation had been matter of conversation between us on several former occasions, and when the barrack rooms at Scutari were finally given over to the medical department, he directed me to urge on Dr. Menzies the necessity of taking immediate steps to get them purified. He also instructed me to desire him to apply direct to the principal dragoman of the embassy at Constantinople, for anything he might require from the Turkish Government, in place of sending

his applications through other channels; and in the same communication I pointed out to him the portion of the barracks which I thought he ought to avoid, on account of its faulty drainage and want of repair.

At page 11, Dr. Sutherland quotes from a letter of mine to the Director-General of the Army Medical Department, under date of the 28th October, 1854, and makes me say that the hospitals at Scutari "were in a very satisfactory condition." In the copy of my letter of that date I cannot find this expression; but I see I pointed out to him the discomfort that was occasioned, on the first opening of the barrack hospital, by the non-arrival of boards and tressels, which I had ordered on the 3rd of September, 1854, to be sent down from Varna, and mentioned that 500 sets had then been received, which had enabled us to put the whole hospital establishment at Scutari "in a very creditable state," and that the sick and wounded were all doing as well as could possibly be expected. I further stated, that by the strenuous exertions and unceasing labours of 1st Class Staff-Surgeon Dr. Menzies, and the medical officers under him, our difficulties had, in a great measure, been surmounted, and in a short time, I flattered myself, we should have an hospital establishment that would bear a comparison with any other of the same magnitude, formed under similar disadvantages.

Such was my opinion at the time, and such it still remains, notwithstanding the popular indignation, which, Dr. Sutherland says, "was at that very time roused throughout all England concerning them;" and I think I was borne out in my statement. Each patient had a comfortable bed and bedding all perfectly new, the rooms and galleries were clean and not overcrowded, as there were 600 spare beds in the hospitals at Scutari at the time my letter was written. The privies and drains, of which so much was subsequently said, were not then in any way offensive, and distant as the privies were from each other, and separated as they were by a room and passage from the corridors, and placed as they were in a distinct building at the inner angles of the barrack which measured 840 feet by 630 feet, it is difficult to conceive how, with an outfall of the drainage of 148 feet in less than 200 yards, they could under almost any circumstances have become so offensive and pestilential as they are represented to have been by the Sanitary Commissioner, for it must be borne in mind that the lower floor of the barrack was not occupied by sick. I am censured by Dr. Sutherland, and accused of ignorance and incompetency, for having allowed sick and wounded men to be placed in wards at the barrack hospital, Scutari, which

measured on an average 49½ feet in length, 31¾ feet in breadth, and 15¼ feet in height, each ventilated by three large windows opening outwards, and a door and two or more windows opening inwards into a corridor 18 feet wide, running the whole length of the building, which had numerous windows, and communicated with the inner square by means of large well staircases at certain intervals. With favourable weather, a class of patients by no means severe, and the regulated allowance of five feet of surface wall for each, few medical men, I fancy, will think there was anything so very faulty in this arrangement as a temporary expedient, nor will they perhaps consider that the necessity of resorting, in the first instance, to the more elaborate and scientific alterations of the building which were subsequently carried out by the Sanitary Commissioners, was so urgent as has been represented; but even had it been so at the period of its first occupation, there was neither time nor means to effect them.

In the course of the winter of 1854-5, the hospitals at Scutari became more crowded than was desirable, from the great influx of sick sent down from the Crimea; but that was matter of necessity, not choice, and the privies and their approaches may occasionally have been rendered dirty and offensive by the negligence of the hospital servants, but this could only have affected the corridors in their immediate neighbourhood, and not the whole of the 28 wards opening out of them, as one would be led to infer from reading Dr. Sutherland's statement, which leaves an impression as if the privies opened directly into the wards where the sick were. Whereas, the privies were placed in the barrack hospital in detached buildings, in the inner angles of the square, and in the general hospital, in detached buildings at the outer angles of the square; and I can hardly imagine the principal medical officers at Scutari would have allowed such a nuisance, as is described by Dr. Sutherland, to exist in the hospitals there.

Unfortunately, much sickness, and lamentable mortality, occurred in the British army, during the winter of 1854-5; but when the Sanitary Commissionrs arrived at Scutari, in March 1855, sickness was diminishing rapidly, and the cases of diseases which presented themselves, were of a much milder character than they had been during the winter. The Sanitary Commissioners, in their Report, gave a table showing the decrease of sickness and mortality in the Scutari hospitals after their arrival, which they ascribed to their own sanitary labours in and about the buildings; but as this did not strike me to be a correct deduction, I stated in my observations that the diminished number of sick, and milder nature of the cases of disease sent down to the hospitals at Scutari

from the Crimea, after their arrival, might have influenced the results more than their flaps and traps in the privy drains; and as an example, I mentioned the number that had been embarked, and the number that had died on the passage during two periods, the one immediately preceding, and the other immediately following the arrival of the Commissioners. I put this in as plain a manner as I could, and I thought it would have been intelligible to every one, but Dr. Sutherland has so mystified it by his subtle reasoning, that I can scarcely recognise my own statement; and the shortest way I suppose will be to admit, that, because the Sanitary Commissioners trapped the privy drains in the barrack hospital at Scutari, sickness and mortality diminished in the Crimea.

To prove that deaths on board the hospital ships had no relation to the deaths in hospital at Scutari, Dr. Sutherland instances the month of December 1854, when a number of the sick embarked at Balaklava were labouring under cholera and its sequelæ; and the month of February 1855, when the hospitals at Scutari were filled with fever cases that had been accumulating during the previous month. In the one case it was reasonable to expect death to occur more speedily, and in the other, in addition to the chances of serious fever cases sent down there for treatment, the worst cases of those embarked for Smyrna and Abydos were removed from the ships as they passed Scutari. This alters the doctor's proposition very much, and in his comparison between the Crimea and Scutari he leaves out of sight the fact that every slight as well as every serious case of disease admitted into hospital is included in the former, whereas during the winter of 1854-5 only serious cases of disease were sent down to the latter.

In my abstract of admissions and deaths in the Crimea, from December 1854, to August 1855, I omitted the strength of the army, to save figures, which I admit I ought not to have done; and the doctor is quite witty on the subject: but, respectable as the increase of the British force in the Crimea was, it bore no relation to the comparative numbers of 25,000 and 2,500,000, which have been adduced as an example by Dr. Sutherland.

At pages 14 and 27 of his Reply, Dr. Sutherland gives two of what he calls corrected statistical tables, both of which are erroneous in almost every particular, but taken even according to his own showing, they tell against himself, and prove that sickness and mortality had begun to decrease in the army before the arrival of the Sanitary Commissioners at Scutari, and continued to do so until the month of May 1855, when they began to increase again; but it would be as unjust to charge this increase to the Commissioners, as it was unfair for them to claim the merit of the

decrease which had commenced before their arrival in the country, for both these changes were owing to causes over which their trifling sewage operations at Scutari had not the remotest influence. I do not know from what source Dr. Sutherland obtained information for the two Returns which he has given in his Reply, but the annexed tables, copied from documents in my possession, will show how erroneous they are, and what little reliance can be placed on conclusions drawn from such false premises.

No. 1.—*Copy of Return, inserted at page* 14 *of* Dr. Sutherland's Reply.

Months.	Sick embarked at Balaklava.	Died on Passage.	Deaths per 1000 on Sick Embarked.	Hospitals at Scutari and Kulali.		
				Mean Sick Population.	Deaths per 1000 of cases treated.	Period of Sanitary Improvements.
1854.						
September	3,987	311	78	. .	. .	
October	1,721	76	44	2,016	128	
November	1,902	103	54	3,119	118	
December	3,339	314	94	3,457	144	
1855.						
*January	2,144	172	80	4,440	316	
*February	2,178	41	19	4,178	427	
*Three weeks ending March 17th . .	1,067	5	4·6	3,779	315	Three weeks ending 17th March, 1855.
April 7th	860	4	4·6	3,306	144	April 7th.
„ 28th	793	8	10	2,803	107	„ 28th.
May 19th	471	—	—	2,018	52	May 19th.
June 9th	615	1	1·6	1,504	48	June 9th.
„ 30th	890	8	9·0	1,442	22	„ 30th.

No. 2.—*Return compiled from original documents furnished to the* Inspector-General *of* Hospitals in the Crimea.

Months.	Number of Sick embarked from the Crimea.	Died on Passage.	Deaths per 1000 of Sick Embarked.	Return of Sick treated in the Hospitals at Scutari and Kulali.						Remarks.
				Remained in Hospital at the beginning of the Month.	Admitted.	Total treated.	Discharged.	Died.	Deaths per 1000 of cases treated.	
1854.										
September .	4030	357	88	..	..	..	..	..	..	Wounded from the Alma, and cases of cholera.
October . .	1774	77	43	2277	1401	3678	1211	211	57·36	
November .	1986	113	56	2256	3611	5867	1716	289	49·25	
December .	4393	325	74	3867	3101	6968	1911	504	72·32	Cholera prevailed, and very fatal this month.
1855.										
January . .	3440	230	66	4548	3900	8448	2046	1207	144·17	
February .	1884	23	12	5195	2688	7883	2204	1328	168·46	
March . .	960	5	5	4351	2833	7184	2837	555	77·25	
April . . .	1102	5	4	3792	1767	5559	2500	201	36·15	
May . . .	824	2	2*a*	2858	1878	4736	2333	95	20·05	
June . . .	1167	12	10	2308	1847	4155	2187	46	11·07	

a. Included as casualties in my observations, but on more minute examination of the Returns, I find they were sick Croat labourers, and ought to have been omitted, which would have made the number of deaths in the second period 17, instead of 19, as stated.

Return No. 2, shows so marked a decrease in the number and mortality of cases sent down from the Crimea to the hospitals at Scutari, for treatment, during the month of February 1855, that it is almost superfluous to state, that a favourable change in the health of the army had commenced before the arrival of the Sanitary Commissioners at Scutari; but if anything further were required to establish the fact, I might be allowed to quote the following extract from a communication of mine to the Director-General of the Army Medical Department, which was written on the 23rd February, and had no reference to any inquiry of this kind, so that it may be fairly taken as an unbiassed expression of my opinion on the subject:

"You will be pleased to learn that an improvement has taken place in the health of the troops of late, though I am sorry to say our sick list still continues very heavy."

"The type of fever which prevailed in the general hospital at Balaklava, and in the 93rd and some other regiments, has changed from the typhoid to the remittent, and even intermittent character. For a week or ten days preceding the 19th, the weather was mild and genial, and the men began to regain their health and spirits, but on the 19th, the wind changed to the north, and we had a violent snow storm during the 20th, but as yet I cannot observe that it has done much injury to the sick."

At the end of the month, in my weekly report to the Commander-in-Chief, I find the following observation on the same subject:—"It was wonderful to see the cheering effect the few fine days had on the health and spirits of the men; and as the winter may now be considered nearly at an end, I am full of hope and confidence."*

In the 2nd part of Dr. Sutherland's Return, it will be seen that the deaths per 1000 of cases treated, is calculated from the sick in hospital at certain fixed periods, and not from the whole number treated, which makes the mortality, that is lamentable enough in reality, appear excessive.

At page 27 of his Reply, Dr. Sutherland gives the following Table of admissions and deaths in the whole army, from December 1854, to May 1856:—

Months.	Admissions to Strength per 1000 per Annum.	Deaths to Strength per 1000 per Annum.	Months.	Admissions to Strength per 1000 per Annum.	Deaths to Strength per 1000 per Annum.
1854			1855		
December .	3888	721	September .	2004	121
1855			October . .	1380	49
January . .	4176	1173	November .	1176	52
February . .	2760	979	December .	1332	32
March . . .	2316	561	1856		
April . . .	1716	223	January . .	1116	21
May . . .	1944	202	February . .	924	9
June . . .	3396	318	March . . .	972	10
July . . .	2832	152	April . . .	840	8
August . .	2760	181	May . . .	720	7

From what data Dr. Sutherland has calculated the above table, I do not know; but it is at variance with the following per centages, which are taken from authentic documents.

In the following statement, the admissions are confined to those of a primary kind, as the transfers to general hospitals were only multiples of the same; but the

* In my sanitary observations on the Adjutant-General's Monthly Return for February 1855, the subject is entered on at greater length.

deaths include the whole mortality of the army, whether in general or regimental hospitals, or on board ship at sea.

	Per Centage of Admissions to Strength in the Crimea.	Per Centage of Deaths to Strength in all Places.	
April, 1854	3·9	0·07	
May „	10·2	0·09	
June „	9·3	0·06	
July „	17·5	1·33	Cholera in Bulgaria.
August „	28·2	2·84	
September „	22·3	3·10	Battle of the Alma, and Cholera.
October „	23·6	2·49	Battle of Balaklava.
November „	27·8	4·16	Battle of Inkermann, and Cholera.
December „	32·4	6·01	Cholera prevalent.
January, 1855	34·8	9·78	Fever.
February „	23·0	8·16	Ditto.
March „	19·3	4·68	
April „	14·3	1·86	
May „	16·2	1·69	
June „	28·3	2·65	Assault of Redan, and Cholera.
July „	23·6	1·27	Cholera.
August „	23·0	1·51	Cholera.
September „	16·7	1·01	Assault of Redan.
October „	11·5	0·41	Relieved from Trench and Night Duty.
November „	9·8	0·48	
December „	11·1	0·27	
January, 1856	9·3	0·18	
February „	7·7	0·08	
March „	8·1	0.09	
April „	7.0	0·07	
May „	6·0	0·06	
June „	3·6	0·02	

The above Table exhibits a gradual increase of sickness and mortality from April 1854 to January 1855, when, from the improved condition of the men, they began to decrease; and after the capture of Sebastapol, in September 1855, which relieved the men from trench and night duty, a marked improvement in the health of the army took place, which was never interrupted so long as it remained in the Crimea.

The doctor is indignant at the sewage operations of the Sanitary Commissioners being undervalued; and, at page 11, he gives a table of the works performed, in which he allows it to be understood that they were all carried out before the 30th of June, 1855, the date to which my observations allude. But if the reports of others be taken, it will be found that some of them were not carried out for eight or nine months afterwards, and others not at all.

The Sanitary Commissioners brought out with them skilled engineers and workmen, and were invested with almost unlimited

authority to hire labourers to carry out their views, and yet, according to their own showing, it is astonishing how very little they accomplished, and how many months elapsed before their more important works were completed—for to talk of so many hand carts or baskets full of rubbish removed from one place to another, is ludicrous to any one who knows what that really means amongst Eastern labourers. I say, with these advantages at their command, and knowing how little they really accomplished, and with what difficulty they accomplished that little, one might have thought they would have had more consideration for their brethren of the military profession who were less fortunately situated, and whose powers were limited to recommendations, which had to be regulated by the exigencies of the service, and due respect and consideration for those in command.

The system of what is called putting on record recommendations and demands that you know those in authority have no means of carrying out, only creates embarrassment, without serving any useful purpose, and ought to be discountenanced and despised by all upright men.

Dr. Sutherland, at page 1 of his Reply, says that I seem to think gaining of credit is the main aim of public service. I have certainly lived long enough to be very sceptical about the philanthropy of mankind. Most men have some object in view—something which they are anxious to obtain—whether it be mere credit or more solid advantages; and, from my intercourse with Dr. Sutherland, I should say he was no exception to the general rule.

London, February 1858.

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GUY'S HOSPITAL

MEDICAL AND SURGICAL

SCHOOL.



1859.

LONDON :
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LONDON BRIDGE.

GUY'S HOSPITAL.

THE MEDICAL SESSION COMMENCES ON THE FIRST OF OCTOBER.

The Introductory Address will be given by

Dr. S. O. HABERSHON,

On Saturday, the First of October, at Two o'clock.

Gentlemen desirous of becoming Students must produce satisfactory testimony as to their Education and Conduct; they are required to pay £40 for the first year, £40 for the second year, and £10 for every succeeding year of attendance. One payment of £100 entitles a Student to a perpetual Ticket.

The payment for the year admits to the Lectures, Practice, and all the privileges of a Student for that year only.

Clinical-Clerks, Dressers, Ward-Clerks, Dressers'-Reporters, Obstetric-Residents, and Dressers in the Eye-Wards, are selected according to merit from those Students who have attended a second year. Each Dresser (except those in the Eye Wards) has the privilege of rooms and commons in the Hospital free of charge for one month of his course. The Obstetric Residents have the like privilege for two months each—one month as junior, another as senior. A Resident House-Surgeon is appointed every six months from those Students who have obtained the College Diploma.

Every Student is required to conform to the Rules and Regulations for the internal management of the Hospital.

The privileges of a Student will be withdrawn in the event of neglect or misconduct.

Certificates will not be given for Lectures or Practice, unless duly attended.

The Winter Session terminates March 31st.

The Summer Session commences May 2nd, and concludes July 30th.

VOLUNTARY EXAMINATIONS

WILL BE HELD AT FOUR PERIODS OF THE STUDENT'S COURSE AS FOLLOWS:—

First.—At Entrance; and will take place on Monday, Oct. 17th. It will comprise Elementary Classics, Ancient and Modern History, and Mathematics. The Candidate who shall distinguish himself the most, will receive £25; the second Candidate, £20; and the third, £15.

Second.—At the end of July in the first year, on all the Subjects of the first year's Course of Study, one sum of £30, and another of £25, will be given according to proficiency.

Third.—At the end of July in the second year, on the Subjects which form the Course of Study up to that time. £35, and £30.

Fourth.—At the end of July of the third year, on all the Subjects of the Curriculum. £40, and £35.

Honorary Certificates will be given to those Candidates who pass a creditable Examination.

SPECIAL EXAMINATION.

Two Gold Medals will be given annually by the Treasurer to Students at the end of their third year: one for Clinical Medicine, and the other for Clinical Surgery.

SINGLE COURSES OF LECTURES

MAY BE ATTENDED ON THE FOLLOWING TERMS:—

Anatomy, Physiology, Demonstrations and Dissections, Medicine, Surgery, Chemistry, Midwifery, on the Payment of Five Guineas for each Course of Lectures.

Materia Medica, Medical Jurisprudence, Botany, Practical Chemistry, Comparative Anatomy, Manipulative and Operative Surgery, on the Payment of Four Guineas for each Course.

Fee for Attendance on either the Medical or Surgical Practice of the Hospital:—

Three Months - - - - -	Ten Guineas.
Six Months - - - - - -	Fifteen Guineas.
Twelve Months or Perpetual -	Twenty-five Guineas.

MEDICAL OFFICERS.

Physicians.—Thomas Addison, M.D.; G. H. Barlow, M.D.; Owen Rees, M.D., F.R.S.; W. W. Gull, M.D.

Assistant Physicians.—S. O. Habershon, M.D.; S. Wilks, M.D. F. W. Pavy, M.D.

Surgeons.—Edward Cock, Esq.; J. Hilton, Esq., F.R.S. J. Birkett, Esq.

Assistant Surgeons.—Alfred Poland, Esq.; Cooper Forster, Esq.; T. Bryant, Esq.

Obstetric-Physician.—Henry Oldham, M.D.

Assistant Obstetric-Physician.—J. Braxton Hicks, M.D.

Surgeon-Dentists.—T. Bell, Esq., F.R.S., and Pres. L.S.; J. Salter, Esq.

Surgeon of the Eye Infirmary.—John F. France, Esq.

Apothecary.—James Stocker, Esq.

LECTURES.

WINTER COURSES.

Medicine.—Dr. Owen Rees, and Dr. Gull, *Mondays*, *Wednesdays* and *Fridays*, at Half-past Three.

Clinical Medicine.—Dr. Addison, Dr. Barlow, Dr. Owen Rees and Dr. Gull.

Surgery.—Mr. Hilton and Mr. Birkett, *Tuesdays*, *Thursdays* and *Saturdays*.

Clinical Surgery.—Mr. Cock, Mr. Hilton, and Mr. Birkett.

Anatomy, Descriptive and Surgical.—Mr. Poland, and Mr. Cooper Forster, *Mondays*, *Tuesdays*, *Thursdays*, *Fridays* and *Saturdays* at Nine.

Physiology and Microscopic Anatomy. — Dr. Pavy, *Tuesdays*, *Thursdays* and *Saturdays*, at Twelve.

Demonstrations on Anatomy.—Mr. Durham and Mr. Moxon, *Daily*.

Demonstrations on Morbid Anatomy.—Dr. Wilks, *Daily*, at Half-past Two.

Clinical Lectures on Midwifery and Diseases of Women.—Dr. Oldham.

Chemistry.—Dr. Alfred S. Taylor, *Tuesdays*, *Thursdays* and *Saturdays*, at Eleven.

Moral Philosophy.—The Rev. T. H. Bullock, M.A., Chaplain to the Hospital.

Experimental Philosophy.—Mr. Durham, *Wednesdays*, at Eleven.

Pupils' Physical Society, *Saturdays*, alternate, at Seven in the Evening.

The Clinical Wards will open the first week in October.

Lying-in-Charity.—Dr. Oldham and Dr. J. Braxton Hicks.

Curator of the Museum.—Dr. Wilks.

LECTURES.

SUMMER COURSES.

Demonstrations on Cutaneous Diseases.—Dr. Addison and Dr. Gull, *Mondays*, at Half-past One,

Materia Medica.—Dr. Habershon, *Tuesdays*, *Thursdays*, and *Saturdays*, at Three.

Clinical Medicine.—Dr. Habershon, Dr. Wilks, and Dr. Pavy.

Clinical Surgery.—Mr. Poland, Mr. Cooper Forster, and Mr. Bryant.

Midwifery.—Dr. Oldham, *Tuesdays*, *Wednesdays*, *Thursdays*, *Fridays* and *Saturdays*, at a Quarter to Nine.

Medical Jurisprudence.—Dr. Alfred S. Taylor, *Tuesdays*, *Thursdays* and *Saturdays*, at Ten.

Ophthalmic Surgery.—Mr. France, *Wednesdays* and *Fridays* at Three.

Pathology.—Dr. Wilks, *Mondays*, at Twelve.

Dental Surgery.—Mr. Salter.

Comparative Anatomy.—Dr. Pavy, *Wednesdays* and *Fridays*, at Twelve.

Botany.—Mr. Johnson, *Tuesdays*, *Thursdays* and *Saturdays*, at Half-past Eleven.

Practical Chemistry.—Dr. Odling, *Mondays*, *Wednesdays*, and *Fridays*, Ten to One.

Operative and Manipulative Surgery.—Mr. Bryant, *Mondays*, at Three.

The Clinical Wards will open the first week in May.

Registrars.—*Medical*—Dr. Whitley; *Surgical*—Mr. Bryant.

Mr. Durham and Mr. Moxon will assist Pupils in their Studies.

The Library, Museums, and Model Rooms are open daily to the Students, from Nine o'clock, a.m., till Five o'clock, p.m.

Mr. Stocker, Apothecary to Guy's Hospital, is authorised to enter the Names of Students.

DAYS AND HOURS OF ATTENDANCE ON LECTURES AND HOSPITAL PRACTICE.

WINTER SESSION, 1859–60.

	Hour.	M.	T.	W.	T.	F.	S.
Anatomy	9	—	—		—	—	—
Dissections	9 to 4	—	—	—	—	—	—
Chemistry	11		—		—		—
Examination of Patients for Admission	10·30			—			
Experimental Philosophy	11			—			
Operations on the Eye	11·30			—			
Physiology	12		—		—		—
Out-patients seen by Dr. Habershon	,,	—					
,, ,, Dr. Wilks	,,			—			
,, ,, Dr. Pavy	,,					—	
,, ,, Dr. Hicks	,,				—		—
,, ,, Mr. Poland	,,						—
,, ,, Mr. Forster	,,			—			
,, ,, Mr. Bryant	,,	—			—		
,, ,, Mr. France	,,		—			—	
,, ,, Mr. Salter	,,				—		
Wards visited by Dr. Addison	1·30			—			—
,, ,, Dr. Barlow	,,	—				—	
,, ,, Dr. Rees	,,		—			—	
,, ,, Dr. Gull	,,			—			—
,, ,, Mr. Cock	,,	—		—		—	
,, ,, Mr. Hilton	,,	—			—		
,, ,, Mr. Birkett	,,	—				—	
Eye Wards by Mr. France	,,			—			—
Obstetric Wards by Dr. Oldham	,,		—		—		
Operations	,,		—				
Morbid Anatomy	2·30	—	—	—	—	—	—
Medicine	3·30	—		—		—	
Surgery	,,		—		—		—
Physical Society	7						—

The Clinical Wards open the first Week in October.
Clinical Lectures are given Weekly.

SUMMER SESSION, 1859–60.

	Hour.	M.	T.	W.	T.	F.	S.
Midwifery	8·45		—	—	—	—	—
Medical Jurisprudence	10		—		—		—
Practical Chemistry	10 to 1	—		—		—	
Botany	11·30		—		—		—
Comparative Anatomy	12			—		—	
Pathology	,,	—					
Materia Medica	3		—		—		—
Ophthalmic Surgery	,,			—		—	
Dental Surgery	,,						
Operative Surgery	,,	—					

The Summer Clinical Course commences in May and terminates in July.

The Wards are visited by the Physicians and Surgeons on the same days and hours as throughout the Winter Session.

GUY'S HOSPITAL.

THIS HOSPITAL, founded by THOMAS GUY, in 1721, for the reception of four hundred patients, and recently enlarged through the aid of a large bequest from the late WILLIAM HUNT, contains at the present time nearly five hundred and fifty beds; and, with its extensive buildings and large airing grounds, occupies an area of about seven acres. The Hospital is divided into Medical, Surgical, Clinical, Ophthalmic, Uterine, and Venereal Wards, independently of a ward, in a detached building, for Lunatic patients, the vacancies in which the Governors of the Hospital have of late years forborne to fill up. In the year 1857, 44,281 persons were relieved by its means; 5,226 as in-patients, 9,889 as out-patients, and 25,886 as casualties, besides 1,731 women who were attended in their confinements, and 1,549 who received advice, from the Lying-in Charity. Four hundred patients are now received into the original building of Guy, and one hundred and fifty into the part of the new wing already completed; the latter building, when finished, will admit three hundred persons.

According to the provisions of the Founder's will, which is confirmed by Act of Parliament, the Hospital is under the

care of sixty Governors, of whom the Treasurer is the general acting manager, and has the especial direction of the Medical School. Under the arrangements adopted by this body the ordinary Medical Staff of the Hospital consists of three Physicians and three Assistant-Physicians for general diseases; two Physicians for uterine diseases; three Surgeons and three Assistant-Surgeons for general surgical cases; one for ophthalmic, and one for dental, surgery; besides other medical men, not engaged in the care of the patients, who assist as lecturers in the management of the School.

The Physicians and Surgeons have distinct wards; two of which, containing forty beds, are especially devoted to clinical teaching in medicine. The care of these latter is taken in rotation by the Physicians during the winter, and by the Assistant-Physicians during the summer. The Clinical patients are selected by the Physician or his Clerk from all applicants for admission; their symptoms are carefully recorded, and constitute the basis of regular clinical lectures. The Surgeons also, in rotation, select cases from the general wards for the special purpose of clinical instruction, and lecture upon them during the winter: and the Assistant-Surgeons carry on similar work during the summer. Apart from these clinical records, all the cases admitted into the Hospital are reported by the Clerks attached to each Physician and Surgeon. Thus, during the whole sessional year, there are clinical lectures both on Medicine and on Surgery during the week. The Physicians for Uterine cases, and the Ophthalmic and Dental Surgeons also afford clinical and practical instruction in their several departments. The Medical and Surgical out-patients supply extensive opportunities for the observation of cutaneous, infantile, syphilitic, and other diseases; and many students have thus the means of acquiring practical knowledge, and of performing many minor surgical operations. Cribs are distributed throughout the female wards for the accommoda-

tion of children; and, during the last year, nearly 550 were admitted: 164 under five, and 382 under ten years of age. The Assistant-Physicians take charge of the general, whilst their seniors have the charge of the clinical wards, during the winter session.

Wards containing thirty beds are devoted to Ophthalmic Surgery, and the patients in these have their special dressers and reporters appointed in the usual manner, and 1,500 annually are seen as out-patients.

Every facility and encouragement is thus given to the Students to observe for themselves, to record facts from personal observation, to examine and study at the bed-side, so as to acquire the ability of investigating, as well as experience in treating disease. Clinical teaching and reporting have become for some years of paramount importance in the education of a Guy's Student, and engage almost his entire attention after elementary work and lectures have been completed. A large number of Students become reporters to the Physicians or Surgeons; and the diligence with which they perform the duties of the office is taken as one of the more important tests of their fitness as dressers or clinical clerks. The reports of cases, although they are not looked upon as complete records, but as means of instruction, have been usually transcribed into large volumes, and kept in the clinical rooms. In these rooms—the one in connection with the Medical, the other with the Surgical wards—the Students can write out their notes, or have the use of chemical apparatus, microscopes, etc., which their studies may require. There are two Registrars—one Medical and one Surgical—to assist or direct Students. The present plan is a development of that originally adopted by the Clinical Society of Guy's, established more than twenty-five years ago by the Students themselves, and now incorporated into the general regulations of the Institution.

MEDICAL EXAMINING COUNCIL.

This consists of part of the staff taken in rotation, whose duty it is to meet from time to time, and take into consideration the fitness of the pupils for the various offices. They receive reports from the Registrars, returns from the Demonstrators and Janitor, etc., and recommend to the Treasurer candidates whom they judge most eligible for the appointments above enumerated.

PUPILS' APPOINTMENTS.

House Surgeon.—This gentleman must be a member of the College of Surgeons, and is appointed by the Treasurer for three months, and may be continued in the office for six. Rooms and commons are provided for him within the Hospital, and in the absence of the Surgeons and Assistant-Surgeons, he has the general superintendence of the surgical department of the Institution.

Clinical Clerks are selected from those students who have been most diligent as reporters in the wards. Having had some experience, they are expected to produce enlarged and useful reports, which constitute the basis of Clinical Lectures.

The Dressers.—Four Dressers are chosen for each Surgeon, and hold their appointments for six months. Two of their number, in rotation, live in apartments found for them, and have their commons with the House Surgeon free of expense.

Assistant-Surgeons' Dressers.—Two Students are appointed as Dressers to each of the Assistant-Surgeons for two months; they are required to attend to such of the patients in the Hospital as are under the care of the Assistant-Surgeons, and to the out-patients generally.

Dressers in the Eye Ward.—Two gentlemen are chosen every two months for the special purpose of attending to and reporting on Ophthalmic cases.

Obstetric Clerks are two in number. They reside within the Hospital, and are boarded free of charge. Their duty is to assist the junior pupils in difficult cases, to accompany them to their first case of labour, and to superintend generally the working of the Lying-in Charity. They are not allowed to use instruments without the sanction of one of the Obstetric Physicians. The Medical Examining Council consider the exhibition by a pupil of diligence and skill in his attendance on Midwifery cases the best qualification for this appointment. Special certificates are given to those gentlemen who have attended one hundred cases.

Post Mortem Clerks are selected from among the senior Students, according to merit. Two are appointed for two months, their duty being to open bodies and remove the organs under the superintendence of the Demonstrator of Morbid Anatomy. An opportunity is thus afforded to Students who are more especially interested in this branch of study for minute investigation by the aid of the microscope. The diseased parts are exhibited to the pupils, and explained by the Demonstrator.

Pupils are appointed to the above offices by the Treasurer, on the recommendation of the Medical Examining Council, who select those who are most distinguished for general good

conduct, ability, and industry, especially for care and correctness in their reports of cases in the wards, and diligence in the dissecting-room.

Special certificates are given to those gentlemen who have faithfully performed their various duties.

Reporters or *Ward Clerks* are chosen from those Students who have been diligent in their studies during the first winter session; they are expected to attend the Physicians or Surgeons to whom they have been appointed, to note down the history or daily symptoms of cases, and to transcribe them. The reports are examined by the Medical or Surgical Registrar, and his opinion of their value is forwarded to the Medical Examining Council. Students are encouraged to examine for themselves, and to correct their observations by the remarks of the Physicians and Surgeons at the bed-side.

THE SCHOOL DEPARTMENT.

This consists of Two Theatres, Anatomical, Pathological, and Comparative Anatomy Museums, Model-room, Dissecting-room, Materia Medica Museum, Chemical Laboratory, and Library.

The Museum of Human Anatomy is divided into an Anatomical and a Pathological department, under the care of the Curator, Dr. Wilks. The Anatomical department contains nearly 2,000 different preparations of the organs and tissues. The earliest contributors were Sir A. Cooper, Dr. Hodgkin, Mr. Key, and Mr. Cock. It commences by a valuable series of skulls of all nations, some specimens being very rare. The teeth are next in order, which, for the sake of convenience, include the pathological specimens commenced by Mr. Fox, much increased by Mr. Bell, and now superintended by Mr. Salter. For a series of injected pre-

parations, showing the ovum in course of development, to Dr. Oldham. For the various dissections of the brain, spinal cord, and nerves, the Museum is indebted to Mr. Hilton. This division of the Museum deserves especial mention from its containing a series of wax models of the different regions and organs, which stand unrivalled as works of art, and present the most complete and minute representations of the anatomy of the human body in existence; all of these have been executed within the walls of the institution by Mr. Towne, from dissections by Mr. Hilton, and a few by Mr. Callaway. Their object is not to supersede the necessity of dissection by the Student, as some have misapprehended, nor have they that effect. Among other advantages which they possess, such as presenting the ordinary relation of parts, etc., many of them are from dissections more elaborate than the time or skill of a Student could enable him to produce; and others represent complex relations of parts which could not be arrived at without many separate dissections, and a knowledge of which the Student could not in many instances obtain without assistance from art. Although their great beauty and delicacy of finish may be appreciated by the uninstructed, yet they can be adequately prized only by the anatomist, who sees in the models an actual representation of all that his utmost perseverance could effect upon the recent tissues. It is but due to the labour and talent here shown, to draw attention to this distinction, particularly as their general merit is apt to cause their intrinsic and essential worth, namely, their truthfulness, to be overlooked. The illustrations of the anatomy of the brain deserve especial notice; there are thirty showing different sections of the organ in all its parts, and thirty-nine showing its development from the earliest fœtal conditions, and a unique series of cerebral convolutions in the principal varieties of the human race. They may be compared with great interest with the models of the brain of animals in the

Comparative Museum. The organs of sense have also been fully illustrated, especially the ear, the complex parts of which have been developed with great skill. The entire distribution of the nervous system is shown, as well as the various other systems of the body. Drawings accompany each model in order to aid the Student in his references.

The Pathological Department is divided into twelve sections. It contains 4,800 specimens, with 2,000 drawings, representing the appearances in the recent structures. The drawings are arranged in a cabinet, so as to correspond to the different sections, which are as follows:—

1. Diseases of Bone. Among these are some very interesting specimens by Sir A. Cooper, illustrating fracture of the neck of the thigh-bone; and also several here, as in other sections, from the valuable collection of the late T. E. Bryant, of Kennington.

2. Joints, Ligaments, etc. This contains specimens by Sir A. Cooper, of dislocation of the hip, and preparations by Mr. Aston Key, illustrative of the pathology of the joints. These two sections occupy the greater part of the lower gallery, and number 1,248 preparations.

3. Heart, Arteries, Absorbents, etc., 534 preparations, including malformations. Here may be noticed dissections by Mr. Cock of some of the earliest cases, where a ligature was placed on the subclavian, iliac vessels, etc., by Sir A. Cooper and Mr. Key.

4. Nervous System and Skin. This section contains 348 preparations. Those of the skin include many tumours of various descriptions.

5. Respiratory Organs. Here are 399 specimens. This department has been especially enriched by Dr. Addison, by his illustrations of Phthisis.

6. Digestive Organs, Liver and Spleen, 740 preparations, shewing the various diseases of the separate organs, and including a large number of Biliary Calculi.

7. Urinary Organs, etc. This department contains the original specimens of diseased kidney, collected by Dr. Bright, now designated by his name, and already well known from having appeared in his works. With these are specimens of disease of the bladder, which, with the preceding, amount to 296 preparations. In this department are the Urinary Calculi, 350 in number, put up and analysed by Drs. Marcet, Babington, Owen Rees, Golding Bird, and Odling.

8. Female Generative Organs. Among these are some beautiful specimens of ovarian cysts, which received the special attention of Dr. Hodgkin, in his elucidation of this form of disease. In this department are illustrations of diseases of the breast, many of which are due to the investigations of Mr. Birkett; instead of a few examples of chronic mammary tumor, there are now 90 specimens of adenocele. This class numbers in all 396.

9. Male Generative Organs. Amongst these are some diseases of the testis, referred to by Sir A. Cooper. Specimens, 218 in number.

10. Peritoneum. This includes Hernia, many specimens of which have illustrated the writings of Sir A. Cooper, Mr. Key and Mr. Cock, amounting to 226.

11. Utero-Gestation. For numerous specimens in this department, we are indebted to Dr. Lever and Dr. Oldham. It contains several cases of extra-uterine fœtation, various diseases of the ovum, and a variety of malformed fœtuses, as well as some malformed organs of adults. Specimens. 149.

12 Includes Parasites.

Besides these various cases, which are catalogued and numbered, there are several jars containing duplicate specimens for the use of the lecturers and others; by this means, not only can a preparation be handled and its peculiarities examined, but the more valuable examples in glass avoid the risk of injury.

On the ground-floor are contained also the numerous specimens which accompanied the successful essays sent in for the Astley Cooper Prize. These are arranged in the order of awards:—

1844. On the Structure and Use of the Thymus Gland: John Simon, Esq., F.R.S.

1847. On the Structure and Use of the Supra-Renal Capsules: Richard Halahan, Esq.

1850. On the State of the Blood and Blood-vessels in Inflammation: T. Wharton Jones, Esq., F.R.S.

1853. On the Structure and Use of the Spleen: Henry Gray, Esq., F.R.S.

1856. On the Cause of the Coagulation of the Blood: B. W. Richardson, M.D.

Adjoining the Museums are two lesser rooms—one is the microscopic-room, where one of Powell and Lealand's instruments is kept, with several hundred specimens of the various structures of the body, presenting a complete histological series. The other room contains the volumes of records of the *post mortem* examinations commenced by Mr. Key, Dr. Hodgkin, Mr. Wilkinson King, and since carried on by the demonstrators of morbid anatomy. The present plan adopted by Dr. Habershon and Dr Wilks is, that of filling up a blank form with the daily *post mortem* reports and at the end of the year binding them together.

The Pathological Department has also been greatly enriched by a series of models, 360 in number, illustrating all the usual varieties of diseases of the skin, as well as several others which are rare, and have not been hitherto described. They have been, for the most part, selected and classified by Dr. Addison, whose attention has been especially directed to this object. A new catalogue of these models, according to the classification of Willan and Bateman, has lately been issued by Dr. Habershon, as well as of those of the respiratory organs and digestive system before mentioned. The remaining volumes are also under revision.

Besides the preparations and drawings above named, there are 1,300 diagrams for the use of the lecturers on Anatomy, Physiology, Medicine, Surgery, and Midwifery, and 660 for Comparative Anatomy. There are, also, 330 pathological casts in plaster, showing various deformities, dislocations, herniæ, etc.

The *Museum of Comparative Anatomy* occupies the left wing of the Museum, and contains 2,500 specimens. The ground-floor is principally occupied by articulated skeletons arranged in the Cuvierian order from man downwards. The series is very complete, and contains rare and beautiful examples. In the galleries, the preparations are placed in physiological sections, each of which is well illustrated; for example, of the nervous system there are nearly sixty dissections, which have been principally made by Dr. Gull. The original contributors were Mr. Bell, Mr. Morgan, and Mr. Wilkinson King. Mr. Towne has also of late added much to the value of this department, by elaborate wax models of those organs and structures which could not be preserved in the recent form. Among these are a complete series of models, exhibiting the changes in the egg during incubation, proceeding from the germinal vesicle to the full grown chick. Also models of the brain of the various classes of animals, showing the gradual development of their parts and convolutions up to man. These may be usefully compared with the models exhibiting the development of the human brain in the adjoining Museum.

The *Dissecting Room* is of recent construction, and has many arrangements deserving notice; it is open daily, is well lighted, warmed, and ventilated, and in all respects adapted for its purpose. The Demonstrators of Anatomy, attend daily to assist the pupils. Near this are rooms at present occupied by Dr. Pavy, and fitted up for the purpose of physiological experiments.

The *Museum of Materia Medica* contains specimens of all the drugs, and preparations in general use under the different forms ordinarily met with in commerce, also with their principal adulterations. It is now under the superintendence of Dr. Habershon. The specimens can be conveniently referred to and studied. A second series of specimens is for the use of Students to give facilities for tactile examination. Dr. Golding Bird added a collection of rare proximate principles in connection with the recent advantages in the chemistry of the animal fluids. A beautiful series of metallic ores, many of them collected by the late Arthur Aikin are arranged in glass cases.

A *Laboratory* is adjacent, in which everything is prepared for Dr. Taylor's lectures on Chemistry and Medical Jurisprudence, the adjoining Medical Theatre being used for these courses, as well as those on Materia Medica. A Laboratory for Practical Chemistry is fitted up for the summer session, under the superintendence of Dr. Odling.

Nearly the whole of the students now avail themselves of these advantages for acquiring a practical knowledge of these subjects.

The *Library* contains 3,324 volumes, and is supplied with weekly, monthly, and quarterly journals, of Medicine, Natural History, and Philosophy. It is open to the students daily. Each student is allowed to take home one volume, which must be returned by ten o'clock the following morning.

The Pupils' Physical Society is now the representative of the old Physical Society of Guy's. The Meetings take place on alternate Saturdays, at seven in the evening, when a paper is read by a member on a professional subject, and a discussion follows. The Society has always been in a prosperous state, and has been most advantageous to the students. It is under the especial patronage of Mr. Cock,—Dr. Whitley and Mr. Bryant kindly acting as Secretaries.

A prize of £10 from the funds of the Society is given at the end of the session to the member who sends in the best essay, and report of cases.

Guys' Hospital Reports.—These Reports have been issued in one or two volumes annually, since the year 1836, and are for the most part records of cases that have been in the Hospital.

The Chapel.—This contains accommodation for Students, as well as other members of the Institution. There is Sunday and week-day service.

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 threee 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.

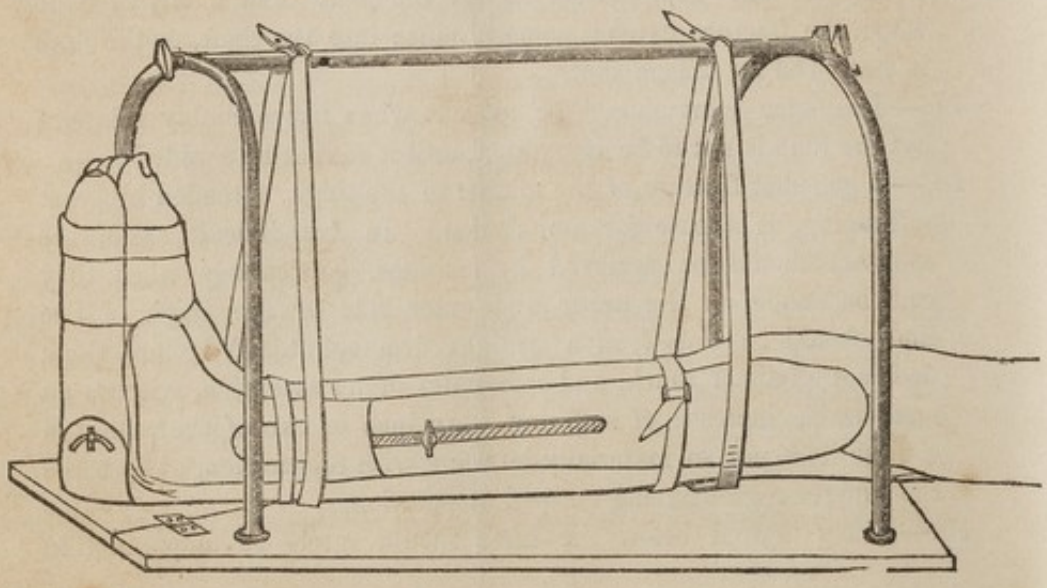
The Apparatus (Mr. Luke's) for the treatment of Fractures of the Leg by suspension, consists of a Cradle, a Leg Rest or support, two Splints, and a Folding Board. The Cradle is formed of two iron arches, held together by a straight rod, the ends of which pass through their centres and fix by binding 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.
Calico, 5 yards.
Lint, 4lbs.
Emp. Resinæ, 2lbs.
Ditto spread, 4 yards.
Spongio Piline, ¼ yard.
Surgeon's Sponges, 6.
,, Tow, 1½lb.
Pins, Needles & Thimble, 1 pkt.
Paper & Pens, 12, paper 1 in cover
Spatula and Bolus Tile, 1.
Tape, Lucifers, 1 piece, 1 box.
Minim Measure, 1.
Wax Candles, 8., for operations at night.
Ligature, Silk and Thread, ½ oz. each.
Reel of Dentist's Silk, Pill Boxes, Packing Tow.

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, $\frac{1}{3}$rd. 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
$\frac{1}{2}$ lb. of Packing Thread, middling.
$\frac{1}{2}$ 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 ,, $1\frac{3}{4}$ lbs. of Green Tea.*
1 ,, ,, ,, $2\frac{3}{4}$ lbs of Black Tea.*
1 Can, tin, for oil feeding, $\frac{1}{2}$ 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.
Ammon: Sesquicarb. .	0	12
Acid Citric in Powder .	1	0
Antim: Potass: Tart. .	1	0
Argenti Nitras . . .	0	4
Chloroform	1	8
Cupri Sulph.	1	0
Ext: Colocynth: Co. .	0	12
Hydrarg: Chlorid. . .	1	0
Hydrarg: Bichlorid. .	0	2

	lb.	o
Jalap Pulv.	0	8
Ipecac: Co: Pulv. . .	1	0
Liq: Ammon: Acet. Co.	1	0
Liq: Opii. JEREMIE .	1	0
Liq: Plumbi: diacet. .	1	0
Matico Fol.	0	4
Opii: Pulv.	0	$\frac{3}{8}$
Ol: Tiglii.	0	1
Quinæ: Disulph. . .	0	12

SUNDRIES.

Wax Candles, No. 9.
Minim Measure, 1.
Surgeon's Sponges, 6.
Silk and Thread Ligature, $\frac{3}{4}$ oz.
Packthread, 2 oz., and Spongio Piline, $\frac{1}{4}$ 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.

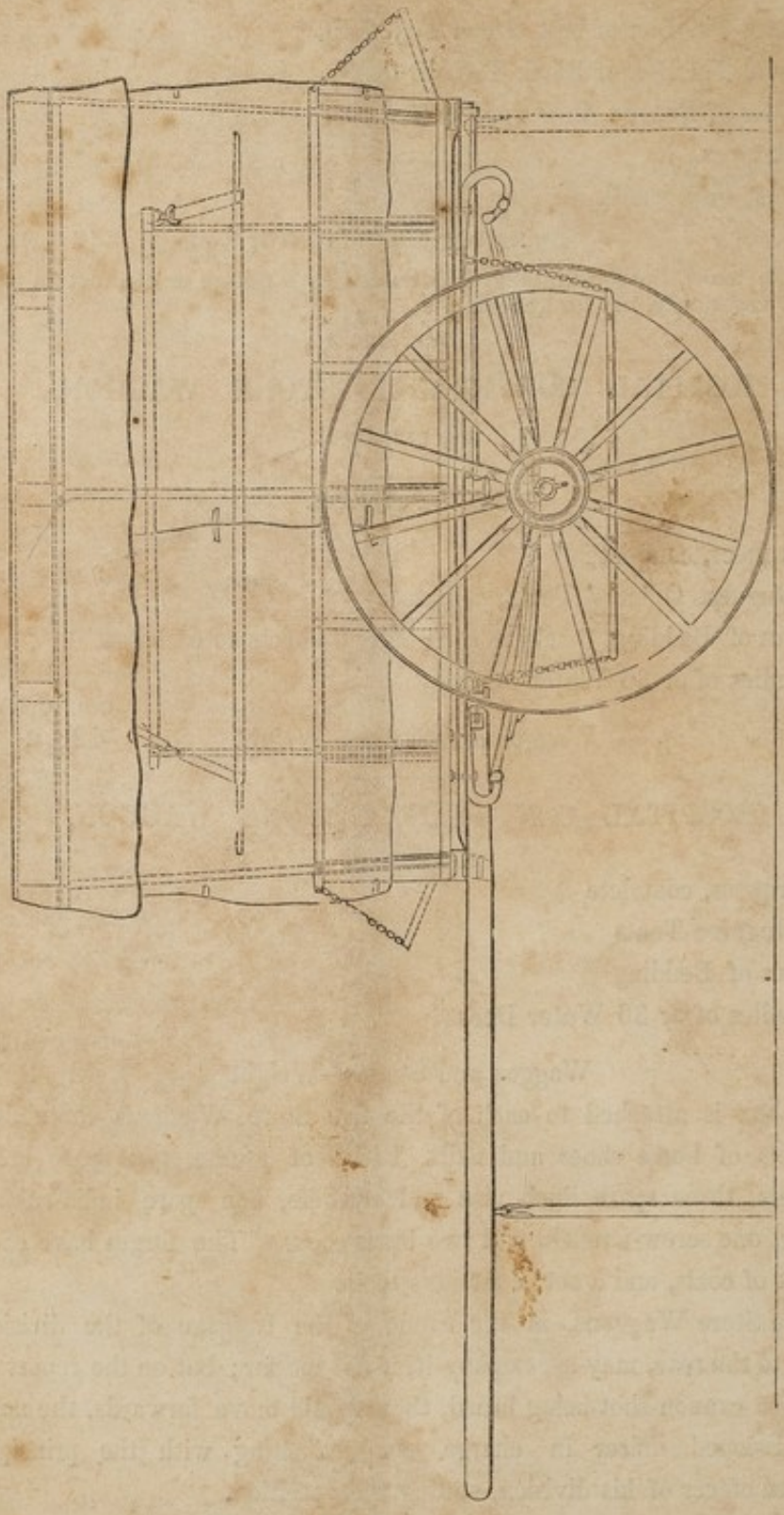
3 Marquees, complete
5 Portuguese Tents
2 Bales of Bedding
3 Bundles of or 36 Water Decks

	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.

13

INSTRUCTIONS

TO

THE PURVEYOR IN CHIEF IN THE EAST.

LONDON:
PRINTED BY GEORGE EDWARD EYRE AND WILLIAM SPOTTISWOODE,
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY.
FOR HER MAJESTY'S STATIONERY OFFICE.

1854.

INSTRUCTIONS

TO THE

PURVEYOR IN CHIEF IN THE EAST.

The Purveyor in Chief is responsible for the conduct and management of his department.

He is to obey such orders as the Inspector General of Hospitals, or the principal medical officer in charge for the time being, may think necessary for the welfare of the sick, and the interests of the Public Service.

Should such orders involve considerations of expenditure or finance generally, which the Purveyor in Chief shall think it to be his duty to bring under the notice of the Secretary-at-War, he will communicate his opinions and observations direct to the Secretary-at-War, furnishing at the same time a copy of his communication to the Inspector General of Hospitals, or the principal medical officer in charge for the time being; pending, however, the reference home of such questions for the decision of the Secretary-at-War, he will act upon the requisitions of the Inspector General, or the principal medical officer for the time being.

He will superintend the Purveyors and Purveyors' Clerks attached to the army, calling for any explanations from them with reference to their duties which he may think necessary for the good of the Service, and bring any subject connected therewith to the

notice of the Inspector General, with a view to further proceedings, should such be necessary.

He will communicate freely with the Inspector General in reference to the duties which immediately attach to his department, and will suggest for the Inspector General's consideration, from time to time, such alterations or improvements as he thinks likely to contribute to the better working of his department.

He will furnish confidential reports to the Inspector General, in reference to the Purveyors and Purveyors' Clerks, state their respective merits, capabilities, &c., and recommend to the Inspector General for promotion, when vacancies occur, such Clerks as he considers eligible for and most deserving of promotion, who is to forward the same for the confirmation of the Secretary-at-War.

Purveyor.

1. The Purveyor has the charge, and is held responsible for the due care, management, and issue, of all stores (except those in charge of the apothecary), furniture, and provisions, from whatever source derived.

2. It is his duty to superintend the packing or unpacking of all stores received, belonging to his department, taking the orders of the Inspector General of Hospitals, or principal medical officer on the spot, regarding Boards of Survey thereon.

3. The Purveyor is to issue to the Steward of the hospital, on demands duly approved by the senior medical officer, a due proportion of bedding, dresses, and utensils for each ward, holding him responsible for the care and preservation of the same. He will

take from the Steward receipts for all articles issued to him, and grant to him receipts for all articles received from him; and, to ensure accuracy and regularity, all persons in charge of stores should be furnished with proper receipt books, the pages of which should be numbered, and the number written in words on the first sheet, and signed by the principal medical officer.

4. The Purveyor is to furnish all articles of provisions required for the use of the hospital, whether supplied from England or drawn from the Commissariat Department; and he is held responsible that the diets and extras are issued in strict conformity with the diet rolls. To enable him to perform this part of his duty, he will be allowed a clerk, a steward, and a storeman, according to the extent of his charge; but this does not relieve him from the responsibility of this part of his functions.

5. The Purveyor is to take charge of and issue, on duly approved requisitions, all the stationery, books, and printed forms required for the use of the department. He will make out a return, agreeably to the prescribed form, of those receipts and issues quarterly, and he will include these articles with his quarterly demands for stores.

6. The Purveyor (in a Book kept for the purpose) is to make accurate entries of the receipt and expenditure of all articles of consumption in his charge, and from which book he will prepare his weekly, monthly, and quarterly returns, and submit them to the Inspector General of Hospitals, or principal medical officer, who will convene Boards to examine them with the diet rolls. If found correct, they will receive the approving signature of the President and

Members of the Board, and then be transmitted to the Inspector General of Hospitals.

7. The Purveyor is to prepare a quarterly return of the stores under his charge (not including articles of daily consumption), according to the prescribed form, exhibiting the receipts and issues during the preceding three months. This return will also be submitted to a Board of Survey appointed by the Inspector General of Hospitals, or principal medical officer; which Board will compare the return with the invoices of stores received and vouchers of stores issued, and see that they correspond. They will ascertain that the quantities stated to be remaining are actually present in the store, that the store is properly arranged, well ventilated, and the articles in good preservation. Such stores as have, from fair wear or other causes, become unserviceable, will be surveyed by the Board, which will note such articles as are repairable, and such as are totally unserviceable.

This return, when so examined and signed by the Board of Survey, will be transmitted by the Purveyor to the Inspector General of Hospitals, along with his quarterly requisition for articles required for the next three months.

8. The Purveyor is to keep a register, in which he will enter the regiment, name, rank, and regimental number, date of admission, discharge, or death of every man who is received into hospital.

9. He is to keep a book of the establishment of the hospital, containing the names of all the officers and servants of every description belonging thereto, with the dates of their appointment and removal, and the rates of their daily pay, or wages and allowances.

He will make out the pay return of the officers every two months, and the returns for extraordinary field allowance every three months; viz. 1st January, 1st April, 1st July, and 1st October.

He will also make out the ration return for the officers, their servants, and horses, at such periods as may be fixed by the Commissariat Department.

10. The Purveyor is carefully to enter all official letters, written or received by him, as well as duplicates of all his returns and accounts in Books or Guards kept for the purpose. These books, &c., in case of removal, will be handed over to his successor, as a record for reference on all future occasions.

11. The Purveyor will keep a pack and arms store book, into which he will enter an account of all money and valuables belonging to sick officers or soldiers, and a correct inventory of the effects of men who die in hospital.

12. It is his duty to make all funeral arrangements, and to report to the commanding officers the death of all men belonging to their regiments. He will at the same time apply for instructions regarding the disposal of the men's effects, and ask for payment of their funeral expenses.

13. The Purveyor, or his Clerk, should examine daily the diet roll of each ward previously to issuing the ingredients of the diets marked thereon; pointing out any errors or unusually large demands that he may discover, to the principal medical officer of the hospital.

14. The Purveyor is specially charged with the supervision of the hospital servants, and he will

report any neglect or inefficiency that comes under his notice to the principal medical officer.

He will enter, or cause to be entered, in the hospital defaulter book, copies of all complaints or breaches of discipline, made by medical officers against either servants or patients, the originals of which should be transmitted to the men's regiments when they are discharged from hospital.

15. It is the Purveyor's duty to look to the cleanliness and order of the exterior of the hospital, the passages, privies, yard, &c.

He is also responsible for the cleanliness of the kitchen; and it his duty to see that the Steward discharges his duty properly in that department, by having the cooking utensils kept clean, the quality and quantity of the provisions duly examined, and the patient's meals punctually and properly prepared and served to them.

16. It is the Purveyor's duty to look to all repairs and alterations required both in the interior and on the exterior of the hospital, and report the same to the principal medical officer, who will forward the statement to the Engineer Department.

17. It is his duty to prepare all wills for patients, when requested so to do; and he will take care that the medical attendant of the man is always one of the two attesting witnesses, as a guarantee to his friends that the man was in a fit state of mind at the time to make a will. Printed Forms of Wills may be had from the War Office on application.

He will keep a correct register of all wills executed in the hospital, for future reference.

18. The Purveyor will enter into contracts for washing the body linen of the patients, and the

soiled hospital bedding and dresses; and where this cannot be effected, he will hire people on the most advantageous terms he can for Government, to perform this duty.

19. It is to be understood that, whenever any articles of subsistence or extras for sick men, other than the ordinary health ration, are drawn for by regiments or detachments, such men are to be placed under the regulated hospital stoppage for the period they are so maintained, although they may not belong to a regularly established general or regimental hospital, and the supplies are to be furnished whenever practicable through the purveying department.

Accounts.

20. The Purveyor or Clerk in charge of one or more hospitals will obtain the necessary funds by imprests from the commissariat chest on the station, for which purpose he will prepare a monthly estimate in triplicate in sufficient time before the commencement of the month; one copy is to be laid before the General commanding on the station, who, if satisfied of the propriety of the estimate, will grant a warrant on the Commissary for the amount, and this copy of the estimate is to be afterwards forwarded to the War Office by the Military Secretary; the duplicate copy of the estimate is to be transmitted by the Purveyor to the commissariat officer, and the triplicate to be retained by himself.

21. The amount of each estimate is to be drawn for, from time to time during the month, as required, in order to avoid having too large an amount of cash in hand; and if the estimate is for a larger amount

than is found to be necessary, the overplus is to remain in the commissariat chest.

22. The precise amount of each issue is to be credited in the Purveyor's accounts with the War Office, and the particular estimate on which received is to be invariably specified.

23. The proportion of the amount of the estimate which may be required on account of supplies of bread, meat, and other articles of subsistence to be furnished, through the contractors, by the commissariat, under the rules prescribed in the 59th article of the Hospital Regulations (1845), is not to be actually drawn from the commissariat chest; but at the end of the month an exact settlement is to be effected with the commissariat officer for all such supplies by means of a draft for the proper amount, for which the commissariat officer will give a receipt in acknowledgment of payment for the supplies; while on the other hand the Purveyor will give the usual receipt for the amount as an ordinary imprest issue, duly crediting the same in his accounts to be rendered to the War Office, in precisely the same manner as he credits the bills on which he receives cash.

24. The commissary's receipt must be annexed to the Purveyor's account, in addition to the other vouchers in support of the charge for such hospital supplies.

25. The directions contained in article 166 of the Commissariat Code of Regulations (1852), which enjoins that every article of diet required for the sick shall be obtained through the commissariat contractor on foreign service, should be followed whenever practicable.

26. If any surplus cash remain in the Purveyor's hands, which may not be immediately required, he should pay a round sum on account thereof into the commissariat chest, and charge such repayment in the general state of his accounts, vouched by the commissary officer's receipt.

27. All sums inserted in the general state are to be either charges or credits, no deduction being admissible on either side of the account.

28. Fractional parts of pence to be excluded from totals of estimates and drafts, also from the general state, so as to exclude the same from the balance at the end of each quarter.

29. The Explanatory Directions to Paymasters and others as to the due regulation of estimates and drafts, so as to leave small balances at the close of the quarter, and as to confining the transactions within the period to the 31st of March to the account terminating on that day, should be conformed to as much as practicable, and the cause of any excess above 100*l.* in any quarterly account should be specially explained.

30. The quarterly accounts and other returns to be used by the Purveyors with the army in the East are to be on the forms used by Purveyors on the home service, so far as applicable; and a stock of these may be obtained on application to the War Office, in the usual manner, upon the prescribed Form of Requisition. The articles of the Explanatory Directions to Paymasters relative to Army Hospitals, from 406 to 420, will apply very closely to the hospitals in Turkey, and are to be attended to accordingly. In like manner the separate Regulations for Hospitals, dated 1st February 1845, are to be followed, so far

as applicable, and not contrary to the special instructions herein contained.

31. These instructions relative to the accounts are, however, liable to any modification hereafter, which the Secretary-at-War may approve of, on due representations from the Purveyor in Chief after his arrival in Turkey.

32. The pay and allowances of the Purveyor in Chief, and the officers and clerks of his department, will not be included in the Purveyor's accounts, but drawn for and charged separately through the Commissariat Department, in like manner with the pay and allowances of other staff officers.

War Office,
Nov. 14, 1854.

14

Circular, *No.* 193.

WAR OFFICE,
23*rd December*, 1857.

156, 123
192

The Secretary of State for War has decided, with the concurrence of His Royal Highness the General Commanding-in-Chief, that no soldier, labourer, or other person, paid by this Department, shall be employed (as heretofore) by any Military or Civil Officer, except Regimental Officers serving with their regiments, who, under the provisions of the Queen's Regulations and Orders for the Army, are allowed to have soldier servants to attend them.

2. To such Officers, not Regimental, as have been allowed the use of soldier servants, a daily allowance of 1*s.* at home, and 1*s.* 6*d.* abroad (including rations) will be granted in lieu of each such servant, in the following proportions:—

To a Lieut.-General, the allowance for three servants.

To a Major-General, for two.

To every other Staff Officer including the Recruiting Staff and each Staff Chaplain, for one servant.

To every Civil Officer, who is entitled under existing regulation or authority to the use of a servant, or to servants' allowance, for one servant.

3. Servants' allowance will not be given to Officers receiving commuted allowance to cover all contingent expenses.

To

General and other Officers Commanding at Home and Abroad.

4. Regimental Officers of Cavalry, Artillery, and Infantry will continue to be provided with soldier servants, and consequently will not be entitled to the pecuniary allowance. But as regards Officers of the Royal Engineers who are not allowed to employ Sappers as servants, they will continue to receive the pecuniary allowance, for one or two servants, according to Rank under existing regulations, at the established rates of 1*s.* a day, for each servant on Home Service, and of 1*s.* 6*d.* a day for each servant on Foreign Service.

5. Officers drawing the allowance for one servant only, are to furnish certificates in support of their claims, according to Form No. 1, annexed hereto, and those drawing it for more than one, according to Form No. 2, annexed.

6. The higher rate of 1*s.* 6*d.* a-day, applicable to foreign service, will be chargeable on the passage to and from the station, in all cases wherein the servants' allowance is chargeable.

7. No Officer will be entitled to rations for the servants, on account of whom he receives the pecuniary allowance, but at foreign stations, rations may be drawn for additional male servants actually kept, not exceeding, in the whole, the number specified in the Royal Warrant, after deducting the servant or servants for whom he receives the commuted allowance.

8. Servants' allowance will not be given to Officers ordered home from abroad on reduction, after the expiration of a month from the date of landing in the United Kingdom; and, if the Officer obtain leave of absence previously to being placed on half-pay or retired allowance, it is not to continue beyond two months, in the whole, from the date of disembarkation in the United Kingdom.

9. Officers on sick leave, on the recommendation of a Medical Board, will receive the allowance for the full period of their absence on such leave, or for such part of the period as they shall continue on full-pay.

10. Officers, on leave of absence on private affairs, can only be permitted to receive the full allowance for two months of such leave.

11. The servants' allowance, on re-appointment from the non-effective list, in the case of Officers of the Royal Engineers, and of the Medical, Chaplain, Commissariat, Military Store, Engineer and Barrack Branches, if ordered for foreign service, will commence from the date of embarkation.

12. Staff Officers are not to draw the allowance for servants from an earlier date than that on which they assume their Staff duties, and, as regards such Officers, it will cease on the termination of their duties.

13. The provisions of the Black Servants' Warrant are not affected by this Circular.

14. The pecuniary allowance hereby extended to Officers on the Staff, in lieu of soldier servants, is not to apply to Officers of the Head-Quarter Staff in London.

15. The regulations contained in this Circular will take effect from 1st January next, or the first day of any subsequent month next ensuing, after the receipt of the Circular.

16. The date from which the regulations come into operation, under the preceding clause is to be reported to the Accountant-General by the Officer Commanding at the station.

B. HAWES.

FORM OF CERTIFICATE, No. 1.

"I hereby certify, upon honour, that I have not had attending me, in the capacity of a servant or bâtman, during any part of the period for which I now claim servants' allowance, a soldier, labourer, or any other person employed and paid by the public, and that no ration has been drawn for the servant for whom the allowance is claimed."

Name_____

Rank_____

Dated at_____ this_____ day of_____ 185

FORM OF CERTIFICATE, No. 2.

"I hereby certify, upon honour, that I have employed the number of servants for which I claim the allowance above specified. and that no rations have been drawn for the same; nor have I had attending me, in the capacity of a servant or bâtman, during any part of the time, a soldier, labourer, or any other person employed and paid by the public."

Name_____

Rank_____

Dated at_____ this_____ day of_____ 185

STATISTICAL NOMENCLATURE.

With a view to give effect to the recommendation of the Royal Commission appointed to inquire into the Regulations affecting the Sanitary Condition of the Army :— "That an improved nomenclature of diseases be adopted in "the Army Medical Returns, and such alteration in the "classification of the diseases as may admit of an accurate "comparison of them with others of a similar nature," it has been decided to adopt the nomenclature drawn up at a statistical congress held at Paris, in 1855, under the auspices of the French Government, and which comprised among its members many of the most eminent statisticians and medical men from every country in Europe, and to follow the classification made use of by the Registrar-General in his reports on the mortality of the civil population of England. (Registrar-General's Sixteenth Annual Report, and Army Medical Regulations, page 148). To facilitate the introduction of this nomenclature, the following classified lists of diseases have been prepared, and the French and German synonyms, drawn up by members of the congress, have been added, in the belief that they will be found useful by many officers in studying professional works in these languages. In the classification employed by the Registrar-General all diseases and causes of death have been divided into five classes, and these again have been sub-divided into several orders. Although some of these are not applicable to soldiers, it has been deemed advisable to print them in the following list, as the army medical officers are required to furnish, annually, a report upon the health of the women and children under their professional care.

T. Alexander,
Director-General.

Army Medical Department,
December 1859.

SYSTEM OF CLASSIFICATION.

I. Morbi zymotici—zymotic diseases.
Diseases that are either epidemic, endemic, or communicable; induced by some specific body, or by the want or by the bad quality of the food.

In this class are comprised the following orders :—
1. Miasmatic diseases.
2. Enthetic diseases.
3. Dietic diseases.
4. Parasitic diseases.

II. Morbi cachectici—constitutional diseases.
Sporadic diseases; affecting several organs in which new morbid products are often deposited; sometimes hereditary.

Order 1. Diathetic diseases.
2. Tubercular diseases.

III. Morbi monorganici—local diseases.
Sporadic diseases, in which the functions of particular organs or systems are disturbed or obliterated, with or without inflammation; sometimes hereditary.

Order 1. Diseases of the nervous system.
2. „ „ circulatory system.
3. „ „ respiratory system.
4. „ „ digestive system.
5. „ „ urinary system.
6. „ „ reproductive system.
7. „ „ locomotive system.
8. „ „ integumentary system.

IV. Morbi metamorphici—developmental diseases.
Special diseases, the incidental result of the formative, reproductive, and nutritive processes.

Order 1. Developmental diseases of children.
2. „ „ women.
3. „ „ old people.
4. Diseases of nutrition.

V. Violent diseases or deaths.
Diseases which are the evident and direct results of physical or chemical forces, acting either by the will of the sufferer, of other persons, or accidentally.

Order 1. Accident.
2. Battle.
3. Homicide.
4. Suicide.
5. Execution.
6. Punished.

Classified List of Diseases.

Class I. Zymotic Diseases.

Order 1. *Miasmatic Diseases.*

Variola.	Small pox.	Variole.	Wahre oder Menschenpocken, oder Menschen-Blattern.
Varioloides.	Modified ditto.	Varioloide.	
Varicella.	Chicken pox.	Varicelle.	Wasser-Blattern.
Miliaria.	Miliary fever.	Miliaire.	Friesel.
Morbilli.	Measles.	Rougeole.	Masern.
Scarlatina.	Scarlet fever.	Scarlatine.	Scharlach Fieber.
	Angina Maligna is included in Scarlatina.		
Tonsillitis.	Quinsy.	Esquinancie.	Mandelbräune.
Diphtheria.	Diphtheria.	Diphthérite.	Rachencroup.
Parotitis.	Mumps.	Oreillon.	Ohrdrüsenbräune.
Cynanche trachealis.	Croup.	Croup.	Croup.
Pertussis.	Hooping-cough.	Coqueluche.	Keuchhusten.
Febris Typhoides.	Typhoid fever.	Fièvre typhoide.	Nervenfieber.
„ Recurrens.	Relapsing fever.	—	—
„ Typhus.	Typhus fever.	Typhus.	Typhus.
„ Intermittens.	Ague.	Fièvre Intermittente.	Wechselfieber.
„ Remittens.	Remittent fever.	„ Rémittente.	Remittent-Fieber.
„ Icterodes.	Yellow fever.	„ Jaune.	Gelbes Fieber.
„ Continua.	Continued fever.	Synoque.	
Cases of fever arising from intemperance are not to be included under this head, but are to be entered as Ebriositas (Class I., Order 3).			
Ophthalmia.	Ophthalmia.	Ophthalmie.	Augenentzündung.
Erysipelas.	Erysipelas.	Erysipèle.	Rose, Rothlauf.
Erythema.	—	Erythème.	Röthe.
Pyæmia.	Purulent infection.	Pyohémie.	Eiterfieber.
Gangræna nosocomialis.	Hospital gangrene.	Gangrène d'hôpital.	Hospitalbrand.
Metria.	Childbed fever.	Fièvre puerperale.	Kindbettfieber.
Pestis.	Plague.	Peste.	Pest.
Anthrax.	Carbuncle.	Anthrax Malin.	Carbunkel.
Furunculus.	Boil.	„ benin.	Blutschwür.
Influenza.	Influenza.	Grippe.	Grippe.
Dysenteria.	Dysentery.	Dyssenterie.	Ruhr.
Diarrhœa.	Diarrhœa.	Diarrhée.	Durchfall.
Cholera biliosa.	Cholera.	Cholera.	Cholera.
„ spasmodica.	Asiatic Cholera.	—	—
Rheumatismus.	Rheumatism.	Rheumatisme.	Rheumatismus.

Order 2. *Enthetic Diseases.*

Syphilis primaria.	Primary syphilis.	Syphilis primitive.	Primäre Syphilis.
„ secundaria.	Secondary ditto.	„ secondaire.	Secundäre Syphilis.
Iritis syphilitica.	Inflammation of the Iris.	Irite.	Entzündung der Regenbogenhaut.
Gonorrhœa.	Gonorrhœa.	Gonorrhée.	Tripper.
Phymosis et paraphymosis.			
Bubo.	Bubo.	Bubon.	
Orchitis.	Swelled testicle.	Orchite.	Hodenentzündung.
Strictura Urethræ.	Stricture.	Uréthrosténie.	Verengerung der Harnröhre.
Equinia.	Glanders.	Morve.	Rotz.
Rabies.	Hydrophobia.	Hydryphobie.	Wasserscheu.
Necusia.	Infection by puncture in dissection.	Infection par piqûre de dissection.	Sections-gift oder-Wunden.
Pustula Maligna.	Malignant pustule.	Pustule Maligne.	Milzbrandcarbunkel.
Lepra.	Leprosy.	Lépre.	Aussatz.

Order 3.—*Dietic Diseases.*

Febris à fame.	Famine fever.	Fièvre de Faim.	Hungerfieber.
Scorbutus.	Scurvy.	Scorbut.	Scorbut.
Purpura.	Land scurvy.	Purpura.	Purpura oder Blutflecken Krankheit.
Rachitis.	Rickets.	Rachitisme.	Englische Krankheit.
Bronchocele.	Bronchocele.	Bronchocele.	Kropf.
Cretinismus.	Cretinism.	Cretinisme.	
Ergotismus.	Ergotism.	Ergotisme.	Mutterkornvergiftung.
Ebriositas.	Intemperance.	Alcoholisme.	Trunksucht oder Säuferdyskrasie.

Order 4.—*Parasitic Diseases.*

Aphthæ.	Thrush.	Aphthe.	Schwämmchen.
Porrigo.	Scaldhead.	Porrigo.	Kopfgrind.

Scabies.	Itch.	Scabies ou Gale	Krätze, Milbenkrätze.
Phthiriasis.	Morbus pedicularis.	Phthiriase.	Läusesucht.
Vermes.	Worms.	Entozoaires.	Wurmsucht.
a. Acephalocystis, echinococcus, hominis.	*a.* Hydatids.	Hydatides.	Hydatiden, Echinococcus.
b. Tænia Solium.	Tape worm.	Ténia (ver solitaire),	Bandwurm.
c. Strongilus Gigas.	——	Strongle géant.	
d. Ascaris Lumbricoides.	Round worm.	Ascaride lombricoïde.	Spulwurm.
e. Ascaris Vermicularis,	Thread worm.	„ vermiculaire.	Fadenwurm.
f. Dracunculus.	Guinea worm.	——	Guineawurm.

Class II.—Constitutional Diseases.

Order 1.—*Diathetic Diseases.*

Podagra.	Gout.	Goutte.	Gicht.
Anæmia.	——	Anhémie.	Blutarmuth, Bleichsucht.
Anasarca.	Dropsy.	Hydropisie.	Wassersucht.
Carcinoma encephaloides.	Cancer (soft).	Cancer encephaloide.	Encephalöid.
Carcinoma alveolare.	„ (colloid).	„ alvéolaire.	Alveolarkrebs.
Carcinoma osteoides.	„ (osteoid).	„ ostéoïde.	Knochenkrebs.
Carcinoma epitheliale.	„ (epithelial).	„ epithélial.	Hautkrebs, Epithelisma.
Scirrhoma.	„ (scirrhus).	Squirre.	Schirrhus.
Melanosis.	——	Mélanose.	Melanose, Schwarzer Krebs.
Lupus.	——	Lupus.	Wasserkrebs.
Noma.	Canker.	Noma.	
Gangræna senilis.	Dry Gangrene.	Gangrène sénile.	Trockner Brand.

Order 2.—*Tubercular Diseases.*

Scrofula.	Scrofula.	Scrofule.	Scropheln.
Abscessus Psoanus.	Psoas abscess.	Abscès du Psoas.	Lendenmuskelabscees.
Tuberculosis Mesenterica.	Mesenteric disease.	Tuberculose.	Tuberculose Bauchfellenzündung.
Peritonitis Tuberculosa.	Tubercula Peritonitis.	Peritonite tuberculeuse.	
Phthisis Pulmonalis.	Consumption.	Phthisie.	Schwindsucht.
Hæmoptysis.	Spitting of blood.	Hémoptysie.	Blutspeien.
Meningitis tuberculosa.	——	Meningite tuberculeuse.	

Class III.—Local Diseases.

Order 1.—*Diseases of the Nervous System.*

Meningitis.	Inflammation of the membranes of the brain.	Meningite.	Meningitis.
Encephalitis. (Including acute Hydrocephalus)	Inflammation of the brain.	Encéphalite.	Gehirnentzündung und Acuter Wasserkopf.
Myelitis.	Inflammationof spinal chord.	Myélite.	Rückenmarkentzündung.
Apoplexia.	Apoplexy.	Appoplexie.	Schlagfluss, Nervenschlag.
Paralysis.	Palsy.	Paralysie.	Lähmung.
Paralysis agitans.	Shaking palsy.	——	Zitterkrampf.
Chorea.	St. Vitus' dance.	Chorée (danse de St. Guy).	Veitstanz.
Delirium Tremens.	Brain fever of drunkards.	——	Säuferwahnsinn.
Mania.	Madness.	Folie.	Manie.
Monomania.	Monomania.	Monomanie.	Monomanie.
Dementia.	Mental imbecility.	Démence.	Unsinnigkeit.
Epilepsia.	Epilepsy.	Epilepsie.	Fallsucht.
Hysteria.	Hysteria.	Hystérie.	Muttersucht.
Tetanus.	Lockjaw.	Tetanos.	Starrkrampf.
Convulsio.	Convulsions.	Convulsions.	Krämpfe.
Eclampsia.	——	Eclampsie.	Krampf der Gebärenden.
Laryngismus.	——	Laryngisme.	
Cephalæa.	Chronic headache.	Cephalée.	Kopfschmerz.
Neuralgia.	Neuralgia.	Névralgie.	Neuralgie.
Cæcitas.	Blindness.	Cécité.	Blindheit.
Otitis.	Inflammation of the Ear.	Otite.	Ohrentzündung.
Dysecœa.	Deafness.	Surdité.	Taubheit.

Order 2.—*Diseases of the Circulatory System.*

Carditis.	Inflammation of heart.	Cardite.	Herzenentzündung.
Pericarditis.	Inflammation of membrane covering heart.	Péricardite.	Herzbeutelentzündung.
Endocarditis.	Inflammation of membrane lining heart.	Endocardite.	
Morbus Valvularum Cordis.	Disease of valves of heart.	Maladies des valvules du cœur.	Klappenfehler.
Hypertrophia cordis.	Hypertrophy of heart.	Hypertrophie du cœur.	Herzhypertrophie.
Atrophia cordis.	Atrophy of heart.	Atrophie du cœur.	Herzatrophie.
Degeneratio cordis.	Fatty degeneration of heart.	Dégénérescence du cœur.	Fettige herzentartung.
Aneurisma cordis.	Aneurism of heart.	Anévrisme du cœur.	Herzaneurisma.
Aneurisma ——.	Aneurism of ——. The artery affected to be specified.	Anévrisme ——.	Aortenaneurisma.
Angina Pectoris.	Breast pang.	Angine pectorale.	Brustbräune.
Syncope.	Fainting.	Syncope.	Ohnmacht.
Arteritis.	Inflammation of arteries.	Artérite.	Schlagaderentzündung
Atheroma Arteriarum.	——	Athérome.	Atheroma.
Phlebitis.	Inflammation of veins.	Phlebite.	Venenentzündung.
Varix.	Varicose veins.	Varices.	Krampfadern.

Order 3.—*Diseases of the Respiratory System.*

Epistaxis.	Bleeding at nose.	Epistaxis.	Nasenbluten.
Laryngitis.	Inflammation of windpipe.	Laryngite.	Kehlkopfentzündung.
Œdema Glottidis.	——	Œdème de la glotte.	Stimmentzündung.
Bronchitis.	Bronchitis.	Bronchite.	Luftröhrentzündung.
Pleuritis.	Pleurisy.	Pleurésie.	Brustfellentzündung.
Hydrothorax.	Water in the chest.	Hydrothorax.	Brustwassersucht.
Empyema.	——	Empyème.	Empyem.
Pneumothorax.	——	Pneumothorax.	Luftbrust.
Apoplexia Pulmonalis.	Congestion of lungs.	Apoplexie pulmonaire.	Lungenschlag.
Pneumonia.	Inflammation of lungs.	Pneumonie.	Lungenentzündung.
Asthma.	Asthma.	Asthme.	Engbrüstigkeit.
,, Tritorum.	Grinder's asthma.	——	Grinder'sches Asthma.
,, Metallicorum.	Miner's ,,	——	Miner'sche Asthma.
Emphysema.	——	Emphysème des poûmons.	Emphysem.

Order 4.—*Diseases of the Digestive System.*

Glossitis.	Inflamm. of tongue.	Glossite.	Zungenentzündung.
Stomatitis.	,, mouth.	Stomatite.	Mundentzündung.
Pharyngitis.	,, pharynx.	Pharyngite.	Schlundentzündung.
Œsophagitis.	,, gullet.	Œsophagite.	Speiserörhenentzündung.
Gastritis.	,, stomach.	Gastrite.	Magenentzündung.
Enteritis.	,, bowels.	Entérite.	Darmentzündung.
Peritonitis.	Abdominal inflam.	Péritonite.	Bauchfellentzündung.
Ileus.	Iliac passion.	Ileus.	Darmgicht.
Obstipatio.	Constipation.	Constipation.	Verstopfung.
Intus-susceptio.	Invagination of bowel	Intussusception.	Darmverschlingung
Prolapsus ani.	Prolapse of Bowel.	Chute du rectum	Volvulus.
Hernia.	Rupture. Specify the particular kind of hernia.	Hernie.	Engeweidebrüche.
Dyspepsia.	Indigestion.	Dyspepsie.	Dyspepsie.
Colica.	Colic.	Colique.	Kolik.
Hæmatemesis.	Vomiting of blood.	Hématémèse.	Blutbrechen.
Melæna.	——	Méléne.	Schwarze Krankheit.
Hæmorrhois.	Piles.	Hémorrhoïdes.	Hämorrhoiden.
Fistula in Ano.	Fistula.	Fistule.	Fistel.
Splenitis.	Inflam. of spleen.	Splénite.	Entzündung der Milz.
Hepatitis.	,, liver.	Hépatite.	,, ,, Leber.
Icterus.	Jaundice.	Ictère.	Gelbsucht.
Chololithus.	Galistones.	Calcul biliaire.	Gallensteine.
Cirrhosis.	——	Cirrhose.	Cirrhose: granulirte Leber.
Ascites.	Abdominal dropsy.	Ascite.	Bauchwassersucht.

Order 5.—*Diseases of the Urinary System.*

Nephritis.	Inflam. of kidneys.	Néphrite.	Nierenentzündung.
Ischuria.	Retention of urine.	Ischurie.	Harnverhaltung.
Diuresis.	Excessive secretion of urine.	Diurèse.	Unvermögen den Harn zu halten.
Enuresis.	Incontinence of urine.	Enuresie.	Unwillkürlicher Harnabgang.
Nephria.	Bright's disease.	Néphrine.	Brightsche Krankheit.
Diabetes.	Diabetes.	Diabète.	Harnruhr.
Calculus vesicæ.	Stone in the bladder.	Calcul.	Steinkrankheit.
Lithiasis.	Gravel.	Gravelle.	Harngries.
Hæmaturia.	Bloody urine.	Hématurie.	Blutharnen.
Cystitis.	Inflam. of bladder.	Cystite.	Blasenentzündung.
Morbus Prostaticus.	Diseased prostate.	Prostatite.	Vorsteherdrüsenkrankheit.

Order 6.—*Diseases of the Generative System.*

Varicocele.	Varicose veins of chord.	Varicocèle.	Krampfaderbruch.
Orchitis.	Inflam. of testicle. When not the result of gonorrhœa.	Orchite.	Hodenentzündung.
Hydrocele.	Dropsy of testicle.	Hydrocèle.	Wasserbruch.
Hysteritis.	Inflam. of womb.	Hystérite.	Gebärmutterentzündung.
Hydrops Ovarii.	Ovarian dropsy.	Ovarémie.	Eierstockswassersucht.
Tumor Ovarii.	„ tumour.	Ovarite.	Eierstocksgeschwülste.
Tumor Uteri.	Uterine „	Tumeur Utérine.	Uterusgeschwülste.
Polypus Uteri.	„ polypus.	Polypes de l'utérus.	Uteruspolypen.

Order 7.—*Diseases of the Locomotive System.*

Arthritis.	Inflam. of joints.	Arthrite.	Gliedersucht.
Synovitis.	——	Synovite.	Gelenkkapselentzündung.
Hydrarthrus.	Dropsy of a joint.	Hydrarthre.	Gelenkwassersucht.
Contractura.	Contraction.	Contracture.	Contraktur.
Ostitis (including periostitis).	Inflammation of bones.	Ostéite.	Knochen-und Knochenhautenzündung.
Exostosis.	Osseous tumour.	Exostose.	Exostose.
Caries.	——	Carie.	Rückgrathverkrümmung.
Necrosis.	——	Nécrose.	Knochenfrass.
Atrophia Musculorum.	Muscular atrophy.	Atrophie Musculaire.	Muskelatrophie.

Order 8.—*Diseases of the Integumentary System.*

Roseola.	——	Roséole.	Roseola.
Urticaria.	Nettlerash.	Urticaire.	Nesselfriesel.
Eczema.	——	Eczéma.	Eczem, Hitzbläschen.
Herpes.	——	Herpès.	Herpes, Flechte.
Pemphigus.	——	Pemphigus.	Pemphigus, Blasenausschlag.
Rupia.	——	Rupia.	Rupia.
Ecthyma.	——	Ecthyma.	Echthyma.
Impetigo.	——	Impetigo.	Impetigo, Pustelflechte.
Acne.	——	Acné.	Acne, Finne.
Mentagra.	——	Mentagre.	Mentagra, Bartfinne.
Lichen.	——	Lichen.	Schwindknötchen.
Prurigo.	——	Prurigo.	Hautjucken.
Psoriasis.	——	Psoriasis.	Schuppengrind.
Pityriasis.	Dandriff.	Pityriasis.	Hautkleie.
Ichthyosis.	——	Ichthyose.	Fischhaut.
Phlegmon.	——	Phlegmon.	Phlegmon.
Paronychia.	Whitlow.	Panaris.	Wurm, Panaritium.
Abscessus.	Abscess.	Abcès.	Abscess, Geschwür.
Ulcus.	Ulcer.	Ulcère.	Geschwür.
Pernio.	Chilblains.	Engelure.	Frostbeule.

Class IV.—Developmental Diseases.

Order 1.—*Developmental Diseases of Children.*

Natus Mortuus.	Stillborn.	Mort né.	Todgeboren.
Premature natus.	Premature birth.	Accouchement prematuré.	Unzeitiggeboren.
Atelectasis Pulmonum.	——	Faiblesse.	Lungen-atelektasie.
Cyanosis.	——	Cyanose.	Cyanose.
Spina bifida.	——	Spina bifida.	Spina bifida.
Anus imperforatus.	——	Imperforation de l'anus.	Atresia Ani.
Fatuitas.	Idiocy.	Idiotisme	Idiotismus.
Mutitas.	Congenital Deaf-Dumbness.	Sourd-mutité.	Taubstummheit.
Dentitio.	Teething.	Dentition.	Zahnung.

Order 2.—*Developmental Diseases of Women.*

Chlorosis.	Chlorosis.	Chlorose.	Bleichsucht.
Partus, Abortus.	Childbirth, Miscarriage, Abortion.	Suites des couches.	Kindbett, Fehlgeburt.
Paramenia. (Including amenorrhœa, leucorrhœa.)	——	Amenorrhée.	Unregelmässigkeit, oder Fehlen des Monats-flusses.
Climacteria.	Turn of Life.	Temps critique.	

Order 3.—*Developmental Diseases of Old people.*

Senectus.	Old age.	Sénilité.	Altersschwäche.

Order 4.—*Diseases of Nutrition.*

Atrophia, asthenia.	Atrophy, Debility (includes premature old age).	Atrophie.	Atrophie.

Class V.—Violent Deaths or Diseases.

Order 1.—*Accident.*

Ambustio.	Burn, Scald.	Brulûre.	Feuer, Verbrennung mit heissen Flüssigkeiten.
Explosio.	Explosion of gunpowder, &c.	Explosion de —	Explosion von Pulver, &c.
Gelatio.	Frostbite.	Congélation.	Erfrierung.
Ictus fulminis.	Lightning.	Foudroyé.	Blitzschlag.
Insolatio.	Sunstroke, or Heat Apoplexy.	Coup de soleil.	Sonnenstich.
Submersio.	Drowning.	Submersion.	Ertrinken.
Suspendium.	Hanging.	Suspension.	Erhängen.
Suffocatio.	Suffocation.	Suffocation.	Erstickung.
Luxatura.	Dislocation.	Luxation.	Verrenkung.
Subluxatio.	Sprain.	Subluxation.	Verstauchung.
Fractura —	Fracture of —	Fracture de —	Bruch von —
Contusio —	Contusion of —	Contusion de —	Contusion von —
Concussio —	Concussion of —	Commotion de —	Erschütterung von —
Vulnus Sclopetarium —	Gunshot wound.	Plaie d'arme à feu.	Schusswunden.
Vulnus incisum.	Cut, Stab, &c.	Coupure, Piqûre.	Schnittwunden.
Morsus Serpentis.	Snake bite.	Morsure de serpent.	Schlangenbiss.
Venenatio.	Poisoning.	Empoisonnement.	Gift.
Privatio.	Privation.	Indigence.	Armuth.
Vesiculæ pedis.	Footsore.		

Order 2.—*Battle.*
Order 3.—*Homicide.*
Order 4.—*Suicide.*
} The diseases or causes of death are the same as in Order 1.

Order 5.—*Execution.*—Mode of execution to be stated.

Order 6.

Punitus.	Punished

S.

Scabies, I. 4.
Scarlatina, I. 1.
Scirrhoma, II. 1.
Scorbutus, I. 3.
Scrofula, II. 2.
Senectus, IV. 3.
Serpentis morsus, V. 1.
Splenitis, III. 4.
Spina bifida, IV. 1.
Stomatitis, III. 4.
Strictura urethræ, I. 2.
Subluxatio, V.
Submersio, V.
Suffocatio, V.
Suspendium, V.
Syncope, III. 2.
Synovitis, III. 7.
Syphilis, I. 2.

T.

Tetanus, III. 1.
Tonsillitis, I. 1.
Tuberculosis, II. 2.
Typhus, I. 1.

U.

Ulcus, III. 8.
Urticaria, III. 8.
Uteri (morbi), III. 6.

V.

Varicella, I. 1.
Varicocele, III. 6.
Variola, I. 1.
Varioloides, I. 1.
Varix, III. 2.
Venenatio, V.
Vermes, I. 4.
Vesiculæ pedis, V. 1.
Vulnus, V.

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16

ON THE EFFECTS

OF

TWELVE WEEKS' RESIDENCE

IN

BULGARIA

(*During the months of June, July, and August*, 1854)

ON THE

SUBSEQUENT HEALTH OF THE BRITISH TROOPS IN THE CRIMEA.

BY

WILLIAM AITKEN, M.D. Edin.,

CORRESPONDING MEMBER OF THE IMPERIAL NATURAL HISTORY SOCIETY OF DRESDEN, AND OF THE ROYAL IMPERIAL SOCIETY OF PHYSICIANS OF VIENNA; FORMERLY DEMONSTRATOR OF ANATOMY IN THE UNIVERSITY OF GLASGOW; AND LATE PATHOLOGIST AT SCUTARI.

COMMUNICATED BY

DR. JENNER.

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Received April 16th.—Read June 9th, 1857.

It may perhaps be presumed that the inquiries regarding the causes which led to the great losses by disease amongst the troops in the Crimea during the first seven months of the campaign there, have fully attained the object for which they were instituted.

But notwithstanding all that has been written about this

eventful period, some elements of causation in the induction of disease amongst the troops of the allied armies have been entirely overlooked, disregarded, and lost sight of throughout the inquiries into the nature and origin of the sickness and diseases of the soldiers in the Crimea.

One cause, to which I would particularly allude, may be characterised as "*the persistent pernicious influence of the residence in Bulgaria upon the health of the ex-Bulgarian portion of the Crimean army.*"

There are three remarkable periods into which the medical history of the late Russian war may be divided.

1. The period of the residence in Bulgaria from about the end of June, 1854, till September of that year.

2. The period of the first seven months' occupation of the Crimea in the camp before Sebastopol, during which the losses sustained by the allied troops from disease alone, have not been surpassed by any army in the history of the world.

3. The period after April, 1855, characterised by a gradual return of the army to a state of health and efficiency equally unsurpassed. It is entirely due to the laborious exertions of Sir John McNiell and Sir Alexander Tulloch that we are indebted for precise information regarding the causes of the unprecedental losses to the strength of the army which took place during the first seven months of the campaign in the Crimea.

They have shown, in the clearest possible manner, how these losses are attributable to the combined influence of several causes, namely:

(1.) The influence of circumstances inherent to warfare, and especially the excessive amount of duty performed by men, few in number and inadequate in strength.

(2.) The influence of departmental deficiency, to which the great privations of the troops were in a great measure due.

(3.) The pernicious endemic influences of certain localities in the Crimea in which bodies of men were encamped.

It is now my object to show that the inactive residence in Bulgaria during three months exercised a persistent pernicious influence upon the health of the troops in the Crimea; and which continued to make itself felt, more or less, throughout the campaign, but more especially during the first seven months; nay, it may even now be doubted whether many who passed through the campaign in Bulgaria are as well able to resist disease and sickness as their constitutions were wont to do.

It is known, from the evidence of Dr. Mapleton, in 'Parliamentary Paper' No. 247, p. 253, for 1855, that the general health of the troops in Bulgaria may be described as "sickly." They were "using up" while there. An estimated per centage of illness or sickness of the army during their twelve weeks' residence in that district cannot be stated. Many men were weak and ill, and lost flesh rapidly, though they were not under medical care in hospital; and when asked as to their health, they could not definitely say what ailed them. The troops were depressed in spirits from inaction, and were terror-stricken from the suddenness and fatality of the attacks of disease. Long drills, combined with bad and unwholesome tents, great heat during the day, followed by cold and dewy nights, fogs, morning and evening mists from paludal districts, great range of temperature, sour brown bread, and ill-assorted food, contributed to "use up" the strength of the men, and to put the army into that very unsatisfactory state in which it was previous to the embarkation for the Crimea. Physicians will at once recognise that the condition of the men here described corresponds to that state of *anæmia* to which Vogel gives the name of *malaria-chlorosis*. The men were in a very bad state when they marched from the various camps to embark at Varna. They were so weak, that they could not and did not march more than between four and five miles a day, and it was as much as they could do to carry their necessaries, and some required to have their knapsacks and arms carried for them.

The immediate consequences of this may be read in the

losses sustained during the first *twenty-two* days' marching in the Crimea, when the famous "flank movement" was effected. During this short time the strength of the British army was diminished by about 5053 men, of whom 353 were killed at Alma, 1867 were wounded there, 2237 were sent sick to Scutari; and the loss on the "flank march" alone is estimated at about 596 men.

The future persistent pernicious influence of the Bulgarian residence it is now my object more fully to illustrate.

The sources of our information relative to the topics about to be noticed are chiefly contained in—

1. Parliamentary paper (No. 42) of the session 1857, which contains, amongst other information, the dates of the arrival in the East of each regiment, together with its original strength on joining the allied army.

2. Parliamentary paper No. 218 of session 1855, pp. 474—479, shows what drafts were sent out to recruit the different regiments in the Crimea, the amount of the draft, and the period of its arrival in the Crimea.

3. It is known from several sources what were the respective regiments which served in Bulgaria, *e. g.*, Parliamentary papers 218—242, and Russell's 'War.'

4. The general abstract of sickness and mortality appended to the volume published by Colonel Sir Alexander Tulloch, entitled, 'The Crimean Commission and the Chelsea Board.'

It is necessary, in the first place, to classify the Crimean army into two parts, namely:

1. Into the troops which served both in Bulgaria and in the Crimea, and which may be called the *ex-Bulgarian* part of the army.

2. Into the troops which served in the Crimea only, and which may be simply termed the *Crimean* troops.

In thus considering the sanitary condition of the British

army in the the Crimea, as influenced especially by *the residence in Bulgaria,* I offer the following results, merely as *approximative* conclusions to the truth, from data not sufficiently extensive to give such conclusions with absolute accuracy. The topics, however, are of such importance, that in all future pathological inquiries regarding the nature of the diseases from which our troops suffered, not only in the camp before Sebastopol, but also at Scutari, and other local hospitals, the influences of which I now write must occupy a prominent place in the causes of sickness, mortality, and general loss of strength—a place, however, which has not as yet been distinctly assigned to them. The great comparative loss which appears to have been sustained by the drafts especially requires investigation; but unless we are put in possession of the ages of the recruits sent out, their number and periods of service, their admissions to hospital, deaths, and invaliding, as distinct from the other troops, their comparative numerical losses cannot be accurately determined.

The comparative reduction in the strength of each portion of the army could only be inferred (1) by comparing the actual deaths in each, and the ratio of these to the admissions and to the original strength; (2) by comparing the ratio of deaths and invaliding to the admissions, and to the original strength of each of the two divisions of the army; (3) by comparing the per centage of drafts required to recruit the strength of the troops in each of the two divisions of the army.

In attempting approximatively to ascertain the results yielded by such comparisons, there is an evident source of fallacy which cannot, with the existing data, be eliminated; for although the numerical returns of the drafts and the losses of different regiments might be arithmetically dealt with as bodies of men, yet there are no data by which the individual soldiers constituting the drafts, (and consequently holding the same position as the Crimean troops,) could be separated from those in the same regiments who belong to the ex-Bulgarian class. A fallacy, therefore, is involved in the fact, that if A, B, C, and D, represent ex-Bulgarian

soldiers, and if *a*, *b*, *c*, and *d* were the drafts who joined them in the Crimea, the numerical losses of the whole during the period being *four* men, there is no evidence to show whether these *four* men were ex-Bulgarian (A, B, C, D), or Crimean soldiers (*a*, *b*, *c*, *d*.)

The following observations, therefore, merely illustrate the question, considered in a *nosological* point of view, and the evidence is thus far of a circumstantial nature only.

The following are the more important particulars which the tables appended to this paper illustrate, and which demonstrate, to a certain extent, the influence of the residence in Bulgaria as a cause of disease.

A.—Tabular Statements to show the Influence of the Bulgarian Residence on the General Health of the Troops.

Diseases.	EX-BULGARIAN FORCES.			CRIMEAN FORCES.		
	Total admissions from all diseases.	Ratio per cent. to the total admissions from all diseases.	Ratio per cent. to average strength (14959).[1]	Total admissions from all diseases.	Ratio per cent. to the total admissions from all diseases.	Ratio per cent. to average strength (8880).[1]
Fevers	6179	24·2	41·3	2780	16·2	31·2
Cholera	1007	3·9	6·6	872	5·2	9·8
Scorbutic diseases .	1294	5·0	8·6	540	3·2	6·1
Enteric diseases ...	11098	43·1	74·1	7750	46·8	86·1
Frostbite	1034	4·0	6·9	810	4·9	9·0
Pulmonary diseases	1887	7·4	12·7	1110	6·7	12·5
Other diseases	2960	11·6	19·1	2671	16·1	30·0
Total, exclusive of wounds and injuries.	25459	...	169·3	16533	...	184·7

When we take the total numbers of admissions and

[1] This average strength is the sum total of the average strengths of each regiment as given by Sir Alexander Tulloch. See tables at the end of this paper.

average strength to estimate the ratio per cent. of admissions to average strength, it is found that the "Crimean" portion of the army suffered a greater loss of strength by *admissions to the hospital* than the ex-Bulgarian troops did by 16 per cent.; the numbers being 170 per cent. of admissions in the ex-Bulgarian troops, and 185 per cent. of admissions among the Crimean troops; and the following is a tabular view of the diseases which prevailed in each of the two portions of the army, arranged in the order of their greatest ratio to the whole admissions.

Ex-Bulgarian.	Per centage on total admissions from all diseases.	Crimean.	Per centage to whole admissions.
Enteric diseases	43·1	Enteric diseases	46·8
Fevers	24·2	Fevers	16·2
Pulmonary diseases	7·4	Pulmonary diseases	6·7
Scorbutic diseases	5·0	Cholera	5·2
Frostbite	4·0	Scorbutus	5·2
Cholera	3·9	Frostbite	4·9

But while the admissions to hospital were so much greater amongst the Crimean portion of the army, the deaths per cent. on these admissions were very much greater amongst the ex-Bulgarian part, as shown in the following table:

Deaths per cent. on total admissions from each disease:

Ex-Bulgarian.		Crimean.	
Fevers	23·3	Fevers	17·2
Cholera	63·5	Cholera	53·5
Scorbutus	11·3	Scorbutus	8·0
Enteric diseases	24·2	Enteric diseases	17·7
Frostbite	25·4	Frostbite	16·3
Pulmonary	11·0	Pulmonary	7·4
Wounds and Injuries	19·1	Wounds and Injuries	13·7

When we contrast the sanitary state of these two divisions of the army by means of the foregoing tables, the following general statement may be made:

1. That the admissions were greater amongst the *Crimean* portion of the army than amongst the ex-Bulgarian, and the

excesses were chiefly due to enteric diseases, scorbutic diseases, and cholera; while the excess of admissions from the *ex-Bulgarian* portion were chiefly due to fevers and pulmonary diseases compared with the other (Crimean) portion of the army.

2. That while the admissions were greater from the *Crimean* portion, the mortality compared with the amount of admissions was much greater amongst the *ex-Bulgarian* portion of the army than amongst the *Crimean*. The greater ratio of mortality chiefly arose from (1) cholera, (2) frostbite, (3) enteric diseases, and (4) fevers amongst the *ex-Bulgarian* part.

Some interesting features in these antithetical conditions may be noticed in the history of fever and cholera amongst the troops.

In the case of fevers, the difference in the whole admissions was 8 per cent., being so much more in the *ex-Bulgarian* troops than in the *Crimean*.

When it is considered that about 3·3 per cent. is the usual average of fever patients admitted into hospitals in large cities, such as London (*e. g.* Guy's), it is at once made obvious how prevalent were fevers in the Crimea, and especially among the *ex-Bulgarian* part of the army. The admissions for fever in the Crimea being 24·2 per cent. amongst the *ex-Bulgarian* troops, and 16·2 per cent. amongst the others, compared with the total admissions for all other diseases.

The pernicious influence of the residence in Bulgaria on the constitution of the soldier cannot be more clearly demonstrated than by those facts which show how readily that portion of the army succumbed. They were "used up" when they left Bulgaria; they were less able to cope with disease, and more of them died.

To demonstrate these statements, and illustrate more fully the antithetical conditions already adverted to, it is necessary to consider the classes of diseases one by one.

1. *Of the Fevers.*[1]

	Ex-Bulgarian troops. Average strength 14,959.	Crimean troops. Average strength 8880.
Total admissions to hospital in Crimea...	6179	2780
„ deaths in the Crimea.....	919	294
„ deaths at Scutari or elsewhere.....	531	186
„ Invalided to England	242	159
Admissions per cent. on average strength.....	41·3	31·2
Deaths per cent. on average strength: Crimea, 6·1; Scutari, 3·6 (ex-Bulgarian force) } „ 3·3; „ 2·0 (Crimean force) }	9·7	5·3
Deaths per cent. on total admissions: Crimea, 14·7; Scutari, 8·6 (ex-Bulgarian) ... } „ 10·5; „ 6·7 (Crimean) ..... }	23·3	17·2
Invalided per cent. on average strength	1·6	1·5
„ „ „ total admissions	3·9	5·0

The summary here given shows, that in fevers the admissions were greater in the *ex-Bulgarian* regiments by 10 per cent., calculated on the total strength of the troops; while the deaths per cent. were nearly doubled compared with the *Crimean* portion of the army, and calculated on the strength of each.

With regard to the rate of mortality amongst the total cases of fever admitted, the deaths per cent. were more amongst the *ex-Bulgarian* force by 6·1 per cent.; the ratio of mortality being 23·3 per cent. amongst them, while it was only 17·2 amongst the *Crimean* troops. For the sake of comparison, it may be noticed that in civil hospitals of large towns, such as in London, for example, Guy's, the average ratio of mortality from fever, over the admissions for that species of disease, is about 10·3 per cent. On looking to the numbers invalided, comparatively fewer appear to have been left among the *ex-Bulgarian* troops to be able to avail themselves of this source of escape from sufferings; for the numbers invalided from *fever* amongst

[1] See Appendix, Tables I and II.

the *Crimean* portion of the army was greater than in the *ex-Bulgarian* force by 3 per cent.

2. *Cholera.*[1]

	Ex-Bulgarian strength 14,959.	Crimean strength 8880.
Total admissions to hospitals in Crimea	1007	872
„ deaths in the Crimea	623	467
„ deaths at Scutari or elsewhere.....	28	5
Admissions per cent. on average strength.....	6·6	9·8
Deaths per cent. on average strength	4·1	5·2
Deaths per cent. on admissions: Crimea, 61·8; Scutari, 1·7 (ex-Bulgarian) ...	63·5	53·5

It is interesting to notice, with regard to cholera, the similarity of pathological phenomena presented by the history of this disease in Bulgaria and in the Crimea, compared with its known phenomena as an epidemic. Up to and including the period now under consideration, two separate epidemics may be said to have affected the army. The *ex-Bulgarian* campaigners were exposed to both of them. During the first epidemic, while in Bulgaria, they suffered severely, and indeed so long as they remained in the vicinity of Varna the disease never left their camps. They carried it with them to the Crimea, and it continued to seize upon and to kill many victims on the march from Old Fort to Balaclava, and more especialy after the Battle of the Alma, and on the famous Flank March, when the fate of the more feeble soldiers was at once sealed by death.[2]

During the Crimean epidemic of cholera the statistics present a remarkable antithesis to those of the other classes of diseases, more especially in the following details:

1. The per centage of admissions on the average strength of the *troops serving in the Crimea* only was much *greater*

[1] See Appendix, Tables I and II.

[2] See 'Glasgow Medical Journal' for April, 1857, for an account of the loss on the "Flank March."

than the ratio of admissions amongst the *ex-Bulgarian* troops; and the per centage of deaths from cholera, calculated on the strength of the troops, was also *greater* amongst the former than amongst the latter.

2. But the per centage of deaths, calculated on and compared with the admissions, was *greater* amongst the *ex-Bulgarian* forces by 8·3 per cent. than amongst the Crimean troops.

With regard to the first of these statements, it may be observed that, according to what we know regarding the nature of this remarkable disease, an explanation may exist in the circumstance, that already, during the Bulgarian campaign, the more susceptible of the troops had been seized by the disease, and many had already died. The disease, to use a common expression, "had worked itself out upon them." Fewer, therefore, were in a condition to take the disease, subsequently, amongst the *ex-Bulgarian* troops in the Crimea, and, therefore, fewer of this part of the army died in the Crimea from cholera.

On the other hand, again, with regard to the second of these antithetical statements, it may be observed, that, on account of the "used up" condition of the *ex-Bulgarian* troops, a much larger per centage died amongst them, of those who were attacked, than amongst those who were attacked amongst the *Crimean* troops.

3. *Scorbutic diseases.*[1]

	Ex-Bulgarian strength 14959.	Crimean strength 8880.
Total admissions to hospital in Crimea	1294	540
„ deaths in the Crimea	106	28
„ „ at Scutari or elsewhere	42	16
„ invalided to England	32	18
Admissions per cent. on average strength.....	8·6	6·1
Deaths per cent. on total admissions: Crimea, 8·2; Scutari, 3·1 (ex-Bulgarian) ..... „ 5·1; „ 2·9 (Crimean)	11·3	8·0
Invalided per cent. on admissions	2·5	3·3

[1] See Appendix, Tables I and II.

With regard to the scorbutic diseases it can very readily be understood, from the nature of this species of disease, how the "used up" condition of the *ex-Bulgarian* troops predisposed to the scorbutic state in the Crimea; and accordingly, it is seen, from the above summary, that amongst them the admissions per cent. in the Crimea, on the average strength, were greater by 2·5 per cent., and the deaths greater by 5·3 per cent. than amongst the Crimean troops.

4. *Enteric diseases.*[1]

	Ex-Bulgarian strength 14,959.	Crimean strength 8880.
Total admissions to hospital in Crimea	11098	7750
„ deaths in the Crimea	1057	686
„ deaths at Scutari or elsewhere.....	1648	690
„ invalided to England	384	211
Admissions per cent. on average strength.....	74·1	86·1
Deaths per cent. on average strength: Crimea, 7·0; Scutari, 11·0 (ex-Bulgarian) ...	18·0	15·4
„ 7·7; „ 7·7 (Crimean)		
Deaths per cent. on total admissions: Crimea, 9·5; Scutari, 14·7 (ex-Bulgarian) ...	24·2	17·7
„ 8·8; „ 8·9 (Crimean)		
Invalided per cent. on average strength	2·5	2·3
„ „ on admissions	3·4	2·5

Very nearly the same antithetical statements may be made regarding the enteric affections, amongst the two divisions of the army, as have been made regarding cholera, the ex-Bulgarian troops being in a predicament similar as to both. The susceptibility to these diseases had been already well-nigh exhausted in Bulgaria, and accordingly it is observed that more were admitted amongst the new comers to the Crimea for diseases of the *stomach* and *bowels* than amongst the old campaigners of Bulgaria. The ratio of mortality also, both on admissions and on strength, was greater amongst the *ex-Bulgarian* troops.

[1] See Appendix, Tables I and II.

One remarkable feature in the history of this class of diseases is the great mortality which attended them at Scutari, the ratio being 23·6 per cent. at Scutari against 18·3 per cent. in the Crimea. Such facts tend to confirm the belief entertained by not a few, that not only were the diseases prolonged and tedious at Scutari, but that Scutari, not only from such results but also from its physical climate, as I have elsewhere attempted to show,[1] was a very unfavorable place for convalescence, and never ought to have been selected as the head-quarters of our large hospitals.

5. *Frostbite.*

	Ex-Bulgarian strength 14,959.	Crimean strength 8880.
Total admissions to hospital in Crimea	1034	810
„ deaths in the Crimea	82	34
„ deaths at Scutari or elsewhere	184	99
„ invalided to England	73	51
Admissions per cent. on average strength	6·9	9·0
Deaths per cent. on average strength	1·2	1·1
Deaths per cent. on admissions: Crimea, 7·8; Scutari, 17·6 (ex-Bulgarian) ... „ 4·1; „ 12·2 (Crimean)	25·4	16·3
Invalided per cent. on admissions	7·8	6·6

Of the sufferings of the troops from frostbite, it is to be observed, that more were admitted to hospital amongst the soldiers *who served in the Crimea* only than from amongst the *ex-Bulgarian* campaigners; but that the per centage of deaths amongst this *latter* class of troops was very much greater than amongst the *former*, namely, 25·4 against 16·3, being a greater ratio of mortality by 9·1 per cent.

With regard to Scutari, the history of the cases of frostbite furnish additional facts in illustration of what I have already alluded to in the preceding paragraph, namely, that

[1] 'Glasgow Medical Journal,' April, 1857.

[2] See Appendix, Tables I and II.

the ultimate sufferings of the troops, from this class of diseases, treated at Scutari, were of the most prolonged and tedious kind. When, therefore, such facts are connected with an observation made by Sir Alex. Tulloch, to the effect that—"it was only by degrees that the small proportion who returned, of those who had left the Crimea sick, awakened a suspicion of the fatal character of the disease, and the extent to which the constitution of the troops had suffered by the hardships and privations they had undergone."[1] No other conclusion can possibly be arrived at than that Scutari was unfavorable for convalescence, and an unfit place for the treatment of such large numbers of our sick. I do not wish it to be understood for a moment that the physical climate of Scutari induced of itself diseases there; but that the nature of the climate, the local positions of the hospitals, their sanitary condition, especially as to drainage and overcrowding or even occupation of the corridors, all combined to develop diseases there (such as typhus fevers) and to maintain their existence when imported.

6. *Pulmonary Diseases.*[2]

	Ex-Bulgarian strength 14,959.	Crimean strength 8880.
Total admissions to hospitals in Crimea	1887	1110
„ deaths in the Crimea	126	55
„ „ at Scutari or elsewhere.....	94	38
„ invalided to England	172	72
Admissions per cent. on average strength.....	12·7	12·5
Deaths per cent. on admissions: Crimea, 6·1; Scutari, 4·9 (ex-Bulgarian)	11·0	7·4
„ 4·0; „ 3·4 (Crimean).....		
Invalided per cent. to England	9·0	6·4

The ratio of admissions for this class of affections was nearly the same in both divisions into which I have divided

[1] Tulloch, l. c., p. 150.

[2] See Appendix, Tables I and II.

the army of the East; but the deaths amongst the *ex-Bulgarian* troops were greater, by nearly 4 per cent., than amongst the *Crimean* forces; and the numbers invalided to England were also greater amongst the former than amongst the latter by 4·6 per cent.

The nature of these pulmonary affections I have not been able to ascertain; and it would, no doubt, be of interest to know how far any of them were purely idiopathic, and how far a tendency to tuberculosis had been engendered, or had sustained a stimulus to development, by the Crimean or Bulgarian campaigns.

7. "*Other Diseases.*"[1]

	Ex-Bulgarian strength 14,959.	Crimean strength 8880.
Total admissions to hospital in Crimea	2960	2671
„ deaths in the Crimea	111	74
„ „ at Scutari or elsewhere.....	132	62
„ invalided to England	365	164
Admissions per cent. on average strength.....	19·1	30·0
Deaths per cent. on admissions: Crimea, 3·7; Scutari, 4·4 (ex-Bulgarian) ..... „ 2·7; „ 2·3 (Crimean).....	8·1	5·0
Invalided per cent. on strength	12·3	6·1

This last class, under which a very great variety of diseases are brought together, on account of the antiquated nosological classification employed by the Army Medical Department, seems to show, in the same way as most of the others have done, the "used up" condition of the ex-Bulgarian troops, but the details are not sufficient to found any other definite observations upon.

It is obvious that this inquiry regarding the diseases of the *ex-Bulgarian* forces, especially, might be pushed much further in many directions, did time permit, and if material could be got for diong so; and, perhaps, not a more interesting

[1] See Appendix, Tables I and II.

investigation could be prosecuted than that which would attempt to determine the extent of the period of latency of some of the diseases. On the return of our troops from Walcheren, it is known that fresh cases of fever continued to occur as late as five, six, eight, nine, and even ten months afterwards, so that the persistent pernicious influence of the Bulgarian campaign is not without a parallel. M. Boudin also quotes some remarkable instances in which the influence of a previous residence is felt after removal from a paludal district. Towards the end of April, 1843, the 69th regiment of French infantry arrived at Versailles from the citadel of Strasburg, the focus of a marshy district, where it had been quartered for two years. For more than a year afterwards this regiment continued to fill the hospital with intermittents, the disease attacking even those who remained free from it all the time they were at Strasburg.[1] It is known, also, that the late Director-general, Sir James Macgreggor, never counted upon men who had been long exposed to such influences in estimating the strength of the army during the Peninsular war.

B.—Influence of the Residence in Bulgaria on the Surgery of the War.[2]

Results of Wounds and Injuries.	Ex-Bulgarian regiments.	Crimean regiments.
Deaths per cent. on the total admissions: Crimea, 9·1; Scutari, 10·0 (ex-Bulgarian) ... „ 8·6; „ 5·1 (Crimean)	19·1	13·7
Invalided per cent. on the admissions	45·1	20·4

The numerical statement here given shows still further the persistent pernicious influence of the residence in

[1] 'Etudes de Géologie Médicale sur la Phthisie Pulmonaire et la Fièvre Typhoide, dans leur Rapports avec les Localités Marécageuses,' &c., par S. Ch. Boudin, Paris, 1845.

[2] See Appendix, Tables I and II.

Bulgaria upon the troops, by the comparative results of the surgery of the war.

It will be observed that the ratios of the deaths, per cent., in the Crimea and at Scutari, on the total admissions for wounds and injuries, were 19·1 per cent. amongst the *ex-Bulgarian* troops, and 13·7 per cent. amongst those who had served in the *Crimea* only. It may be here also noticed, for the sake of comparison, that amongst surgical patients in large city hospitals, such as Guy's, in London, the ratio of the deaths to the total surgical admissions is 11 per cent.; a statement which puts in a very favorable light the surgical results, on the whole, of the surgery in the Crimea.

With regard to Scutari, it is to be noticed, in this instance, that the per centage of deaths was also much greater here than in the Crimea.

The ratio of the numbers who were invalided amongst the *ex-Bulgarian* troops for wounds and injuries was nearly double those in the *Crimean* portion of the army, a statement which is of general application to all classes of the diseases already noticed.

General circumstantial evidence.—It may, perhaps, be contended, that the necessary operations of warfare bore with an undue influence on some portions of the army of the East rather than on others, so as to render less clear the effects of the Bulgarian residence upon the troops. It will be seen, however, from Colonel Tulloch's summary, that the brunt of the more severe duties of the front were chiefly sustained by that portion of the army which had been in the Crimea only, namely, the 14th, 18th, 39th, 71st, 17th, 34th, 89th and 90th regiments, in which, as also in the Highland Brigade, the mortality was as high as 45 per cent. for the whole period. So far, therefore, such a statement renders the pernicious influence of the Bulgarian campaign *à fortiori* more obvious.

We may also fairly set any partial advantage from short periods of service peculiar to some of the Crimean troops against any severe losses incident to service in the front.

Comparatively short periods of service were incident to the 14th, 18th, 39th, and 71st, who did not arrive till January, thereby escaping one severe outbreak of cholera and much of the suffering from scurvy and frost-bite. So also the 17th, 34th, 89th, and 90th regiments did not arrive till December, two of them well clothed, and thus far enjoying comparatively greater sanitary advantages.

It cannot, therefore, be said that the mortality amongst the *ex-Bulgarian* troops was in any way increased by the more severe and necessary operations of war during the siege, compared with the others. On the contrary, it is observed by Sir Alex. Tulloch, that "great as was the loss amongst the corps in front, it was much below what some of the corps suffered, especially the following, in which the mortality greatly exceeded the average."[1] These unfortunate regiments were the 46th, 95th, 63d, 33d, 23d, 44th, 28th, and 50th. The loss in these eight corps averaged 73 per cent. during the seven months.[1]

Now it is worthy of notice that *six* out of these *eight* regiments are *ex-Bulgarian* troops, and with the exception of the 46th, whose great loss appears to have been from cholera immediately after their arrival, the cause of the great mortality amongst the other regiments is not attempted to be accounted for. On looking carefully into the general *nosological* summary which Sir Alexander Tulloch gives, in a tabular form, it will be seen that *fevers, enteric diseases,* and *scorbutic diseases,* are those which swell the numbers on the lists of these regiments. The malarious influences imbibed in Bulgaria no doubt developed themselves by a zymotic-like action under the melancholy state of things which Sir Alexander Tulloch and Sir John M'Niell so energetically and boldly brought to light.

The subsequent history of the *ex-Bulgarian* troops in the Crimea very fully illustrates and substantiates a general remark made by Sir Alexander Tulloch, that "a distinction

[1] Tulloch, l. c., p. 158.

was manifested in favour of particular parts of the force, with reference to immunity from disease," and which he justly describes as due, principally, to the diminished intensity of the diseases, or to the greater strength of the constitution to resist their effects." The diminished intensity or less susceptibility to disease is manifest in the greater exemption from cholera amongst the *ex-Bulgarian* troops in consequence of their having already passed through a severe epidemic of it; while the greater strength of constitution to resist the effects of disease is exemplified by those troops who were in the Crimea only, as well in regard to cholera as to other diseases. "The diseases made their appearance in all in a greater or less degree, but were less fatal wherever the strength of the patients had not been materially impaired previous to the attack, or a moderate degree of rest, comfort, and improved diet could be obtained."[1]

These additional and important elements in the causation of sickness, disease, and mortality amongst the troops in the Crimea, to which I have attempted to direct attention and to illustrate, do not invalidate the general conclusion at which Sir Alexander Tulloch arrives, when he says that most of the causes "appeared capable at least of mitigation;" nay, more, I think that of all the causes which were suffered to operate to the injury of our brave soldiers, the residence in Bulgaria ought to have been avoided; and that under a proper sanitary police to control in some measure the encampments of the army, such a potent cause of sickness, disease, and mortality never ought to have existed.

From these details I think it is very clearly apparent that the long inactive residence in Bulgaria constituted a very prominent element of causation in the induction of disease in the Crimea; and that its influence long continued to be felt as an influence of a most persistent and pernicious kind, although it is well known that while in

[1] Tulloch's 'Summary,' p. 160.

Bulgaria many could not say they suffered from any well-defined disease to which a name could be given. They became, however, the subjects of impaired health, which showed itself by imperfect digestion, flatulence, diarrhœa, loss of muscular strength, sallow looks, morbid susceptibility to external impressions of cold or heat, with night sweats, loaded turbid urine, and an unhealthy state of the cutaneous and mucous circulation, but without any manifest local disease—a form of anæmia to which Vogel has given the name of *malaria-chlorosis*. Such a condition frequently came under my own observation while at Scutari, and although in such cases an apparent restoration to health is effected, yet the constitution is so impaired, that the application of any external cause, such as wet, cold, privation, or fatigue, at once brings about the development of some zymotic disease, such as fevers, dysentery, diarrhœa, cholera, scorbutus. Abundant examples of such-like results are constantly to be observed in the Lower Alps, in the Roman territory and Maremma of Italy, the Carolinas and Virginia of North America, the great district of the Sunderbund near Calcutta, as well as many other similar localities, some of which have been particularly noticed. "A glance at the inhabitants of malarious countries or districts," writes Dr. James Johnson, "shows that the range of disorders produced by the poison of malaria is very extensive. The jaundiced complexion, the stunted growth, the stupid countenance, the shortened life, attest that habitual exposure to malaria saps the energy of every mental and bodily function, and drags its victim to an early grave. Fever and ague, though two of the most prominent features of malarious influences, are as a drop of water in the ocean when compared with the other less obtrusive, but more dangerous maladies, that silently but effectually disorganize the vital structures of the human fabric under the operation of the deleterious and invisible poison.

"What are the consequences? Malarious fevers; or, if these are escaped, the foundation of chronic malarious disorders is laid in ample provision for future misery and suf-

fering. Compare the range of human existence, as founded on the decrement of human life in Italy and in England. In Rome a *twenty-fifth* part of the population pays the debt of nature annually. In Naples a *twenty-eighth* part dies. In London only *one* in *forty*, and in England generally only one in *sixty* falls before the scythe of time, or the ravages of disease."

Besides the prolonged residence in Bulgaria, it is now well known that other circumstances contributed in a very material degree to bring about the sickness and mortality amongst the British troops in the East during the Russian war. These have been already noticed. They were brought to light and demonstrated with the greatest possible clearness by Sir Alexander Tulloch, more especially in the recent publication to which I have frequently referred, and in which he gives a summary of information collected by Sir John M'Niell and himself relative to the sickness, mortality, and prevailing diseases among the troops serving in the Crimea. The information contained in this summary might very justly stamp Sir Alexander Tulloch as the pathologist of the war; and if his valuable researches into the state of the individual regiments had not been made, I could not have traced the influence of the residence in Bulgaria with anything like the precision necessary for such important inquiries; although I was well convinced, from many observations I made at Scutari, that the residence in Bulgaria was making itself felt, even at that remote period; but I had not the means to substantiate that impression, till the combined researches of Sir Alexander Tulloch, with the statements emanating from the War Office, and other documents of a public and official kind, all of which I have distinctly referred to, put us in possession of the necessary data upon which to found those conclusions which I have had the honour, through the kindness of Dr. Jenner, to communicate to the Society.

imea.

Number of Ex-B Foot Regiments of		PULMONARY DISEASES.			ALL OTHER DISEASES.				WOUNDS AND INJURIES.			
		Died in the Crimea.	Died at Scutari.	Invalided to England.	Admitted into Hospital in the Crimea.	Died in the Crimea.	Died at Scutari.	Invalided to England.	Admitted into Hospital in the Crimea.	Died in the Crimea.	Died at Scutari.	Invalided to England.
30th	5	—	5	10	82	1	3	7	158	38	17	56
55th	7	3	5	4	156	1	5	11	124	6	7	55
95th	2	5	2	5	101	7	7	6	140	13	19	82
41st	6	6	7	7	161	2	3	6	180	9	10	51
49th	9	8	2	3	97	6	7	6	173	1	12	62
4th	0	7	—	8	56	2	5	14	41	5	2	3
50th	4	6	1	7	122	9	4	14	73	12	7	18
28th	5	4	3	9	145	8	4	21	39	7	3	10
38th	9	6	8	7	181	2	3	20	72	10	2	11
44th	6	11	6	6	129	2	8	30	47	7	4	9
Rifle Brigade	1	5	9	15	165	3	16	27	169	18	21	67
42d	7	4	2	3	107	4	3	7	25	1	4	8
79th	5	9	3	7	63	—	2	12	15	—	2	5
93d	5	9	2	6	89	8	5	11	20	—	4	21
Rifle Brigade	7	—	—	—	207	6	—	—	100	7	—	—
7th	7	7	4	7	114	9	4	15	98	16	21	75
23d	8	5	2	8	93	9	4	15	78	9	12	65
33d	9	10	4	5	110	3	1	18	102	11	21	89
1st	4	1	7	8	96	6	8	14	58	4	1	7
19th	0	4	—	5	113	1	5	15	72	9	9	70
77th	6	4	3	6	96	4	7	22	117	9	7	31
88th	6	2	4	7	164	3	4	21	157	12	8	39
Grenadier G	5	3	8	14	157	13	10	22	—	—	14	106
Coldstream G	0	6	4	5	115	1	5	11	164	11	18	42
Scots Fusilie	6	1	3	10	60	6	10	18	101	7	14	77
Total	7	126	94	172	2960	111	132	365	2323	212	239	1059
Per cent. on	7	—	—	—	19·1	—	—	2·4	—	—	—	—
Per cent. on each disea		6·1	4·9	9·0	—	3·7	4·4	12·3	—	9·1	10·0	45·1

APPENDIX.—Table I.

Sickness and Mortality amongst the Ex-Bulgarian Force in the Crimea.

Number of Ex-Bulgarian Foot Regiments of the Line.	Average strength during the period.	FEVERS.				CHOLERA.			SCORBUTIC DISEASES.				ENTERIC DISEASES.				FROST-BITE.				PULMONARY DISEASES.				ALL OTHER DISEASES.				WOUNDS AND INJURIES.			
		Admitted into Hospital in the Crimea.	Died in the Crimea.	Died at Scutari.	Invalided to England.	Admitted into Hospital in the Crimea.	Died in the Crimea.	Died at Scutari.	Admitted into Hospital in the Crimea.	Died in the Crimea.	Died at Scutari.	Invalided to England.	Admitted into Hospital in the Crimea.	Died in the Crimea.	Died at Scutari.	Invalided to England.	Admitted into Hospital in the Crimea.	Died in the Crimea.	Died at Scutari.	Invalided to England.	Admitted into Hospital in the Crimea.	Died in the Crimea.	Died at Scutari.	Invalided to England.	Admitted into Hospital in the Crimea.	Died in the Crimea.	Died at Scutari.	Invalided to England.	Admitted into Hospital in the Crimea.	Died in the Crimea.	Died at Scutari.	Invalided to England.
30th	522	135	31	20	11	19	9	2	98	7	1	—	387	21	43	12	10	1	2	3	45	—	5	10	82	1	3	7	158	38	17	56
55th	695	236	17	23	12	32	15	—	34	4	2	2	710	15	50	15	23	—	4	1	147	3	5	4	156	1	5	11	124	6	7	55
95th	417	337	67	32	10	17	15	1	33	4	2	—	538	80	83	9	32	8	9	2	52	5	2	5	101	7	7	6	140	13	19	82
41st	684	313	53	23	6	7	6	—	54	—	4	1	354	24	43	8	48	4	4	2	206	6	7	7	161	2	3	6	180	9	10	51
49th	655	236	21	18	8	19	9	1	34	3	1	1	324	14	49	6	29	4	—	—	159	8	2	3	97	6	7	6	173	1	12	62
4th	508	366	24	25	7	34	23	1	33	2	1	—	397	30	57	13	47	3	4	1	70	7	—	8	56	2	5	14	41	5	2	3
50th	520	375	89	20	13	68	45	—	54	3	2	—	209	67	53	25	98	—	9	7	34	6	1	7	122	9	4	14	73	12	7	18
28th	522	389	67	17	16	38	28	1	47	8	2	1	459	51	58	18	20	2	13	2	75	4	3	9	145	8	4	21	39	7	3	10
38th	689	342	102	25	7	38	20	1	141	—	4	10	764	9	70	15	81	—	5	3	109	6	8	7	181	2	3	20	72	10	2	11
44th	598	532	97	25	8	58	41	—	32	2	1	1	267	44	58	9	19	3	10	2	54	11	6	6	129	2	8	30	47	7	4	9
Rifle Brigade	601	110	7	54	22	10	10	2	99	8	2	3	674	70	158	37	33	—	19	5	51	5	9	15	165	3	16	27	169	18	21	67
42d	704	120	8	9	6	55	37	—	23	—	—	—	359	18	31	6	9	—	2	—	77	4	2	3	107	4	3	7	25	1	4	8
79th	714	436	72	12	5	83	37	3	73	10	3	—	191	10	39	11	3	—	1	—	45	9	3	7	63	—	2	12	15	—	2	5
93d	727	277	42	9	9	22	12	—	73	20	—	—	224	14	32	14	—	—	1	—	115	9	2	6	89	8	5	11	20	—	4	21
Rifle Brigade	641	202	6	—	—	40	21	—	29	3	—	—	623	8	—	—	97	—	—	—	87	—	—	—	207	6	—	—	100	7	—	—
7th	562	99	9	19	8	50	34	—	25	1	1	1	262	39	70	11	58	—	6	12	77	7	4	7	114	9	4	15	98	16	21	75
23d	579	136	20	22	10	78	41	4	43	3	—	2	447	124	71	14	46	14	24	2	28	5	2	8	93	9	4	15	78	9	12	65
33d	424	392	70	25	9	27	20	3	59	21	—	2	326	38	74	20	89	16	7	1	89	10	4	5	110	3	1	18	102	11	21	89
1st	771	173	23	12	11	110	74	—	22	—	1	1	492	113	80	21	53	8	9	1	44	1	7	8	96	6	8	14	58	4	1	7
19th	548	102	9	16	8	63	46	2	42	1	1	1	332	56	70	16	53	6	9	3	69	4	—	5	113	1	5	15	72	9	9	70
77th	736	169	31	18	5	32	16	4	110	3	4	—	510	54	48	18	37	3	5	2	74	4	3	6	96	4	7	22	117	9	7	31
88th	624	312	17	19	8	11	8	—	7	—	2	1	896	39	62	22	—	—	2	7	55	2	4	7	164	3	4	21	157	12	8	39
Grenadier Guards	487	85	9	45	11	7	6	—	—	—	5	4	334	28	138	26	88	4	18	6	45	3	8	14	157	13	10	22	—	—	14	106
Coldstream Guards	478	163	11	19	20	47	21	2	53	3	2	—	609	56	103	16	43	6	13	4	40	6	4	5	115	1	5	11	164	11	18	42
Scots Fusiliers	553	145	17	24	12	43	29	1	76	—	1	1	400	35	108	22	15	—	8	7	6	1	3	10	60	6	10	18	101	7	14	77
Totals	14959	6179	919	531	242	1007	623	28	1294	106	42	32	11098	1057	1648	384	1034	82	184	73	1887	126	94	172	2960	111	132	365	2323	212	239	1059
Per cent. on aver. strength		41·3	6·1	3·6	1·6	6·0	4·1	—	8·6	0·7	—	—	74·1	7·0	11·0	2·5	6·9	—	1·2	—	12·7	—	—	—	19·1	—	—	2·4	—	—	—	—
Per cent. on admission for each disease		—	14·7	8·6	3·9	—	61·8	1·7	—	8·2	3·1	2·5	—	9·5	14·7	3·4	—	7·8	17·6	7·8	—	6·1	4·9	9·0	—	3·7	4·4	12·3	—	9·1	10·0	45·1

APPENDIX.—Table II.

Sickness and Mortality amongst the Troops who served only in the Crimea.

Number of the Regiment.	Average strength during the period.	FEVERS.				CHOLERA.			SCORBUTIC DISEASES.				ENTERIC DISEASES.				FROST-BITE.				PULMONARY DISEASES.				ALL OTHER DISEASES.				WOUNDS AND INJURIES.			
		Admitted into Hospital in the Crimea.	Died in the Crimea.	Died at Scutari.	Invalided.	Admitted into Hospital in the Crimea.	Died in the Crimea.	Died at Scutari.	Admitted into Hospital in the Crimea.	Died in the Crimea.	Died at Scutari.	Invalided.	Admitted into Hospital in the Crimea.	Died in the Crimea.	Died at Scutari.	Invalided.	Admitted into Hospital in the Crimea.	Died in the Crimea.	Died at Scutari.	Invalided.	Admitted into Hospital in the Crimea.	Died in the Crimea.	Died at Scutari.	Invalided.	Admitted into Hospital in the Crimea.	Died in the Crimea.	Died at Scutari.	Invalided.	Admitted into Hospital in the Crimea.	Died in the Crimea.	Died at Scutari.	Invalided.
47th	637	294	32	13	4	22	16	2	185	10	1	—	399	26	43	18	37	—	2	6	93	2	2	16	98	1	2	16	95	4	6	42
20th	532	275	31	18	7	12	5	1	77	15	5	2	528	34	68	23	109	15	7	3	90	13	2	8	152	4	2	19	195	15	19	54
21st	582	345	37	14	17	26	17	1	54	2	—	—	618	62	74	20	36	—	9	1	27	4	4	8	149	9	4	10	133	14	7	30
57th	715	90	7	6	8	41	17	—	73	—	—	—	385	29	31	8	73	1	9	2	68	3	1	3	111	1	3	9	133	8	3	35
68th	503	75	5	12	6	10	6	—	63	—	—	1	1372	39	54	10	12	—	2	4	22	2	4	2	418	1	5	13	70	20	2	17
68th (detach.)	154	67	2	—	—	1	—	—	3	—	—	—	172	—	—	—	1	—	—	—	56	1	—	—	59	—	—	—	12	—	—	—
63d	448	84	48	32	11	—	—	1	—	—	4	2	245	95	91	18	—	—	11	4	28	12	6	10	146	21	17	19	99	7	8	32
62d	430	200	24	5	3	34	23	—	19	1	—	—	415	35	29	12	41	6	1	1	101	5	4	1	123	2	3	7	16	—	—	—
9th	309	37	1	3	3	108	77	—	7	—	—	10	369	33	41	19	40	—	7	5	37	2	1	4	128	—	4	8	28	4	—	3
46th	378	184	36	19	12	304	113	—	29	—	2	1	547	79	106	21	92	—	7	7	82	3	5	9	292	23	5	25	43	5	2	9
97th	646	129	18	10	9	132	63	—	17	—	1	1	299	81	59	19	35	1	10	1	10	3	2	2	104	1	2	7	39	4	4	2
89th	433	42	3	9	3	40	40	—	4	—	—	1	568	62	39	14	100	—	4	6	71	—	2	2	134	2	3	9	34	4	2	3
17th	561	116	5	9	2	21	16	—	—	—	—	—	430	30	6	1	83	3	3	2	53	1	1	—	110	1	4	3	33	3	—	1
34th	504	84	6	3	6	46	34	—	—	—	—	—	257	9	15	5	31	—	5	2	82	2	3	1	104	1	2	4	48	2	2	3
90th	419	79	7	15	2	55	26	—	9	—	2	—	285	49	19	7	91	7	20	4	7	2	—	1	80	1	2	10	36	3	3	1
71st	330	163	10	5	—	3	2	—	—	—	—	—	78	—	—	2	1	—	—	—	13	—	—	—	84	—	—	1	6	—	—	—
14th	423	129	2	1	—	6	2	—	—	—	—	—	318	—	—	2	3	—	—	—	166	—	—	3	209	3	1	1	47	1	—	—
39th	401	161	5	6	42	10	10	—	—	—	1	—	278	3	6	5	1	—	1	—	45	—	—	—	106	2	2	1	22	3	—	—
18th	475	226	15	6	4	—	—	—	—	—	—	—	186	10	9	7	27	1	1	3	39	—	1	2	115	1	1	2	43	2	—	—
Totals	8880	2780	294	186	139	872	467	5	540	28	16	18	7750	686	690	211	810	34	99	51	1110	55	38	72	2671	74	62	164	1132	99	58	232
Per cent. on aver. strength		31·2	3·3	2·0	1·5	9·8	5·2	—	6·1	—	—	—	86·1	7·7	7·7	2·3	9·0	—	1·1	—	12·3	—	—	—	30·0	—	—	1·8	—	—	—	—
Per cent. on admission for each disease		—	10·5	6·7	5·0	—	53·5	—	—	5·1	2·9	3·3	—	8·8	8·9	2·5	—	4·1	12·2	6·6	—	4·0	3·4	6·4	—	2·7	2·3	6·1	—	8·6	5·8	20·4

l only in the Crimea.

ST-BITE.			PULMONARY DISEASES.				ALL OTHER DISEASES.				WOUNDS AND INJURIES.			
	Died at Scutari.	Invalided.	Admitted into Hospital in the Crimea.	Died in the Crimea.	Died at Scutari.	Invalided.	Admitted into Hospital in the Crimea.	Died in the Crimea.	Died at Scutari.	Invalided.	Admitted into Hospital in the Crimea.	Died in the Crimea.	Died at Scutari.	Invalided.
	2	6	93	2	2	16	98	1	2	16	95	4	6	42
5	7	3	90	13	2	8	152	4	2	19	195	15	19	54
	9	1	27	4	4	8	149	9	4	10	133	14	7	30
1	9	2	68	3	1	3	111	1	3	9	133	8	3	35
	2	4	22	2	4	2	418	1	5	13	70	20	2	17
	—	—	56	1	—	—	59	—	—	—	12	—	—	—
	11	4	28	12	6	10	146	21	17	19	99	7	8	32
6	1	1	101	5	4	1	123	2	3	7	16	—	—	—
	7	5	37	2	1	4	128	—	4	8	28	4	—	3
	7	7	82	3	5	9	292	23	5	25	43	5	2	9
1	10	1	10	3	2	2	104	1	2	7	39	4	4	2
	4	6	71	—	2	2	134	2	3	9	34	4	2	3
3	3	2	53	1	1	—	110	1	4	3	33	3	—	1
	5	2	82	2	3	1	104	1	2	4	48	2	2	3
7	20	4	7	2	—	1	80	1	2	10	36	3	3	1
	—	—	13	—	—	—	84	—	—	1	6	—	—	—
	—	—	166	—	—	3	209	3	1	1	47	1	—	—
	1	—	45	—	—	—	106	2	2	1	22	3	—	—
1	1	3	39	—	1	2	115	1	1	2	43	2	—	—
4	99	51	1110	55	38	72	2671	74	62	164	1132	99	58	232
	1·1	—	12·3	—	—	—	30·0	—	—	1·8	—	—	—	—
1	12·2	6·6	—	4·0	3·4	6·4	—	2·7	2·3	6·1	—	8·6	5·8	20·4

OF SOME OF THE

FIRST GENERAL LAWS

OF

MEDICINE AND SURGERY.

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OR

FUNDAMENTAL DOCTRINES

OF

MEDICINE AND SURGERY.

ADDRESSED TO

STUDENTS AND JUNIOR PRACTITIONERS.

BY

T. WILKINSON KING,

LECTURER ON COMPARATIVE ANATOMY AND PHYSIOLOGY,
AND ON PATHOLOGY,

AT GUY'S HOSPITAL.



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ANALYSIS.

Preface. 7

Diagrams. 9

The present state of the science of medicine and of the profession. 11

What are the essential elements of medical science on which laws are founded.—Mode of study. 12

Fundamental principle. 13

Health consists in the balance of the functions,—salutary oscillations, and mutual compensations—periodic functions. . 14

Disease is disturbed balance;—in the form of local affections, or combined, or general. 19

Diseases have a definite course. . . . 25

And mostly tend to spontaneous recovery. . . . 26

Variability a peculiar character. . . . 28

PREFACE.

THE following opinions are but rudely stated, yet should they prove intelligible and just, they must, I think, be regarded truly as essential parts of legitimate or rational medicine.

The only extenuation I can offer for faultiness of style or arrangement must be the simple account of my habit of study. These reflections have been more or less before me, and variously weighed for years; but whenever any one has seemed to find its due place and force (comparatively and for the time), my disinclination to alter or adorn it has been equal to my desire to pass on to some adjacent consideration; and I have pursued these things as much from taste as from necessity or for approbation.

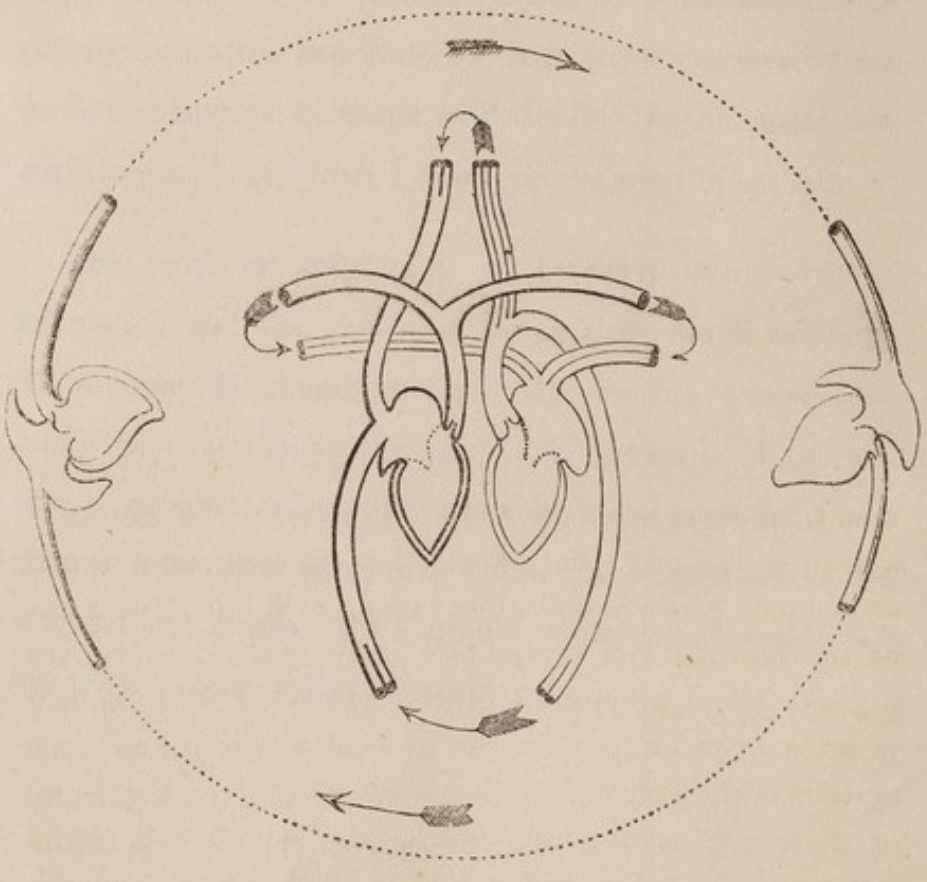
These views may, I hope, be allowed to stand as complete in themselves; they are only concluded where

laws of more limited extent seem to commence. The more extensive of the rules of therapeutics are here pretty plainly indicated, but none of them have appeared to me to be comparable in scope with the few physiological and pathological laws which I have endeavoured to explain.

The merit of originality is perhaps never rightly estimated, and the praise of it is little worth seeking. There may be abundant authority for the statements, and even example for the plan here pursued. I do not know, however, where they are to be found; and yet I can almost hope that some may follow these opinions to the end without dissent, for I am not conscious of wandering far from a clear and practicable track.

Pulmonary Circulation.

(*Right Hearts.*) (*Left Hearts.*)



General Circulation.

The above plans of the circulation are introduced only as notes; in which form also, and with reference to these diagrams, an additional illustration will be found to most of the positions successively maintained in these pages. These may be said to explain physical states; the majority of the examples in the text are connected with humoral changes; but it will be seen that the vital and nervous doctrines are not discarded.

OF SOME

GENERAL LAWS, &c.

It cannot be doubted that the present merits of medical science are very considerable. The shame of our profession is, however, that but a few of its members are well instructed; whilst a still more lasting evil, I fear, depends on the fact that too many of our authors and teachers are one-sided and prejudiced in their views. It can scarcely be an error to impute diseases in some way to the nervous system, or the vascular; to the stomach, the liver, the ileum, or the colon; to the humours, or the solids; to malaria, contagion, or cold; and yet how *justly* do the especial advocates of any one of the doctrines here referred to despise the mass of opposite teachers. The same kind and degree of blame attaches to all the exclusive disciples of experience, of reason, of literature, of observation, of experiment, of statistics, and the like. Is it not possible fairly to respect that which is good in all? Surely it is not only the young who may hope to avoid the errors of partiality.

I am well assured of my incompetence to *complete* the task before me, but I invite the reader the more earnestly

to devote himself to a patient and unprejudiced survey of true medicine, and I have some hope that these pages may assist him.

The elements or rudimentary sciences of our profession sometimes form a very lengthened catalogue. The first essential seems to be a knowledge of the materials of the body, and their arrangements and uses. The second indispensable attainment is an acquaintance with the rise, progress, and termination of morbid actions. The next all-important knowledge is that of remedial agents. The rational principles or laws of medical science must be formed from these combined elements, based upon these rudiments.

The course, however, which I deem most natural and satisfactory to the learner is this: To learn together the form, uses, and disorders of any one part, and of others in succession. If any should object to this plan, my reply would be, let the learner try it, and, unless oppressed by needless impediments, I feel confident he will experience interest, and facility, and success, which the routine of school discipline is too much devoid of.*

This however *is* the plan of the schools, although the pupil does not generally commence it until he is about to leave,—and perhaps he never does. But, whether in the wide survey, or in the detailed study, it must ever happen that available medical knowledge is attained in this way, for it is then anatomy leads to physiology, which is

* How satisfactory would it be at once to be introduced to the structure of the valve between the cavities of the left heart, a dissected series, and one living example of its disorders! Or, for a first lesson, to examine the wind-pipe along with instances of its diseases!

partly physical, partly chemical and electrical, and in part also metaphysical. The outward signs of health are here involved, and with them we have to consider all external influences, and then the first disturbances of health with their various results. The outward evidences of these last during life enforce attention, and after death the morbid anatomy of the interior assists the explanation.

Finally, the mature knowledge of the means of relieving disorders follows out of the knowledge of the functions in health and disease, and the consideration of them in dependence on every external agency, whether morbific or sanative. Is it not in the highest degree plain and satisfactory amongst the laws of remedies, that morbid disturbing causes are to be obviated; and that over-acting parts are not to be excited, but the contrary;—that their excess of stimulus is to be removed, and that the inert or the natural may be stimulated in order to relieve them? And again, that natural processes must be left unembarrassed? What is there more than this in medicine? What can render these views clear, but a sound physiology and pathology?

The fundamental principle—the initiatory law (so to speak) of medicine—declares the truths or involves the facts:

1st, That health consists in a certain natural state, and moderated action of the several parts of the animal frame;

2d, That disease forms a perceptible departure from the healthful state; and

3d, That remedies have a power of modifying the disturbance or assisting the restoration.

SECTION A.

First, we may proceed to reflect a little more at length on the first proposition, *that which relates to health.*

A certain gentleness and regularity of the animal functions are the characters of health; and, for the sake of a theoretical illustration, we may venture to admit the idea of a perfect equiponderance of the whole at a given time. We may suppose that at a certain period the digestive, circulatory, secerning, locomotive, sensitive, and reflecting organs may be observed carrying on their functions with a pretty equable activity. We must remember, however, that the operations are incessantly susceptible of marked and varying *oscillations*,—degrees of exaltation and depression, and even, perhaps, of temporary suspension within the limits of the healthful state. The theory of the natural balance of the animal functions would of course appear most unsatisfactory without a proper attention to the principle of fluctuation, and especially when referring to those almost supplementary actions which seem to be developed at distant intervals, as, for example, the generative. And further, the theory requires that we should pointedly include the idea of *compensatory actions;* that we should indeed be well aware, that the oscillation of some one function towards its extreme of natural activity will be continually found supplying the place of another function, which is fluctuating in an opposite direction;

and that the healthy preponderance of one action in the system will frequently demand a correlative activity in others, and at another time require the compensating decline of some functions.*

The explanation of a compensating office seems indispensable when a great function declines, suddenly perhaps, and another is consequently excited and supplies its place; as the secretion of milk on the contraction of the uterus, which is remarkable in this, that a fresh outlet is established for the mother, and a different nourishment for the infant. Again, when under circumstances of external cold the cutaneous functions are diminished or suppressed, the activity of internal organs is moderately accelerated, or, vice versâ, the copious secretions of the surface lead to diminished eliminations from within. These effects appear for the most part salutary, and often necessary.

It must be perfectly evident that some conditions of the system naturally call for great and others for slighter exertions of counterpoising parts; and thus we find a necessity established for very free limits to the salutary oscillations of functions. An abundance of fluid being poured into the stomach and vascular apparatus, is plainly connected with the want of a free circulation and more abundant excretory actions, as by the kidneys. In like

* Thus, with reference to the diagrams: 1st. The circulation may be easy and uniform, or excited, and still equal. 2dly. Oscillations may arise in any part, and the compensating states be set up consecutively. The pulmonary circulation being impeded, accumulation takes place towards the right heart. A freer respiration relieves this. So repletion in the right heart induces full aeration, and then gradually the left heart and general circulation participate in the exalted activity.

manner the want of food, or delay in the digestive operations, both demands and induces a very material retardation in the circulatory and secretory actions; and thus a confined diet is, to a certain extent, compensated for by more gradual secerning processes, as well as probably by a more complete digestion. The excessive diet of some persons is a sufficient comment upon the powers by which compensatory action or a salutary balance of the functions is maintained; but I have been led to regard as most striking those instances in which an organ, or a function, is occasionally wanting, whether by primitive deficiency, suspended development, or removal, as where a kidney* is deficient, or a testis, or the thyroid gland (an assimilative organ), or as in the amenorrhœa emansionis, or in cases of defective limbs.

Periodic functions. With respect to those functions which seem to be repeated after greater or less intervals, and which may almost be regarded as occasional or periodical, I am disposed to make but little distinction. Alternations of rest and action seem to belong to all the animal organs. The actions of the heart and capillary vessels are not perceptibly different in this respect. And although the functions are affected by seasons of the

* An absent kidney is scarcely uncommon, and I have seen several instances, or rather I have found the little cellular rudiment of a kidney with a pelvis, but imperforate ureter. In these cases the opposite organ has not appeared to me very large or coarse in texture, and more than once the intestinal follicles were seen most peculiarly hypertrophied and elongated. Excepting in the instance of one child, I have only found the single kidney in adults.

year, the periods of the day, the successions of meals, the processes of the mind, and the motions of the will, there is evidence enough that a certain equipoise of the functions is the character of health, and that the sanatory fluctuation is at once a natural result of external agency and mutual correspondence, and a providential resource to obviate more sudden or serious disturbances; in truth, it is an act of compensation. These principles will be further developed, and their application elucidated by the consideration of diseases of particular organs.

The oscillations of the functions and their mutual acts of compensation, duly considered, only serve to explain more fully what may be called theoretically the balance of health; and they may be employed to illustrate the commencement of disease. These natural fluctuations again are continually made available, during the progress of diseases, to obtain a compensatory action, on the part of a healthy organ, which becomes opposed to the too great or too little activity of that which is diseased; as, for example, when one kidney is hastily obstructed, the other becomes hypertrophic. The remedial bearing of these rules is obvious; but we must defer the consideration of this part of the subject.

We have remarked upon the balance of health, the natural fluctuations and mutual compensations of the functions, and have introduced partial examples, which, it will be observed, are drawn almost exclusively from the humoral changes produced in the body; but instances might have been found in abundance among the other actions, had not the first named seemed most applicable to the subject before us. All organs, by exercise, obtain an increased circulation and nutrition, and consequently (and in this way) effect a greater consumption or deteri-

oration of the materials circulated, so that the humoral changes depend on all the organs of the body, though in different degrees. The influence of the nervous system, in this respect, is probably not great, whilst in other points of view its functions are numerous and varied, and their correlation (with each other and with every other) is of the greatest importance, whether we regard them as an isolated series or in connexion with the offices of other parts. When we consider that all parts supplied with nerves must be the sources of sensation, or the subjects of a stimulus arising in a contrary direction (and perhaps both),—when we regard the influence of the senses and other functions on the mind, and the affections of many functions produced by the mind,—we must admit some notion of a natural mean appropriated (in health) to all these mutually dependent parts. We can perceive something of their necessary fluctuation and compensating influences; and we may understand how it is that an excessive oscillation, whether of decline or acceleration, amounts to disease.

We may hereafter find it neither tedious nor difficult to exemplify the mutual dependence of the whole animal functions. In an appropriate place, in relation to individual diseases, it will be highly serviceable to trace, side by side with selected facts, these fluctuations of action in continued though varied degrees of correspondence. For instance, in a plethoric disorder we should have to examine the forces of the circulation and cerebral system as affecting each other, and as dependent on digestion, and then to observe the individual or combined influence of all these upon the muscular system, or on the excretory functions: perhaps to find the free exercise of the locomotive apparatus giving rise to a copious elimination from the blood of that

urea, the nitrogen of which prevails so abundantly in muscular fibre, and most surely of many other matters. Our immediate object precludes such a digression; but it may be observed that the elucidation of a theoretical principle does not require this of us. It is only necessary to remember that when distinct facts establish a view, a more general observation may restrict, but cannot repudiate it, may assist to extend and define, but cannot abolish it. These observations seem indispensable, especially for those who are already biassed to a single set of opinions. Every doctrine must stand or fall by itself. Doctrines which are erroneous must clash. Those which are just will fairly coincide, and those which are growing rightly will illustrate and corroborate each other.

SECTION B.

We may next take up the consideration of the second proposition of our fundamental principle, *which relates to disease.*

When the activity or indolence of an organ passes beyond the salutary bounds already adverted to, this is disease; and we find that unless its functions return speedily to their due proportions, a manifest disturbance arises in other functions, in order, as we may suppose, to adjust the balance of actions, or make a certain approach to that balance, without which the functions successively fail and life ceases. Thus we have arrived at a definition of disease—a definition which is indeed general, but which is equally applicable to every kind of morbid process, and one which seems particularly available for the objects of our present procedure. We may justly determine that,

when an organ is excited or impeded in the exercise of its offices beyond the natural degree, it is in a state of disease although such may at first be actually imperceptible. It is for the most part, however, the effect of one or more deranged functions on the system at large, which is so apparent to us and which we agree to call disease.

It is scarcely perhaps necessary to observe that the primary object of study is disordered function, whether in connexion with or independent of perceptible disorganizations. We may avail ourselves of all discoverable morbid appearances in actions, products, or tissues, in order to derive a clear apprehension of a disorder, its nature, degree, and correlative influence; and this will ensure a right perception of disordered functions, but it must be always indispensable carefully to distinguish between a settled disorganization and a progressing disease. There is no mere refinement of reason in this view: it is only valuable so far as it is practicable, as we may see hereafter. The difference between an incipient ulcer of the cornea and an old opacity is of the same kind as that between a recent changeable stricture and one which is old and permanent.

From the first fundamental law already explained, as involving the *healthy balance, disturbed* yet *amenable,* more or less, to remedies; and after a general definition of disease, we come to observe that the disturbance may commence in almost any part, and that it may continue very partial. Thus we obtain a division or series of disorders, whether acute or chronic, common or specific, of the least complex kind.

Local disturbance then, disorder or disease, seems to me to express quite naturally a second law (in our Second

proposition). Patience will, I think, find nothing to precede, and everything appears rationally to follow this arrangement. Watching the rise, studying the causes, and attending the progress of simple derangements (and the more simple the better), will be found in the foremost degree profitable.

The existence of complex or combined diseases will require no proof. As we saw the efforts of health to maintain an equiponderance of the functions, and found the compensatory actions liable to become inefficient, so we shall find, that when one function fails by disease, others are likely to become oppressed and overwhelmed, and even many in succession, until the disturbance, if not fatal, becomes general: for beyond the investigation of the complex or combined local affections we shall have to study the most general disturbances of the functions whether fatal or not. *Complex diseases* will express an ulterior law, and again *general diseases* another. These divisions of diseases are peculiarly adapted for observation and far from being unnatural, although individual cases will only afford us partial illustrations of the main series.*

Complicated and *general diseases* should come next to be examined, but we must first consider the local a little more at length.

* When a poor regimen induces weakness and dilatation of the left heart, we have a comparatively simple disease; but with a consequent accumulation in the pulmonary circulation and defect in the general, we see examples of increasing complexity.

Where the general circulation terminates in the right heart, a tumour of very simple structure may gradually produce obstruction, the aeration of blood and its general transmission slowly decline, and thus finally some vital organ is overturned.

PLANS OF THE ANIMAL FUNCTIONS,

Between all and every two of which some sort of equiponderance is necessary.

NERVOUS FUNCTIONS, MOTION, &c.

ASSIMILATION. NUTRITIONS. EXCRETIONS.

CIRCULATIONS.

INGESTA. { Food, Fluids, Air, &c.

For the growth and nutrition of { Bone, Joints, Muscles, Nerves, &c. Parenchyma, Membrane, Tubes, &c. } Producing deterioration and loss, requiring renewal and elimination. Effects increased by exercise or use, and vice versâ.

EGESTA. { By skin, mucous membranes, lungs, liver, pancreas, kidneys, genital organs, &c.

CIRCULATORY BALANCE.

The Blood.

Absorbent system—the glands and other organs of perfective assimilation: thymus, thyroid, spleen, liver, &c. } { Veins and the right heart. Left heart and arteries. Pulmonary and general capillaries.

BALANCE OF THE NERVOUS CIRCULATION.

Perception. Reaction.

Voluntary, and involuntary systems, communicating

Organs of sense,

Nerves of conduction,

Centres of appreciation or sense,

Nerves of volition,

Organs of motion, &c.

Local disease may commence in any one function of the body.

In the summer of 1839, I made the acquaintance of Dr. Jennings, senior, a Professor of Medicine in Baltimore, and had the advantage of an exposition from him, which, if I did not fully admit, I did not fail to regard with great interest. This was a view of general pathology, in relation to the nervous system, and as the Doctor was well informed, and both keen and energetic, my impression was, that the hypothesis must often have served him most happily in practice. I certainly think the account deserving of general attention, yet I shall make no pretension to accuracy in the relation (from memory), or in defining its value.

The first thing assumed was a given and appropriate quantity of the matter of innervation (nervous fluid or the like), circulating naturally in various parts of the system; and in health pretty equally distributed, but liable, with disease, to perversion or irregular determination.

A great degree of importance was attached to the accumulation of the *fluid*, and to its subsequent local overflow (if I may so express it), as when a person is said to take cold, and the disorder terminates in a catarrh. Fevers were regarded as the effects also of undue accumulations of innervation, and phlegmasiæ as the localization of the wandering fire, (if I am not mistaken.)

Much stress was laid upon the apparent fact, that the weakest part is most obnoxious to the inundation. Metastasis was thought to depend on the accidental or medical repulsion, and a fresh localization (as of necessity); and relapses were imputed to still retained accumulations, or renewed causes of retention. The

Doctor pointedly referred all ague to alternations of temperature, or rather he excluded the idea of miasm.

The practical inferences from the preceding view were characterized by promptitude and rather severe efficiency, which seemed to me to demand all the sagacity and experience of one like Dr. Jennings to render them safe.

Venesection was esteemed a definite power to lessen the excessive matter of innervation. Counter-irritants were valued, according to their names, as derivatives, and all evacuants as partaking of the two preceding agencies.

The simplicity of the Doctor's view, which he took some hours to illustrate, its correspondence to other (different) views which I had long entertained, and the fact that I was in manner sensible of the want of good general views of the pathology of the nervous system,—all concurred to make me listen to the exposition with much pleasure.

I have already shown the propriety of looking to all parts of the frame; and it need not be said how easy it is to carry a theory too far. I do not recommend single views; and my opinion of the present will be best gathered from my account of others. With questions of originality, I have nothing to do. The foregoing cannot pretend to be even a sketch, but it may point to the nervous balance as fully worthy of consideration.

In the preceding plan every simple disease will find its place, and I desire particularly to give the preference to no one series. The student will place that foremost which he first understands, but let him beware of studying any sets exclusively! It is needless to select any exemplifi-

cation, and it might seem inconsistent.* Avoiding this partiality, then, I pass on to a third law, the most valuable perhaps in the history of diseases, and second to none in the study of remedies.

Thirdly. *The course of disease is definite*, and precisely proportioned to the cause, that is, with proper regard to the state of the individual affected—his particular constitution and susceptibilities. Hence all diseases have their proper names and characters (diagnosis and prognosis). Some may be casually combined, one may subside and another arise, but they are never converted. Each one follows its own course. An incision, a bruise, a fever, an inflammation, a strumous or malignant action, poisoning, or lightning, never fails in its proper phenomena, although the consequences of each must vary in degree and duration, according to the severity of the cause, the parts affected, the reparative efforts, the remedies applied, or the disturbances that may be interposed.

There is a state of disease which I do not know whether to define as health or disorganization; it is in some senses tantamount to both; I mean that unnatural state of activity or indolence of an organ (as the skin) which, by an extreme (healthy?) effort on the part of other organs, is mainly compensated for, even permanently, without material disturbance of the body generally. Such things almost

* The reader may, without reference to the diagrams, consider the effect of impediment in any one point of the circulation; as the transient fulness of the right heart, by the influence of muscles on the general circulation, or the sudden difficulties of a ruptured valve in the artery distributing the blood from the left heart.

belong to increasing years, but they are just equal to the loss of one horse from a team: the rest may do the work with greater exhaustion, but besides this they could not be equal to a certain amount of difficulty, which the whole entire might have overcome.

But the most interesting and available part of this law consists in this, Fourthly, *That there is in most diseases* (if not in all) *a positive tendency to decline*, as it were, an active effort to subside, supposing the morbid excitement removed.

The onset of a fever, as the falling of a mountain, may be fatal at once; and the course of a fever or starvation seems at first without palliation, but the actions of every moment are mingled with efforts tending to restore the healthful balance. And do not the relapses of fevers and inflammations, and of numerous slow, protracted disorders testify abundant efforts towards restoration?

What I have already advanced relative to the condition of health, its correlative functions, fluctuating, compensatory, and balancing operations should render this statement plain and conclusive. The modes or means by which the subsidence is brought about are too intricate and various to explain here; such as the following will, however, not be denied. In a common hemorrhage, the functions almost fail, and with them the forces of the circulation: thus the bleeding orifice is left to contract. It is the same in a simple diarrhœa, the cause being only transitory and not repeated.* Although I have employed the instance of

* As a further illustration, I venture to introduce a merely physiological train of events. Excessive repletion induces successively

hemorrhage to illustrate that of diarrhœa, it is not my intention to speak of a wound as a disease: this is a disorganization. If there is anything about it of the character of disease (as a process), it is the reparative changes which are, however, not morbid, for these tend to decline the moment the local excitement is obviated. These remarks apply to all the morbid changes which surround a settled lesion, an aneurism, a foreign body, or a new growth. The latter is mostly to be regarded just as any other part of the body; sometimes it declines because its stimulus and nutrition fail through other correlating actions, at other times it grows for manifestly opposite reasons.

The phthisical patient is perfectly right when he says I am much better this week; and morbid anatomy proves that such cases do recover, as well as that others are repeatedly repairing. He says, I have taken cold again, my expectoration is returned; and he says truly. He has gradually become extremely susceptible of disturbance; the counterbalancing organs have become obstinately inert, and his physician has not learnt to help him rightly.

Let us patiently endeavour to find out the full extent of this last law, how nearly it may be universal. Let it not be idly imagined to be visionary because it does not seem universal; how remarkably does it apply to numerous

activity in the right heart, the lungs, the left heart, and its distribution of blood, with the resulting excretions, &c. Finally, a subsidence of these functions may be traced in a similar order. Thus it may happen in diseases; and thus we see that the restorative actions are physiological. But we do not see where these actions cease before death occurs.

local diseases! all that can be said against it is, that the time must come in every man's life when after innumerable injuries the law seems to fail. The exceptions may be estimated as one to a thousand. Hence from the simple disturbance, other functions successively become affected. The explanation of the exception is this: The power or repetition, or persistence of the morbid causes is finally overwhelming, or the feebleness of the individual body or function renders it assailable fatally by the slightest disturbing causes. It is true that a disease may advance even to a fatal termination, without any very marked sign of mitigation, and yet in a similar case a venesection may give loose to a steady train of convalescent actions, or perhaps some unseen cause or unexpected change does this. Who has not seen or heard of the magic of calomel?

Every vital action is in a sense healthful, however great the morbid oppression, and even if death has invaded half the body; but I do not desire to overstrain the rule or to maintain that it is universal.

Of course, by disease it is not here intended to include disorganization: such as dead matter, a contracted passage, an indurated, hypertrophied, or wasted organ; and yet most of these cases as they are found in life are not wholly beyond the influence of the rule here maintained.

Fifthly. That a great number of diseases are in their essential character *variable* is not to be denied. Indeed, I attach more importance to this fact than to any conclusion I ever arrived at in the study of medicine. There will be no reason to divide the important distinction of

variable diseases from that law (third), which declares the course of disease to be invariable, and always in exact proportion to the cause and constitution, if it shall be shown that variable diseases are equally definite, but depend only on variable causes; that they consist of a *succession* of diseases,—many repetitions of a disease. The truth of the law, that the course of disease is definite, &c., I suppose to be universal; the truth of the fourth—diseases tend to decline, &c., may possibly be no less so. Both these rules, however, need the illustration which is to be derived from the exposition of the fifth, for which I must premise that it is not intended to explain actual exceptions to the preceding laws, but that it forms in fact a separate though less general rule.

Were it not, however, for the sake of the precision afforded by separate consideration, I should have been disposed to state my view of the last three laws collectively: thus, various causes and conditions of the frame render the progress of many disorders irregular, and here as well as in uninterrupted recoveries, we observe the natural efforts tending to restoration; and in all these cases, and in every accession or repetition of disease, there is a degree of uniformity fixed and certain, with a due regard to the excitants and the recipient, as far at least as our knowledge of causes and constitution can justify any assumption at all.

I now for the present take my leave of this subject and of my reader, not without an interest in the comment he may make, although there is but one point on which I might wish to reply. If he should ask, what is the use of

all this? I would refer him to the analysis at the head of the present chapter, for it seems to me impossible for any one fully to admit the truth of these positions, without the conviction that they must serve to indicate and establish the most just views of the application of remedies, the rules of habit, and the obviation of mischievous causes.

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188
From
M. L. Estes M.D.
Late 1st Life Guards

INFANTICIDES—SUICIDES.

INFANTICIDES—SUICIDES.

May not such crimes be checked; their frequency prevented? According to report many remain undetected.

The ingenuous remarks of learned foreigners on our institutions, should not pass unnoticed, become especially valuable and worthy of grateful consideration, when submitted to us for the prevention of misery and crime.

Corvisart, Dessault, Scarpa, Roux, and Girard, were all admirers of our charities and medical establishments; many others, recent visitors of our Crystal Palaces, etc., have been loud in their encomiums of England and of her various attractions. Some deficiencies have not escaped observation and criticism.

In one respect they consider themselves greatly in advance of England. They had, and probably still have, a *real, magnificent Charity*, free, open to all, without jobbery or patronage; not requiring even a letter of recommendation or any questioning. Like our Floating Hospital, the *Dreadnought*, free and open to

sailors of *all* countries; a real, magnificent charity, doing great honour, not only to our own country, but to humanity generally.

So their "*Enfants Trouvès.*" If that large establishment with its branches, still is, what it originally was, with its former endowments and contributions, it certainly deserves all the praise bestowed upon it.

Infanticide and crime were checked by it in France, no doubt the same results would be expected from similar establishments in England.

The plan and original regulations were excellent, and should be known.

A similar establishment existed for many years at Milan, and was greatly patronised by the Emperor, Joseph the Second, and by his royal mother; both were beloved; their mild and careful administration had won for them the attachment of all northern Italy.

The Orfanotrofio of Milan was upon the plan of that of Paris, and prospered up to the period of revolutionary wars in 1796. Moscati, the eminent physician, was then the Resident Director. Both these were real, fine charities; were fully what their names announced, for "Foundlings," and for Foundlings *only*, for nothing else. Their funds were not to be perverted to any other purpose than to the care and training of Foundlings.

Had such asylums existed under the same rules as abroad, with moveable closets, open in front, having shelves, for receiving deposited children, the closets turning round upon pivots, above and below, many of

the horrible tragedies, frequent of late, would not have occurred. After months of hard labour and destitution, industrious, worthy women, in *despair*, having released their children from hopeless misery, and in "extreme maternal affection," not to be separated from their offspring, have destroyed themselves. In the foreign asylums, the children deposited might have been identified, and reclaimed after the lapse of two or three years, or more; a paper, stating name, age, health, with any bodily mark, a bracelet or necklace, was expected with each child, and a registration was strictly kept for those likely to be reclaimed.

Such was the credit and support of the "Enfants Trouvès" under the *ancien regime*, that ladies of the highest classes, in want of nurses, would send there and be well supplied, at a fixed rate, by the week or month. It was a part of the system to have properly trained nurses, from the country branches, in readiness for such demands.

The question has been mooted whether England may not be especially benefited, by the collecting and training of Foundlings. Good subjects will long be in request for the Army, Navy, and public services, for our splendid colonies, Australia, Western Canada, rising rapidly in prosperity, and elsewhere. According to reports recently sent to the Geographical Society, large tracts of fine land, scarcely peopled, under luxuriant natural vegetation, have been explored in northern and western Australia.

According to a late census of population, in some of

our possessions there were more than *four* men to every woman. The soil and climate are generally favourable to organic life. Long ago, SCOTT, Archdeacon of Australia, during seven years presided over the schools and churches, reported the children of the residents, and of the expiated convicts, as a remarkably fine generation, rising especially around Sydney and in the south. Subsequent experience has confirmed SCOTT's report. Sick officers in the East India Company's service with sickly children, have been since habitually sent to Sydney, for the recovery of health, on six months' leave, and with good results.

Female Foundlings, not likely to be reclaimed, might be sent out at an early age, with great advantage to themselves and to the colony, under proper matrons.

Some years ago, a naval medical officer established a *stud* for breeding horses, on Swan River. He has succeeded in his undertaking. Many fine horses have been reared there, and sent to India for the native cavalry of the East India Company.

Since the early establishment of the Mac-Arthur Colony, in the reign of George the Third, such improvements have ensued as were expected from the associate of Sir John Sinclair, Coke, of Norfolk, and of Arthur Young; especially in the breed of cattle, of sheep. The Mac-Arthurs have been great benefactors, both to Australia and to the mother country. Vast crops of the *finest* wool, have been regularly sent to our clothiers in England. Large quantities of good oils have been obtained from the fisheries and other sources; in short,

under their auspices, and the genial influence of climate, the air, the land, the seas, all alive, all teeming with animation, that country has risen rapidly, is still rising to unprecedented prosperity. Moreover, the quiet Pacific, not subject to the awful agitations of the Atlantic, and its icebergs, is the sea most favourable for Steam Navigation.

With respect to Canada, though we have had it longer than Australia, though much nearer home, with the beautiful and voluptuous cities of Quebec and Montreal, now to be reached in a voyage of a few days only from Galway, we still are little acquainted with western Canada, it is still a sort of *terra incognita* to us.

Extensive tracts, with strong luxuriant natural vegetation, are unpeopled; with healthy climate, though not so mild as the Australian.

By a concurrence of extraordinary events we shall soon be made fully acquainted with this valuable country and its advantages. It is now thrown open to us, 1st, by the Grand Trunk Railway, running above 1200 miles directly through it from the Atlantic, towards the Pacific, westward. 2nd, by the Victoria Monster Bridge across the St. Lawrance, in conjunction with the said Railway; both stupendous works connecting all the cities of Canada with each other, and opening direct communication between the Canadian cities, north, with the United States, south of the Monster Bridge. 3rd, by the well-judged, well-timed opening of the Bridge, and the visits and ovations to His Royal Highness Prince of Wales in the Canadian

cities on one side, in the United States on the other side of the Bridge.

While disturbances, tribulations, collisions, and destructions are prevailing in the *Old* World, in the *New* World we see His Royal Highness, the young hereditary Prince of England, gloriously occupied, in the midst of rejoicings, inaugurating wonderful constructions—laying foundations for the future prosperity and mutual attachment of interesting countries—cementing unions, which never should be otherwise than cemented—everywhere receiving the warmest welcome, greetings, and congratulations in honour of Her Most Gracious Majesty, whom he represents, of himself, and of the missions he is engaged in ; with the importance of which, glad and grateful populations seem duly and deeply impressed.

From the remarks of

AN OCTOGENARIAN

MILITARY MEDICAL OFFICER, IN RETIREMENT.

September 15*th*, 1860.

ON

THE INFLUENCE OF VEGETATIONS

ON THE

VALVES OF THE HEART,

IN THE

PRODUCTION OF SECONDARY ARTERIAL DISEASE.

BY

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ON THE INFLUENCE,

&c., &c.

ATTENTION has been recently drawn by Dr. Senhouse Kirkes, in a communication read before the Royal Medico-Chirurgical Society of London[a] to some of the principal effects resulting from the detachment of fibrinous deposits from the interior of the heart, and their admixture with the circulating fluid; and also by Dr. Rühle[b] in Virchow's Archiv, to the same subject.

These papers both ably illustrate the dangers attendant upon the presence of warty vegetations of the valves, and point out the sources of peril which cauliflower excrescences, once formed, must ever be, by demonstrating the serious results that may ensue from their detachment, and consequent presence in the circulating blood. They show how their arrest within an arterial canal, if of the head, may lead to direct paralysis and speedy death; or, if in the main artery of an extremity, be productive of gangrene, which, though slower in its consequences, yet ultimately becomes no less fatal to life.

A third form of this secondary influence has recently fallen under my observation, and, connected as it immediately is with the subject of arterial dilatation and aneurismal development, I propose directing attention to the case, and offering a few remarks upon it.

This case I saw, for the first time, on the 7th of January of this year. The individual in whose person it occurred was a young man, twenty-five years of age, of delicate constitution and small make. In August, 1846, after exposure to wet and fatigue in shooting, he complained, on returning home, of pain in different parts of his body, but which was more particularly marked about the ankles and knees. The symptoms were

[a] Medico-Chirurgical Transactions, vol. xxxv.
[b] Medical Times and Gazette, March 19th, 1853.

acute; he was unable to rise from his chair from pain in the insertions of the recti muscles, and the ankles were both swollen and tender; sore throat and general symptoms of cynanche accompanied this state; there was some degree of fever, thirst, hot skin, &c. &c.

This state was met by leeches being applied to the inflamed joints, the administration of the warm bath subsequently, followed by Dover's powder and blue pill, with alkaline cathartics.

On the 29th he was convalescent, and was allowed to leave the house, and take walking exercise in the grounds.

On the 2nd September relapse occurred, commencing with transient stiffness, and some uneasiness in the back of the Achillis tendon, followed by swelling of the left wrist. The next day there was a good deal of fever; the night was passed without sleep in consequence of pain; the pulse was 94, and throbbing; the headach considerable; skin hot, and urine depositing a lateritious sediment. Purgatives and colchicum were exhibited; and on the 6th there was a mitigation of the symptoms. It was now, for the first time, ascertained that the patient had gonorrhœal discharge from the urethra. Balsam and alkalies were, therefore, superadded to the colchicum. On the 14th he was free from all uneasiness. Upon the 20th the discharge from the urethra ceased; and on the 23rd he left the country for London.

From this date he continued in good health up to the month of September, 1852, when he contracted syphilis, and was subjected to the influence of mercury.

In November, after exposure to wet, he complained of pain in the head, shoulders, arms, and ankle-joints, with dyspepsia and gastric irritation. This attack was met by laxatives and diaphoretics, followed by sarsaparilla and hydriodate of potash, in doses of five grains, thrice a day. His recovery was tardy; but by the end of the month he had much improved, and his chest, upon careful examination, yielded no sign of cardiac disease. On the 8th of December, convalescence was interrupted by acute rheumatic symptoms, violent headach, hot, dry skin, and great throbbing of the carotid arteries, especially at night; to these succeeded periodical exudations of profuse sweat, occurring every eight hours: leeches were applied over the region of the heart, and colchicum administered internally. Up to the 16th of December there was no dyspnœa or palpitation. Uneasiness was now, for the first time, complained of in the cardiac region; this was followed by severe pain in the left hypochondrium: bellows murmur was shortly after loudly audible at the base of the heart. From this date the symptoms of cardiac disease began gradually to manifest themselves. There

was inability to lie on either the left side or the back; the heart's action became jarring and violent; pulsation was visible in the carotids; the *bruit de soufflet* was loudly heard, not only in the heart, but over the great vessels; the countenance grew pale; the feeling of debility great, and tendency to fainting frequent.

Such had been the history of this patient previously to the evening of the 7th of January, when I first saw him. There was now universal pallor of the skin, conjunctiva, gums, and tongue. There were extreme debility, palpitation, and dyspnœa, accompanied by violent pulsation of the carotid arteries, with headach from throbbing of the cerebral vessels. The pulse was 96, jarring and regurgitant, but quite regular.

Upon examination of the chest dulness on percussion was found over a large space; and to the ear a double bellows murmur was audible, loudest at the middle of the sternum, but distinct over and along the course of the carotids as far as the angles of the jaws; to the bend of the elbows in the upper, and the groin in the lower extremities. Beyond these points there was no *bruit de soufflet*, but a loud, single thump. The pulse, too, was visible throughout the same extent, at least wherever the arteries were superficial; a *bruit de diable* was also audible over the large veins of the neck. The condition of the patient was now extreme; he sat upright in his chair, speaking only in gasps, each sentence being interrupted by a short cough.

The diagnosis made was, dilatation and hypertrophy of the heart, patency of the aortic valves, with excessive anemia in consequence of deficient nutrition.

Removal of the causes of the latter condition being out of the question, the next object to obtain was an alleviation of its more distressing symptoms, by rest, pure air, nutritious diet, and chalybeates, with opium at night. To fulfil this end, the citrate of iron in two grain doses, in the form of the aqua chalybeata of Bewley, was prescribed three times a day, with half a grain of muriate of morphia in an ounce of Murray's solution of camphor at night. The diet consisted of an egg for breakfast, calves-foot jelly at noon, roast or boiled underdone brown meat at 4, with arrow-root and milk at 7, as little fluid being taken in the twenty-four hours as the patient could limit himself to. Under this treatment he continued to progress very favourably until the evening of the 10th, when, on being visited, he said he was afraid his right leg had become paralyzed, it felt so *heavy*, *dead*, and *cold*, and so full about the knee. Upon examining the extremity, its temperature first

attracted notice. It was very low, much below the other. Its colour was a dirty, livid yellow, and the foot and leg were slightly œdematous. The knee was swollen, measuring one inch more in circumference over the patella than the opposite one, the difference caused not by general œdema, or effusion into the joint, but by the presence of a large pulsating tumour in the ham.

On inspection and examination of this tumour, it was found to occupy the lower two-thirds of the popliteal space, sinking down between the heads of the gastrocnemius muscle. It was oval, of the dimensions of a hen's egg, with a lateral diastolic motion of two inches, forcing the forefinger and thumb asunder when applied laterally to it at this degree of separation. Pressure on the trunk of the artery above completely controlled pulsation, *but did not effect any diminution* in the size of the swelling. There was no pulsation to be felt in the posterior tibial artery at the ankle. Upon applying the ear to the tumour, both unaided and with the stethoscope, no *bruit de soufflet* could be heard, but a very loud single thump. A flannel bandage was now carefully applied from the toes to the middle of the thigh, and the same general measures as before continued.

On the 11th and 12th he progressed favourably. By the 13th he had so much improved under the chalybeate treatment, that he could lie flat upon his back in bed. His voice was stronger; he had lost the distressing beating in the head; and when visited in the evening said he felt quite comfortable. At 10 P. M. he retired for the night, and had been about an hour in bed, when he suddenly felt a twisting pain, of a very acute character, in the ham, being, as he described it, as if a corkscrew had been quickly turned into the joint, and then withdrawn with a jerk. This was followed by cramp in the leg, which grew worse and worse, assuming a burning character, and at last becoming so severe, as to make him cry out with pain. Having been sent for, I found him in the condition just described, calling for relief, and yet unwilling to allow the leg to be approached. After a little persuasion, however, he permitted a lawn handkerchief, sopped in laudanum, to be applied over the tumour, and gutta percha sheeting to be slightly bandaged outside. A full opiate was administered internally; and under the joint influence of the two he became tranquil, and in an hour dozed off to sleep.

The succeeding day no examination of the tumour itself could be gained, but, on exposing the front of the knee-joint for the purpose of loosening the bandage, a large artery was plainly

visible, beating on the inside of the knee, and running over the condyle of the femur, showing that collateral circulation had become established.

There was also much increased action of the heart; it was forcibly pulsating on a level with the left nipple, and for two inches to the right side of it. The dulness upon percussion extended over a space of nearly three inches to the right of the left nipple, and for the same extent above and below. The pulsation in the carotid arteries was also very visible, especially on the right side. The most careful examination failed to detect any pericardial roughness, and there was no sign of mitral valvular disease beyond a slight fremitus or purring murmur, whilst the signs referable to the diseased state of the semilunar valves of the aorta were more manifest than before.

On the 18th the citrate of iron was increased to three grains thrice a day, the same general treatment being continued. On the 22nd, nine days after the attack of pain in the popliteal space, all tenderness there had subsided, and a careful examination of the ham was now allowed. The condition of the part was peculiar: all the symptoms of the previously existing tumour had disappeared, and the girth of the limb was the same as that of the opposite side. No difference could now be perceived in the two popliteal spaces when the forefinger of each hand was drawn along the course of the arteries, at the same time, on either side. The collateral vessel, already mentioned as pulsating on the inside of the knee, was still there, beating forcibly, and feeling to the touch as large as the radial artery at the wrist. The posterior tibial could now again be felt beating behind the inner ankle at its normal site, but very feebly, as compared with that of the opposite extremity.

On the 25th of January there were symptoms indicative of failing strength. The appetite had declined, and the digestion become impaired, gaseous distention of the intestines causing much pain of pleurodynic character in the left hypochondriac region. The face and jaws, too, exhibited signs of puffiness from œdematous effusion, and the urine was scanty.

Under these circumstances the citrate of iron was omitted, and an infusion of broom, with nitric ether and acetate of potash, substituted, and dry cupping, with opiate fomentations, were applied to the painful region of the side. The urine at this time, and throughout the whole period of illness, exhibited no trace of albumen either upon the addition of nitric acid or the application of heat. On the 3rd of February, the pallor of the countenance having increased with accompanying debility, tartrate of iron was added in five-grain doses to the diuretic mixture.

On the 16th, at midnight, he was awakened out of sleep by paroxysm of pain of anginal character, the breathing being very rapid and distressing, each attempt to inspire being met by short spasmodic cough. This continued for some time, and eventually subsided under repeated doses of Hoffmann's anodyne liquor in Murray's solution of camphor. From the 16th to the 20th he gradually sank, the sensorium being clouded by day, and delirium supervening at night; wine and stimulants were fruitlessly given, and he died quietly and without pain on the morning of the 20th, the pulse, just prior to dissolution, being as steady, full, and regular, at 90, as in health: the jerk previously existing from regurgitation having subsided as the heart's power of contracting declined; and the wrist, if presented out of bed to a bystander unconscious of the real nature of the case, might have been regarded as the pulse of an individual in robust health.

The body was examined thirty hours after death. Upon raising the sternum, the pericardium floated upwards on a level with the most projecting portion of the heart, being elevated by serum effused into it to this extent, or about, in measured quantity, six ounces. The pericardium covering the heart, as well as the reflected portion of this membrane, showed no trace whatever of inflammatory action. The heart itself was about twice the natural dimensions, and obtusely rounded at its apex; the right auricle and left ventricle were considerably distended with blood. On examining the cavities consecutively, in the course of the circulation,—the right auricle was found dilated and thinned, but not otherwise diseased; the right ventricle less considerably enlarged, though somewhat so; the tricuspid valves quite sound: no trace of endocarditis having apparently ever existed in either of these cavities: the pulmonary artery and its valves were also natural. Proceeding thence to the lungs, both were congested from impeded circulation, and the air-tubes to their minute divisions exhibited conditions peculiar to congestive bronchitis. Returning to the left side of the heart, the pulmonary veins were natural; the left auricle dilated, and its structure thickened; the left ventricle greatly enlarged, and its walls hypertrophied; the mitral valve sound, with the exception of its anterior segment, where were deposited a very few specks of fibrous vegetation. At the aortic valves, as diagnosed, lay the sole seat of disease. Each semilunar division was enlarged to about twice its natural dimensions in diameter, rolled upon itself and everted, projecting upwards towards the arch of the aorta, encrusted upon every direction with masses of fibrine, gray and nodulated; some in tubercles, others in pendant bunches, forming warty

growths with narrow pedicles, or cauliflower-like vegetations, to an extreme degree. Immediately above the semilunar valves, in the sinus of the aorta, existed a large sloughy ulcer, which had destroyed the lining and middle coats of the artery. Beyond this, the aorta was slightly dilated, and bore traces of atheromatous deposit to some extent.

The popliteal artery was then carefully dissected out from its exit from the tendinous canal of the adductor muscles to below its tibial divisions. Examined by the eye, it presented a natural appearance as far as the giving off of the articular vessels; below this it spread out into an oval, flattened body, somewhat resembling the cauda equina of the spinal cord. It then became slightly narrowed before dividing into the tibial arteries, which were both pervious, but their venæ comitantes were obliterated, filled with clots of consolidated blood, of dark modena hue, lodged in separated oval nodules. To the touch, the artery itself above appeared perfectly healthy, though whitish throughout the portion described, but it felt densely solid and firm.

Upon slitting it up, and exposing its cavity throughout, no disease whatever could be found in the upper portion, but towards its lower end it had been converted into a fibrous cord of greyish-yellow colour, as solid as the walls of a long-standing gristly stricture of the urinary canal. In the intervening space was lodged a clot of fibrine, intimately connected to and with the artery below, less closely adherent in the middle, and only applied against its lining membrane above, whence it stretched upwards in a pediculated form to the nearest collateral branch. Its colour, too, greatly differed throughout this course, being gray at the inferior portion, yellow in the central, and blood-coloured at the top, its density decreasing in proportion as the fibrine verged from organic to mere clot.

Such were the local appearances in this case. Here, I think it will be allowed, is demonstrated the value of post-mortem examinations. We see symptoms, anomalous and obscure during life, made intelligible, patent, and clear; all doubt and mystery removed; and the details of a case rendered apparent, which might otherwise have (from their unusual character) become the subject of much speculation, if not of discussion and dispute.

We see symptoms so strongly simulating aneurism, that it is difficult to decide in the negative as to its existence. We have pre-existing arterial disease in a frame which had been subjected to the effects of syphilis and mercury; a pulsating tumour in the most frequent seat of the disease, whose diastole is arrested by pressure on the cardiac side; numbness and slight

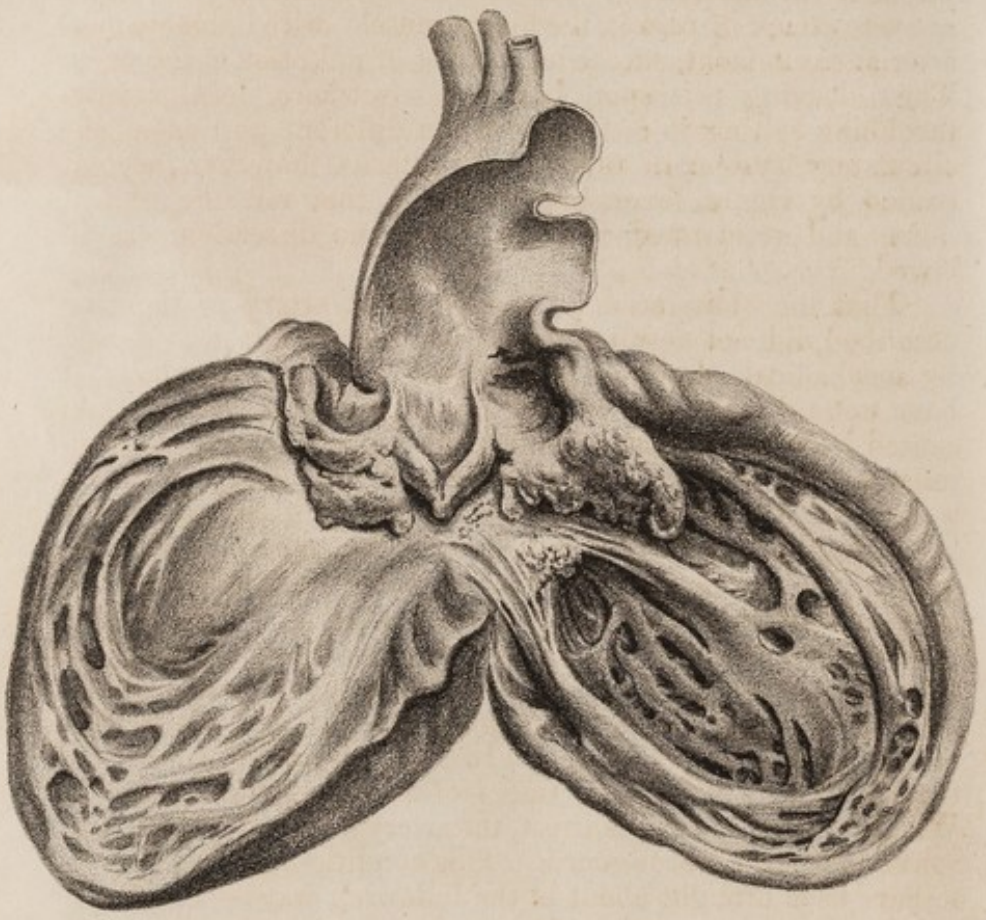
pain in the limb from distention of the passing nerves; œdema of the foot, and passive congestion from pressure on the veins and lymphatics; diminished temperature from interrupted arterial circulation, and loss of pulsation in the branches of the vessel below, yet differing from aneurism in two very important points, viz., being totally devoid of *bruit de soufflet*, upon the most careful examination by the ear; and though fluid and of recent formation, yet not decreasing in size when the flow of blood was arrested by pressure from above.

These two points led to the diagnosis that there was no true aneurismal sac communicating with the arterial tube, but that the whole vessel was dilated,—a circumstance for the occurrence of which weeks, or even months, would, under ordinary circumstances, be required, yet here developed in a few hours. Soon, however, a fresh train of symptoms, resembling aneurism, set in: as in the majority of the cases cured by compression, sudden pain was experienced in the tumour, of an almost excruciating character, lasting for the customary period, then subsiding, and being followed by well-developed collateral circulation. But now again there is a divergence from the simile. No tumour of densely hard character, resulting from the consolidated blood, is to be found in the popliteal space at the seat of disease; but instead, the feeling communicated to the fingers as if the artery were again pervious throughout, confirmatory evidence existing in the restoration of circulation in the posterior tibial artery at the ankle. All these conflicting circumstances have been cleared up by the post-mortem examination.

We find the artery pervious through some extent of the popliteal space, yet at its inferior extremity firmly and entirely closed, its canal plugged by fibrine superiorly, the walls of the artery cohering below, or like a gristly stricture consolidated by fibrous deposit.

We find no traces of a sac or aneurismal pouch; no atheromatous disease of the vessel in its course, the artery healthy at this spot, as well as both above and below. We have the artery obstructed, and rendered impervious to the blood-passage through it, and secondary consequences resulting. We trace them to the centre of the circulation—the heart, and there discover appearances that will readily resolve the phenomena in question,—loosely attached fibrinous vegetations from the sigmoid valves, hanging by pedicles into the aorta, and so delicately adherent, that a touch almost is sufficient to detach them from their site.

Here is a ready explanation of the whole; and yet, before accepting it as certain, we must take another view of the case,





and determine that the symptoms did not depend upon acute local arteritis,—such a condition as has been observed by Dr. Stokes in the following case[a]:—

"A young person, with permanently patent aortic opening, had, whilst labouring under the consequences of this affection, sudden pain in the calf of the leg, accompanied by pulsation in the tibial vessels to a most violent degree; next, a severe attack of pain in the biceps muscle, with immense local arterial excitement, succeeded by loss of pulsation at the wrist. Then, leaving this spot, irritation elsewhere, local arterial throbbing setting in consecutively in different portions of the circulatory system in turn; these attacks, however, accompanied by rigors, fever, and sweating, that ran the patient down and accelerated his end. Here no dissection was allowed."

That the obliteration of the popliteal artery in the case described did not result from local arteritis, but was caused by mechanical plugging of the vessel by a foreign body, I have not a doubt: and for this reason, viz., that had it been caused by arteritis, there would have existed symptoms of an inflammatory character in the general system, and the disease would not have been confined and limited to a single spot.

It may be urged, however, that, in the examples of plugging of the arteries by fibrinous deposits detached from the interior of the heart, which have been adduced by Dr. Kirkes in his paper, already referred to, the masses of vegetation were themselves discovered, not adherent to the coats of the arteries in which they were lodged, but merely lying loosely in the caliber of the vessel. In the case under notice, on the contrary, we have no traces of this vegetation existing. We find, at the spot of its arrest, the artery perfectly obliterated, converted into a fibrous cord. This condition, then, I believe to have been brought about in the following way:—The vegetation became impacted in the vessel so firmly as totally to exclude circulation. The artery then, behind the seat of obstruction, became distended by dilatation of all its coats; inflammatory action was set up at the point of arrest; lymph was in consequence effused, adhesion ensued, and obliteration of the vessel at this spot followed as the final result. Whilst this occurred, the artery above, retaining its elasticity to a considerable degree, contracted upon the blood contained in the dilated portion, expelled the greater portion of it through the collateral vessels, and emptied itself, so far as to prevent conso-

[a] This case is unpublished, and for permission to refer to it here I am indebted to Dr. Stokes.

lidation of a sufficient amount of blood to afford to the touch the sensation of solid tumour, which is felt after rapid cure of aneurism here. A small quantity necessarily remained in the caliber of the artery, which, retained here, coagulated, and formed the clot found within this space, as exhibited in the preparation, and represented[a] in the lithograph annexed.

With such complete stoppage of circulation through the limb as occurred in this case, it is, at first sight, a matter of wonder that mortification of the extremity did not ensue, such as followed in the case quoted by Legroux. Why it did not, I think may be readily explained by reference to the report. The vessels had been so long subjected to forcible distention, from a greatly enlarged and powerfully contracting heart, that they adapted themselves with more than ordinary readiness to the circumstances of the case, and speedily dilated, so as to form a collateral circulation sufficient to give free passage to the blood, and thus prevent gangrene of the leg and foot. A more difficult point of solution is the reason why the artery, upon blocking of its canal, should in this instance have dilated into a tumour, and such a condition not equally obtain when a ligature is ordinarily applied. The explanation, I think, however, may be satisfactorily afforded by referring to the peculiar condition of the individual himself in this case. With cardiac enlargement and disease of the aortic valves, anemia, and broken health, to the degree which existed here, no surgeon could think of resorting to the operation by ligature, if an aneurism did exist. We have not, nor, I think, are we likely to have, analogous cases, subjected to the ligature, and consequently are deprived of the only sources of practical deduction; but, in their absence, we may, I think, fairly draw an inference from negative conclusions.

One subject further remains for our consideration, and from its consequences it becomes the most important of the whole. I mean, the cause of the warty vegetations. Are they simple polypiform concretions resulting from coagulations of the blood, as regarded by Laennec and confirmed by Andral? Are they the result of some peculiar condition of the blood, or particular constitution of the individual, as suggested by Dr. Hope? Do they follow as the consequence of inflammation of the endocardium? Or, as laid down by Dr. Hughes, from coagulation of the blood upon the inflamed membrane? Rheumatic inflammation is now their generally assigned cause, and is, in this instance, confirmed by the history of the case. I have taken the trouble of tracing it carefully back, and find that, so far dis-

[a] This preparation, and the original drawing by Mr. Connolly, are in the author's possession.

tant as the year 1846, when only eighteen years of age, this patient was the subject of fibrous rheumatic inflammation. This attack did not, however, in my opinion, affect the semilunar valves, for recovery was perfect, and succeeding health good, a corroborative proof of which is to be found in the fact of his having passed the careful medical inspection of a Life Assurance Office referee in the intervening time. The mischief, I think, we may assume to have been the result of the last acute attack upon the 8th of December, and for this reason, that the most careful stethoscopic examination, prior to this date, yielded no physical sound indicative of disease—a condition which immediately followed upon this attack, was clearly and obviously present upon the 16th, and remained constant to the time of death. Occurring then, however, I do not, however, refer it to *general* endocardial inflammation, for no trace of such affection could upon *post-mortem* examination be shown to have existed in the lining membrane of the heart, but, in inflammation only of that portion which, from its peculiar nature, became more liable than any other to be the subject of rheumatic attack, viz., the tendinous structure of the passive semilunar valves.

The fibrous structure of the latter must be regarded as affording a tissue much more likely of assault than the fine serous membrane of the endocardium; and, so regarded, inflamatory swelling of the valves once set up, exudation of lymph has only to occur, in a greater or less degree, to form the granular or warty growth, or assume the state of cauliflower excrescence. Upon the size and shape of these vegetations of the valves must necessarily, and to a great extent, depend the attendant danger. The larger and more friable the growth, the more likelihood of their being detached, and when set free their size must, of course, determine the point of arrest; the greater their magnitude, the more important is it the vessel in which they become impacted; but even in the smallest form, such as in casual inspection of post-mortem examinations might be considered as of trifling importance, their presence, as demonstrated by Dr. Hughes, may be the cause indirectly of fatal results, by retarding the blood in its progress, and thus inducing fibrinous concretions, which, equally with the vegetation itself, may be carried into the circulating fluid, be lodged in the cavity of a vessel, and produce death by paralysis if of the head, or gangrene if into an extremity of the body.

I have brought this case forward now because I consider it one of interest to both the practical surgeon and the physician; and as it is a subject of great importance, in connexion with arterial disease, I purpose at some future time, when speaking of aneurism, to refer more particularly to it.

20

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.

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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 considered 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

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(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

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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

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(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,
SAML. MORRIS.

(Signed)

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,
E. A. STEDDY,
Surgeon.

(Signed)

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,
THOS. HOLLICK,
Druggist.

(Signed)

To G. R. Dartnell, Esq.

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.

CADDEL AND SON, PRINTERS, GAZETTE-OFFICE, ROCHESTER.

21

OBSERVATIONS
ON
THE OUTBREAK OF YELLOW FEVER
AMONG THE
TROOPS AT NEWCASTLE, JAMAICA.
IN THE LATTER PART OF 1856.

BY ROBERT LAWSON,
Deputy Inspector-General of Army Hospitals, and Principal Medical Officer at Jamaica.

An opinion has long prevailed that the severe forms of tropical fever could not originate, or spread, at a considerable elevation above the sea. The grounds for this opinion seem to be the statement of Humboldt that yellow fever was confined to the low country on the coast near Vera Cruz, and that it did not pass the farm of l'Encero, elevated 3045 English feet above the sea, "the heat there being insufficient to develop its germ;"* and that of Fergusson, with reference to the varieties of fever occurring at different elevations in St. Domingo. The remarks of these authorities were no doubt correct for the *time* and *place*, but it must not be thence concluded that all the conditions requisite for the production of those forms of fever, except that of suitable elevation, were present in the cases they adduce. Their deductions, therefore, require to be applied cautiously to other localities, and may, under certain modifications of the conditions, be even found inapplicable to the same localities at another time.

With that disposition so common among us, however, to help out preconceived notions by an appeal to the authority of a great name, rather than to correct them by a careful deduction from facts, the opinions of Humboldt and Fergusson have been pushed much beyond their legitimate bearing; but we know too little of the actual causes of severe tropical fever to be able to say with certainty where they may be produced in sufficient intensity to develop the disease, far less to define the point beyond which their production is impossible.

There is no certain test for the presence and operation of the efficient causes of fever but its occurrence among men or the lower animals; but observations on the latter are too few and desultory to admit of frequent application. For all practical purposes, therefore, observations on bodies of men, under conditions sufficiently varied, afford the only means of extending the information on the subject and deciding doubtful points.

In Jamaica there are military stations which have been in existence for many years, the records of which are available for elucidating some

* Political Essay on New Spain, vol. iv. p. 170. English translation, 1822.

of the laws of the disease. Taking Kingston as a centre, the following stations are included within a circle of about eleven miles radius—viz., Port Royal and Fort Augusta, at the level of the sea, and nearly surrounded by it; Up Park Camp and Spanish Town, at moderate elevation above and some distance from the sea; Stony Hill, eight miles from the sea, and 1360 feet above it; and Newcastle, nine miles from the seaboard and about 4000 feet above it. On the north side of the island lies Maroon Town, about twelve miles from the sea coast, and elevated about 2500 feet above it. With the exception of Newcastle (which was first occupied as a military post in 1841), these stations were garrisoned many years, and the returns for them are given in the statistical reports on the health of the troops in Jamaica from 1817 to 1836 inclusive.

The following table, taken from these data, shows the average mortality from fever per 1000 of mean strength, at each of the stations above mentioned, together with the extreme annual variations:

Station.	Annual mortality per 1000, from fever for twenty years.	Extreme annual variation per 1000.
Port Royal	93·9	From 0 to 298
Fort Augusta	55·5	„ 0 to 278
Up Park Camp ...	121·0	„ 21 to 479
Spanish Town	141·0	„ 42 to 368
Stony Hill	70·5	„ 3 to 431
Maroon Town	15·3	„ 0 to 34

These results form the best approximation to a numerical expression of the activity of febrific causes in the different localities for the period they embrace. From them it is obvious that on the average the stations surrounded by the sea were healthier than those at a short distance from it, and near the same level; while in the case of Stony Hill,* and still more of Maroon Town, elevation has been attended with a great diminution of the activity of the causes of febrile disease, though not by their entire disappearance. It is manifest, too, that these causes had very different degrees of activity in different years at the same station, though the periods of increase and decrease were nearly contemporaneous at them all; thus indicating the presence of an epidemic constitution at certain epochs, whatever the nature of that may be.

In 1840 an epidemic period commenced, which continued with variable intensity to the beginning of 1842. It commenced at Maroon Town, and twelve deaths occurred from fever originating there, or thirty-six per thousand of the mean strength within the annual period. In the year 1841–42 there were twenty-four deaths at this station from fever; of these, two in May and five in June, were in men of the 68th Regt., which corps had not been away from the station; the remainder were in the 82nd, which arrived there in the end of June, and many of them were attributed to the low ground. This outbreak was

* Since this was written, I have found, on personal examination, that there is a considerable amount of marshy ground actually among the buildings at Stony Hill, and a considerable portion of the surface seems to be kept wet by springs coming to the surface at various places.

coincident with that which occurred in the 60th Regiment on the south side of the island, immediately on its arrival from the Mediterranean. In the fatal cases at Maroon Town, black vomit was either ejected during life, or found in the stomach after death.

In February, 1842, a case resembling yellow fever showed itself at Newcastle, and terminated fatally on the fourth day. I have not found it expressly stated that the man had not been away from Newcastle, but from the context this seems implied. Staff-Surgeon Hawkey and Staff-Assistant-Surgeon Jameson were sent to examine the case, and their opinion, as given in the General Quarterly Report to March 31st, was, "that the real origin of this instance of fever was very doubtful indeed; that the symptoms during life were most equivocal; but that the appearances of the characteristic black fluid in the stomach after death clearly betrayed the morbid agency of febrific miasm."

In October, 1848, a period when yellow fever had been prevailing extensively in the West Indies, a malignant fever broke out in the family of the schoolmaster-serjeant of the 97th Regiment, at Newcastle. The family consisted of himself, his wife, and three children, and a woman who attended them: all these, except the serjeant, were attacked with fever; he had dysentery; and the wife and children died.

The disease was confined to this family, and was attributed chiefly to the emanations from a cesspool to windward of, and within thirty yards of the hut in which they lived. None of these had been away from Newcastle for a considerable period previously. Deputy Inspector-General Dr. Watson, in his official report to the officer commanding, states that the disease was "a fever of a peculiarly low and pestilent nature;" but Staff-Surgeon Dr. McIlree, who was then surgeon of the 97th, and had the cases under his immediate observation, has favoured me with a statement from his notes made at the time, from which it appears several of these were characterized by rapid course, yellow skin, and black vomit; in other words, were decided yellow fever. The hut in which these cases occurred was situated close to the bend of the road immediately in front of the lowest barrack, at a point 3520 feet above the sea.

In July, 1850, cases of severe fever began to appear at Maroon Town, and Dr. Maclean, Deputy Inspector-General, in his annual report for that period, states that the fatal cases were characterized by yellow skin, and the formation of black vomit in the stomach.

I have thought it advisable to adduce these facts with reference to the more elevated military posts in Jamaica, previous to entering on the special consideration of the occurrences at Newcastle in the end of 1856. They show that though the high land stations may, in ordinary years, present a degree of health little inferior to that observed in Europe, yet when an epidemic constitution prevails, they are by no means exempt from its influence, and may even, as in the case of Newcastle on the late occasion, suffer severely, though it is probable to a far less extent than the low land stations under similar circumstances.

The military station of Newcastle is situated near the western extremity of the Blue Mountain range, on its southern aspect, and about nine English miles N.E. by N. from the sea-beach at Kingston. Owing to the difficulties of the ground the distance by the road is about fifteen miles. The highest point in the neighbourhood of Newcastle is St. Catherine Peak, which attains an elevation of 5000 feet above the sea, from this the ground proceeds southerly 1600 yards to another peak less elevated, forming the eastern boundary of the space enclosing the station. From the flank of the latter peak a sharp ridge is thrown off to the S.W., though at a greatly reduced elevation, which forms the southern boundary of the valley on that side of Newcastle. The ground slopes away from the peak to the southward, throwing off abrupt ridges intersected by deep hollows, and forms the eastern boundary of the Hope Valley, which drains the whole, and through which the road to Newcastle passes.

From St. Catherine Peak the ridge of the Blue Mountains passes in a westerly direction, and at the distance of 2270 yards there is a small pointed peak, from the southern base of which a sharp ridge runs off about S.S.E., rapidly declining in elevation until it nearly meets the spur crossing from the peak to the southward of St. Catherine's, thus forming the western boundary of the space surrounding Newcastle. The cantonment itself is on a spur given off from the connecting ridge about midway between St. Catherine Peak and that to the westward. This spur has a southerly direction, and falls rapidly as it leaves the parent ridge, maintaining, however, an elevation much the same as that of the western bounding height, at a corresponding distance from its northern commencement.

The cantonment occupies a space of nearly 800 yards in length; and the difference of level between the highest and lowest building is 505 feet. The mess-room is 4050 feet above the sea.* The top of the ridge is so contracted in many places that there is room for single houses only, while its sides descend at an angle which is seldom less than forty degrees, and in some places fifty degrees, below the horizon. At other places it spreads out considerably, giving room for more extensive buildings; but the slopes terminating in the water-courses are everywhere abrupt, and the latter deeply excavated. On the western side of the cantonment there is but one large valley, which is pretty well cleared; to the eastward the valley, as it ascends from the lower part, branches out into a number of smaller ones, separated by sharp ridges, and these generally contain much bush. From the nature of the ground the fall is everywhere so great that water finds a ready outlet, and there is nothing of the nature of marsh to be seen; while, from the frequent rain and the supply from the springs, the main water-courses have always a stream in them.

The soil in the neighbourhood seems to be clay, mixed with vegetable matter on the surface; though where excavated the clay is found

* Some years ago it was proposed to make a carriage-road from the low lands to this station; when the levels were taken, the elevation of the plateau on which the mess-room stands was found to be 4050 feet above the sea. This information was derived from the plans in the Engineer's Office, in Jamaica.

stiff and unmixed, and is of a red colour. This clay overlies a bed of marl of a yellowish-grey colour, and that again seems to be bedded in sandstone of a purplish-blue colour, and of remarkable firmness and cohesion; large boulders of this nature are found all over the flanks of the hills, where the action of the rain has washed away the soil and left them exposed. The stratum of clay attains considerable thickness in many places, and in several has been eaten into deep gullies from the action of the surface-drainage, or extensive slips have taken place.

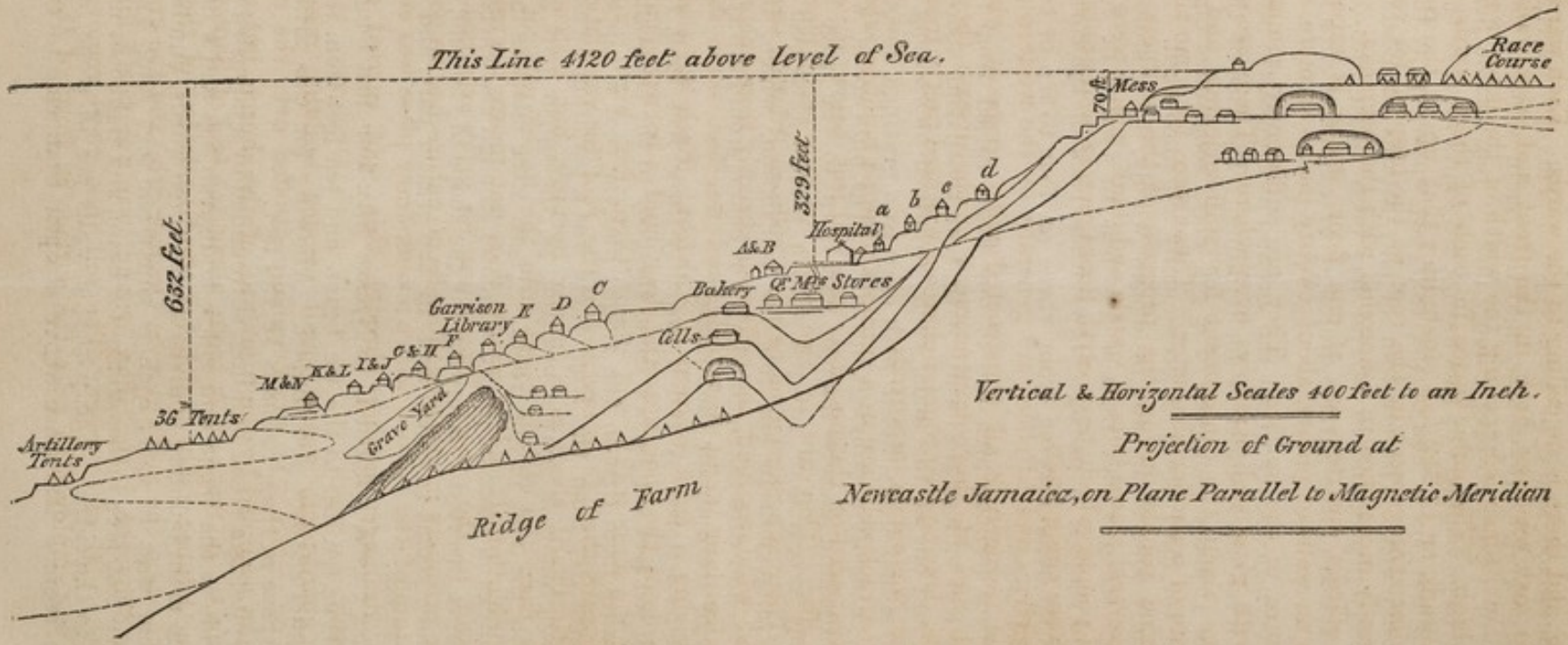
It has been necessary to cut the ground at Newcastle into terraces, to obtain level space sufficient for building. The face of the scarp in these cases (usually composed of a red clay, sometimes embracing a portion of the marl also,) is occasionally left uncovered. Sometimes it is partially covered in, and in others wholly, by a stone retaining wall. The scarp varies from a few feet to twelve or fourteen in height, and there is a passage between the back of the corresponding house and its base, varying from three or four to ten or twelve feet, in different cases.

The houses for the men are of one floor, raised from the ground about two feet on a stone wall, with four ventilating spaces in front and back, and one at the ends, each seventeen inches long and seven inches and a half deep, fitted with open iron gratings, through which there was generally a sufficient draught. The huts are of wood, lined substantially, and closely floored, and open to the ridge inside the roof. They have a door covered with a porch; glass sash windows; and an arrangement in the roof for ventilation, which, if properly attended to, and care taken to admit air below, would always secure a sufficiency of fresh air for the inmates.

The rooms lettered A and B are fifty-three feet long, twenty-six feet broad, ten feet six inches from the floor to the tie beam, and ten feet six inches from that to the ridge; and the roof is hipped at each end. At six feet from the front there was a partition forming a sort of verandah, but with louvre boarding at the upper part, communicating with the rest of the room. There were jalousies in front of these buildings in place of glazed windows, though elsewhere the sash windows were inserted. Allowing for the shape of the roof, the cubic space in these rooms is 16,447 feet in the greater part, and 4074 feet in the verandah.

The other rooms, lettered C to N, are fifty-four feet long, twenty-four feet wide, ten feet to the tie beam, and ten feet from that to the ridge. The roofs are also hipped. Allowing for this arrangement, the cubic space in these rooms is 18,480 feet.

The hospital is a stone building, surrounded by a jalousied verandah, ten feet wide at the front and sides, and seven feet and a half at the back. The main building is divided into three wards, numbered from 1 to 3, from west to east; each is thirty-one feet long, twenty feet wide, fifteen feet four inches to the tie beam, and eight feet nine inches from that to the ridge. The partition walls are of stone, and reach to the tie beam. The space above is open from end to end of the



Vertical & Horizontal Scales 400 feet to an Inch.

Projection of Ground at

Newcastle Jamaica, on Plane Parallel to Magnetic Meridian

building, and there is no ceiling to the wards. Each ward has a door, and two sash windows, both in the front and back walls; and over each, a louvre-boarded opening the width of the door or window, and a foot high. The cubic space in each of these wards is 9507 to the tie beam, or 12,219 feet, including that up to the ridge. There is a similar arrangement in the roof of the hospital for ventilation to that already mentioned in connexion with the barracks.

The officers' quarters are of one floor, which is raised from the ground, on walls or pillars, about twenty inches or more, according to the nature of the surface. They are sufficiently commodious, and fitted with glass sash windows everywhere. There are several other buildings about the cantonment for staff-serjeants, and workshops, which are of a similar character. These were for some time occupied by married people during the progress of the sickness. There are also in several places huts of wattle and daub, which were occupied by married people, which have earth floors merely, and are of course not raised from the ground.

The privies and kitchens are generally on the western slope of the hill; the former are all constructed with cesspools, which are not trapped, and at the commencement of the disease they were very offensive. During its progress charcoal was used pretty freely, and their condition was much improved.

The barrack cells are in a substantial stone building about 400 feet to the eastward of the hospital, and 140 feet below it, on the edge of a ravine. They are in two rows, of four each, placed back to back. There is a passage of five feet wide in front of each row, with jalousied windows, and the cells open directly from them. The cells are ten feet long, eight feet wide, and ten feet three inches to the eaves, giving a cubic content of 820 feet. Each has a small opening at the side of the door, near the floor, and a barred opening over the door of the same width, and about three feet high. In the cells to the eastward there is an opening in the roof for ventilation; in those to the westward there is a similar opening, but instead of leading directly from the cell, it opens into the upper part of the passage already mentioned, and of course does not insure the same thorough ventilation as the other. There was no privy attached to the cells, and the prisoners in obeying the calls of nature had to go to a spot in the bottom of the ravine, where a temporary place was erected. The surface drainage passing through this spot carried off the soil completely.

The guard-room was a small wooden building raised from the ground on pillars. It was originally situated over the centre of the space now occupied by the front wall of the church, but was removed from this to the front of A room, about the end of September or first week in October. The trench for the foundation of the church was commenced on the north side on October 8th, and the ground opened all round by the 16th. The ground was not fairly filled in again before the end of October. The soil (not clay) removed from the trench was employed to raise the surface in front of the new guard-

room. This guard-room was occupied until November 5th, when it was vacated, and the men on guard accommodated in marquees on the parade-ground.

At the commencement of the epidemic this guard furnished one sentry over the guard-room, one at the hospital, one at the quarter-master's store, and one at the canteen. At a later period two others were given for rooms C and E, when these were occupied by sick. There was, besides, a small guard of one corporal and three privates mounted over the cells every night, and which was accommodated in a bell tent close to the cells.

In the early part of June, 1856, two companies of the 36th Regiment were stationed at Up Park Camp, and the European artillery at Port Royal. On June 10th, the former were removed to Stony Hill; and the following day, thirty-five of the latter went to Stony Hill, and thirty-six to Newcastle. Four cases of yellow fever had proved fatal at Port Royal among the artillery between the 12th and 30th of May; and a man of the 36th died from the same disease at camp on May 10th.

In June two officers of the 36th died at Stony Hill of yellow fever —one on the 16th, and the other on the 29th; and about July 20th, fever of the same character began to show itself among the men, and continued during August. As this was attributed to the barrack being out of repair,* sixty-five of the 36th were removed to camp on August 9th, and on the 20th of the same month they left camp for Newcastle.

Fever continuing at Stony Hill, on August 21st, the men of the 36th who were able to proceed were sent to Newcastle, and the artillery to camp; but several cases proving fatal at camp subsequently, hey also were moved to Newcastle on September 19th.

The strength of the force at Newcastle during the last six months of the year was:

	Officers, including staff.	N. C. officers, drummers & privates.
July	12	490
August	14	499
September	18	650
October	20	685
November	18	667
December	19	637

These numbers include one serjeant and eight men who were stationed at the Botanic Gardens, a post in a narrow valley six miles from Newcastle, on the road to Kingston, and about 1100 feet above the sea.

On the detachments from Camp and Stony Hill proceeding to Newcastle the troops were somewhat crowded, thirty-six men occupying each room, and the remainder being in tents on the flat space in the immediate vicinity of the rooms.

In consequence of two patients having contracted fever in hospital,

* Recent examination has directed attention to a considerable extent of marshy ground of long standing in the neighbourhood of the buildings at Stony Hill.

the sick (with the exception of yellow fever cases) were removed from that building on September 21st, and accommodated in marquees on the open space in front of it. The building was whitewashed, and the sick re-occupied it on October 14th; but fever again appearing, they were removed on October 23rd to rooms C and D, which were cleaned for the purpose.

The first case of yellow fever which was seen at Newcastle in 1856 was that of Private William Green, 36th Regiment. This man had been suffering from chronic catarrh, and went to the Botanic Gardens on January 23rd, for change. He complained of being out of sorts on June 27th, but being sickly, little was thought of it; becoming worse, however, on the 29th he was removed to Newcastle, where he became yellow, had black vomit, and died on July 2nd. He had not had communication with any case of fever previous to his own attack, and had not been away from the post above half a mile at any time. The serjeant and the men at the post remained healthy, both then and throughout the subsequent epidemic at Newcastle.*

On going to the hospital, Private Green was placed in No. 3 ward, in which there were several other patients; the number under treatment at the time was 20. There was no other case for some time.

On August 21st, the detachment from Stony Hill arrived at Newcastle, and the following day two of them, Privates Brown and Griffiths, went to hospital with fever; the former died on August 25th, and the latter on the 27th, both being yellow, and having had black vomit. Another man of this detachment, Private Anderson, went to hospital on the 23rd, and died on the 26th, presenting the same symptoms. On August 24th, another, Private Rossu, who arrived from Stony Hill that day, went to hospital, and died on the 28th, with the same symptoms. Private Reuben Smith arrived from Up Park Camp on August 28th, where he had been in hospital under treatment for remittent fever from August 12th to the 27th; as he complained of weakness, he was taken into hospital, though not then placed on the books. On the 31st, fever appeared, while in hospital, and he died on September 7th, with yellowness of the surface, and black vomit. These men were accommodated in No. 2 ward, in which there were several other patients; the total number of sick in hospital at the time increasing from 24 on August 23rd, to 33 on Sept. 7th. These cases may be, perhaps, referred to the low ground; at all events, nothing decided can be said as to where they were produced; the next, however, is more important, and requires special consideration.

Private Henry G. Meloney, 36th Regiment, the next case, arrived from Stony Hill on August 21st, and was accommodated in a tent at the west end of the hospital, and to the north of the orderly-room.

* Dr Bowerbank informed me that there were two cases of yellow fever in this neighbourhood: one on Sept. 16th, which recovered, and the other on Oct. 9th, which proved fatal; both individuals, however, had been away from the locality in the low ground previously.

This was a delicate-looking man; he had been under treatment for fever a day or two before he left Stony Hill, but since his arrival at Newcastle had been employed on the public works, though weak and sickly. He got wet on September 6th, and had a rigor, and he attributed his subsequent illness to that wetting. He was admitted on September 7th, labouring under low fever, which pursued an obscurely remittent form until the night of the 14th. The following day there was a considerable improvement, and in the evening a decided exacerbation, and the tongue then presented for the first time the red tip and sides so common in yellow fever. The fever continued during the 16th, and on the 17th there was pain in the chest (epigastrium), for which a sinapism was applied with relief, and about midday the fever remitted. There was slight fever during the night, and the following day yellowness of the surface was noted, and in the evening vomiting of brownish matters and much prostration. From this period he gradually became weaker, and died on the 19th, at half-past nine p.m. On opening the body, the liver was found large, pale, and friable, and the stomach and intestines contained a large quantity of black vomit.

It is not easy to determine whether this case should be attributed to the low ground, or whether it was the result of exposure at Newcastle. The man had been sick at Stony Hill, but was at work seventeen days at Newcastle before he got wet, and manifested symptoms of fever there—a long period of incubation, but not longer than has been occasionally observed, so that nothing can be satisfactorily deduced from that. The course of the disease was unusual for yellow fever, having gone on from the 6th to the 14th without displaying the character of that disease decidedly. On the 15th, there was either a relapse or an attack of a new fever, which presented the peculiar tongue frequently seen in yellow fever; this remitted on the forenoon of the 17th, and was accompanied by the uneasiness about the præcordia characteristic of this disease; and the following day the yellowness of skin, irritability of stomach, and sinking, and terminated fatally on the 19th. The latter part of the course of the disease was in every respect, therefore, analogous to the ordinary course of yellow fever, and it is difficult to suppose that, had the original attack been of this nature, some of the symptoms it subsequently presented would not then have shown themselves. These speculations are of importance, for if the original attack were remittent fever only, then the subsequent yellow fever must have arisen from causes in operation at Newcastle, and not from poisoning of the system during his residence at Stony Hill; for had that been the case, it would have been brought into action on the first attack on September 6th.

Meloney was treated in No. 2 ward, the same in which Smith, the last man labouring under yellow fever, was, and in the next bed to that in which he was, in the north-west corner of the ward. Smith died at seven A.M., on September 7th, and the body, with the bedding, was removed in half an hour to the dead house; while we have seen that Meloney was actually indisposed the previous day, and he

came to hospital at ten A.M. only. His first attack of fever, therefore, arose independently of the hospital or of its inmates ; had contagion been superadded to the first attack, it must be concluded that the form would have been aggravated at once, and it is contrary to all experience to suppose that the disease would have gone on for a week, at the end of that time show the improvement it did, and then, from contagion applied a week before, assume the characters of yellow fever.

The question is, therefore, narrowed to this : if his first attack were yellow fever, it was called into action by his getting wet on the 6th, and the state of the system determining that form of disease may have been contracted either at Stony Hill or at Newcastle, there is no evidence to determine which ; if the first attack were merely remittent, the subsequent one must be altogether attributable to causes in operation at Newcastle, and if the reasoning given above be correct, these could not have been connected with specific contagion.

On September 17th and 18th, two men who were in the same ward with Meloney, at its south-east corner, became affected with fever, which assumed the yellow form. These were Privates Joseph Austin and Timothy Wild, both labouring under ophthalmia ; the former had been under treatment since April 10th, and the latter since August 30th, and it is believed neither had been away from Newcastle since March. Both had yellow skin and black vomit, and Wild died on the 20th ; the other recovered.

These were the first cases of yellow fever in men who had not been away from Newcastle, and they arose under circumstances sufficiently suspicious. From the above details it is clear that they can decide nothing as to the causes of the disease, unless that these, whatever their nature may be, were in operation.

The next cases which occurred, however, are of greater use ; these were in Private David Monk, who was engaged on the public works, and lived in the piazza of A room, and Mrs. Bell, who lived in B room, which was occupied by married soldiers and their families. These rooms, as will be seen by the plan, are one hundred feet in front of the hospital, and at a considerably lower level, and are ninety-five distant from each other. Monk, while engaged at the public works, got wet on Saturday, September 20th ; on the Sunday he was feverish in his room, and the following morning went to hospital ; he died on September 26th, yellow, with black vomit.

Mrs. Bell, an industrious, respectable woman, was attacked on September 22nd, and died on the 25th ; yellow, with black vomit. So far as could be ascertained at the time, neither of these had been away from Newcastle since the early part of March. Immediately after their decease inquiries were made to ascertain whether either had had communication with those who were previously sick, or had washed clothes for them, or been in any way exposed to contagion, but no trace could be found of communication, in any way, with the sick, or with each other. The husband of Mrs. Bell was not attacked subsequently.

These cases occurred under circumstances so different from those

preceding them, that many of the doubtful points surrounding the origin of the latter can be eliminated. They do not appear to have been away from Newcastle for months previously, therefore their attacks cannot be attributed to the influence of the low ground. They do not seem to have had any communication with others labouring under the disease, either directly or indirectly, therefore it cannot be attributed to specific contagion; and they lived in different buildings, and do not seem to have had communication with each other, therefore they afford a stronger proof of the cause being in operation at Newcastle, and somewhat diffused.

While these circumstances were taking place, several cases of fever occurred in barracks, but they presented none of the malignity of the yellow fever, and were returned as Febris C. C. Of these, one, Private Walsh, came from A room on September 2nd. This man had been on guard on August 1st. He belonged to the light company, which had not been away from Newcastle for some time previously. The next was Private Smithson, who lived in a tent between the hospital and B room, who went to hospital on September 11th; he came from Stony Hill on August 21st. The next case was from A room on September 14th. The subject of it, Private William Ball, Light Cavalry, had been on guard on the 2nd. Another case occurred on the 15th, in Private Whilehan, in L room. This man was permanently employed on the public works. The next case was that of Private John Lye, who lived in B room, and was employed as regimental policeman. He was attacked on September 17th. The next case was that of Private Fallon, who lived in H room, and who came from Up Park Camp on the 20th August. He was attacked on the 19th September. Another man, Private George Fisher, arrived from Up Park Camp on September 24th, and went to hospital immediately. On September 26th, Serjeant Freeman was admitted from B room. He came from Up Park Camp on August 20th, and had been on guard on September 17th. Another came from L room on September 26th. The subject of it, Private Sturdy, had been on guard the previous day.

Of these men, Walsh, Ball, Whilehan, and Lye were treated in No. 1 ward, and Smithson in No. 2, and all subsequently were placed in marquees outside, when the hospital was evacuated on September 21st. Whilehan had one scruple of quinine and five grains of calomel on the day of admission. Freeman had ten grains of quinine, and Sturdy ten grains of quinine with eight grains of calomel. The others had from nine to fifteen grains of quinine each the second day. In none of these cases were there either yellowness of surface or hæmorrhages of any kind, and they all recovered. They were returned as common continued fever from the first, and nothing arose during their progress to alter this opinion. It seemed proper to introduce them here, not that they have any very important bearing on the case, further than showing that the disposition to fever was, if anything, more remarkable then in the neighbourhood of the hospital and rooms A and B, than anywhere else in the cantonment.

On September 27th, Serjeant Joseph Catton, who was acting as

serjeant-major, and had been drinking very hard for some time, was taken to hospital at six a.m., affected apparently with epilepsy; there was tenderness of epigastrium, with some irritability of stomach, and vomiting of brownish matter resembling incipient black vomit. He died at one p.m., in a fit. On examining the body, the surface was yellowish; the membranes of the brain congested; the mucous membrane of the stomach of a bright scarlet colour, denuded of epithelium around the cardiac orifice, and containing some light brown fluid. The liver had the nutmeg appearance. It may be doubted whether this were a case of yellow fever, but the appearances on dissection agree very closely with those found in that disease. From September 1st he lived in the serjeants' mess-room, a building to the south of B room; his duties as serjeant-major would require him to be moving about much, though they were not likely to have brought him in contact with the sick; but upon this point there is no positive information.

On October 7th, Private Charles Voile went to hospital. In him the disease assumed the form of yellow fever, and he became yellow, and had black stools. He had not been absent from the station for months. He came from B room, the same from which Mrs. Bell, whose case has been alluded to above, lived in, and from the next bed to that occupied by her. This coincidence might be construed into proof of contagion, but it must be received with the qualification that his wife and child, who slept and lived at the same place, and had not had the disease before, as well as many others similarly circumstanced in the same room, were not affected.

On October 10th, Serjeant Bennett, who lived in a tent below B room, near the serjeants' mess, was attacked; he died on the 13th, without being yellow or having any hæmorrhage, but with suppression of urine. His wife, who had not had the disease, was not subsequently attacked. There is no ground to suppose that this man had not had communication with persons labouring under the disease, and therefore by itself it is of no great value in elucidating its causes.

After October 12th, the disease showed itself in several localities, and in a very aggravated form. The first case was that of Private Leather, who had been in the cells, and at hard labour,* since September 17th, by sentence of court-martial. This man was employed on the roads during the day, and locked up when not at work. He was employed under the superintendence of a non-commissioned officer, and his work did not take him near any of the sick with yellow fever, or into the rooms from which they came. He was admitted to hospital on October 12th, and died on the 17th; yellow and black vomit was found in the stomach. Here, then, is a third case which arose under circumstances which, had they been arranged to prove the origin of the disease from local causes, could not have fallen out more remarkably. Further,

* By the court-martial return, Private Leather was confined Sept. 12th for insubordination, tried on the 15th, sentenced to be flogged, but the sentence was commuted to forty-two days' imprisonment with hard labour The proceedings were approved on the 15th, and, according to the usual custom, the imprisonment would commence on that date, instead of the 17th, as above; but under either view the man was a prisoner from Sept. 12th, either in guard-room or cells.

it indicates that the cells were within the range of the causes of the disease.

On October 13th, Serjeant Price, the hospital serjeant, was seized, and he died on the 15th, under a marked form of the disease. He had lived in A room, officers' quarters, above the hospital, and for three days before his attack, in his own room in the hospital. The same day, Private Hickey, from G room, was attacked. He died on the 16th, yellow, with black vomit. He was on the main guard on October 4th, and had been on pass to the village of Middleton two days before admission, which, from the character of the place and the usual practice there, is equivalent to stating that he had been indulging most freely in various ways. These cases by themselves prove little, for Serjeant Price was in the middle of the causes of disease, if these were local, and exposed to contagion, if that existed; while Hickey, in addition to local exposure, had been dissipating and absent from the locality, though it is not known that he was ever exposed to contagion. Several others were attacked subsequently in G room, who had not been away; and on the other hand, there were many men during the course of the epidemic who had been at Middleton on pass, or absent without leave, who never suffered. It is worthy of remark that a man was admitted from the same room as Hickey, on the 11th, with common continued fever.

The next case may be attributable to the low ground; the facts, however, were these, and upon the whole, they seem to warrant its being referred to Newcastle. Ensign G—— had exchanged from the 36th to the 3rd W. I. Regiment; he left Newcastle on the 13th October for Up Park Camp, to join the latter corps. He was guilty of considerable excess that afternoon, and exposed himself a good deal to the sun; the next morning (the 14th) he reported himself sick at camp, and he died on the 17th, yellow, with black vomit. When Mr. G—— first complained at camp, he said he had felt unwell before leaving Newcastle. He lived in *b* room of the officers' quarters, just above the hospital.

On the 15th October, there were five attacks, of which four were returned as yellow fever, and one as common continued fever. Of these, the first was Private Thomas Wild, who had been under treatment since June 16th, for chronic hepatitis. He was in a tent till October 13th, and in No. 3 ward after that date. He had yellow skin and black vomit, but recovered. The next was Serjeant Charles Kierman, who came from Stony Hill on August 21st, and lived in the verandah of B room. He went into hospital on October 15th, and died on the 25th, having been yellow and had black vomit. Two artillerymen were admitted; one from M room,—he was on the guard in the cells eleven days previously,—and the other from a tent on the lowest plateau in front of it. These seem to have been slight cases, and both recovered. A man of the 36th was admitted from K room. He had been on main-guard on the 12th. His case was returned common continued fever, and he recovered.

On October 16th there was but one admission from fever, and that

of the common continued form. The subject of it, Private Mills, came from H room. He had been on the main-guard two days previously. On the 17th there were two admissions—one, Captain Oram, from room B. He had come from Stony Hill on August 21st; he died on October 20th, yellow, with black vomit. The other case was of the common continued form, and came from a tent to the west of C room. He recovered.

On the 18th there were two cases of yellow fever; these were Private Gale, who had been under treatment for a sprain in the hospital marquee since the 15th, having previously lived in I room. He had epistaxis, but was not yellow, and recovered. The other was Lieut. Hugo, who lived in C room of the officers' quarters, above the hospital, next house to that which Ensign G—— had occupied. He had walked about twelve miles on October 12th, and got wet, and on returning took a cold bath. He was yellow, and had incipient black vomit, but recovered.

On the 19th there was but one seizure—Private Matthew Caffery, an hospital orderly, and much employed about the fever patients. He had been employed in the hospital at Newcastle since May 8th, 1856. He died on the 25th, yellow, with black vomit. There was but one case on the 20th—Private Henry Winters, who lived in B room. He was on the cell-guard on the 19th, and had come from Stony Hill on August 21st. He died on the 22nd, yellow, with black vomit. Two of his children, Susanna and Mary Ann, were attacked on the 22nd and 23rd respectively. The former was yellow, the latter not, and neither had hæmorrhage; both recovered. This man's family comprised his wife and two other children, neither of whom had previously had the disease, and were not attacked subsequently, though the mother nursed her sick children. They occupied beds in the married room, opposite that of Mrs. Bell, the first case in this room.

Three cases occurred on the 21st. One of these, Private Thomas Adams, was under treatment in a marquee in front of the hospital, from October 17th, under the head of Dyspepsia. He had been in a tent near A room before reporting himself sick. He arrived at Newcastle from Up Park Camp on August 20th. There was yellowness of surface, but no hæmorrhage, and he recovered. The other case came from A room. The subject, Private Gribbin, had not been absent from Newcastle for months. He died on October 25th, yellow, with black vomit. The third case on the 21st was Private Patrick McDermott, who lived in I room. He was neither yellow nor had hæmorrhage, and recovered.

One case, on the 22nd, has been already alluded to. Another occurred in Private Thomas Gunning, who lived in L room. He had been on the main-guard on Oct. 19th; he had neither yellowness nor hæmorrhage, and recovered.

On the 23rd there were three cases—two of yellow and one of common continued fever. One of the former has been already alluded to in connexion with B room; the other, Mrs. Kehoe, had left that room on October 21st for a tent below M room, from which she came

sick on the 23rd, but is classed as if from B room. She had not been away from Newcastle for months; she had black vomit and hæmorrhage from the mouth, but recovered.

At this time the hospital was evacuated, and the other changes in the distribution of the men were made which have been already mentioned. The disease has been traced thus far day by day to show the succession of the cases; but in describing its subsequent progress, it will be better to follow it in each locality where it appeared.

To commence with the race-course. The men from A and C rooms were sent here from October 21st to 25th. One case of yellow fever had occurred in A room on September 21st, and another on October 21st, and none had as yet appeared in men residing in C room. On the 26th one case of fever occurred, which was returned as common continued fever, and recovered.

On the 27th a case was reported as yellow fever, and another on the 28th, which terminated fatally on November 1st; neither of these had yellowness or black vomit. On the 30th there was another case, which terminated fatally on November 4th, with yellowness and black vomit. All these men had lived in A room before coming to the race-course, and the period which elapsed from their leaving it to the attack was quite within the period of incubation, and in these the disease may be fairly referred back to the influences they were subject to in that room. They carried their bedding with them, and that of the men attacked was not exchanged, yet the disease disappeared almost immediately, and it did not affect men from C room, where hitherto it had not appeared.

On November 2nd a case occurred at this locality in a man who had attended Lieutenant Hugo (who had yellow fever on October 18th) until a few days previously; his case, however, was considered more fright than fever, and he never presented a serious symptom. From the beginning of November there was no case among the people here until the 28th, when a case of common continued fever, of a trivial nature, occurred, which terminated favourably. On December 7th one case of yellow fever was brought here from below, which terminated fatally; and another occurred a few days afterwards, but without the disease affecting any one else; these will be noticed hereafter.

The cases of two officers, Ensign G—— and Lieut. Hugo, have already been alluded to. Subsequent to them a female servant of an artillery officer was attacked; she resided in *a* room, the second below the mess-room. She had been at Port Royal on November 22nd, and on returning that day got wet. She was seized on the 26th; there is no reason to suppose she had been in communication with sick.

On the 28th Lieutenant Stuart was attacked; he had been at Kingston on November 21st and got wet, and did not change his clothes; he resided in *a* room under the race-course, the first to the north of the stable, but had his office in *a* room, next above the hospital. Lieutenant Stuart was yellow, but had no hæmorrhage, and recovered.

Staff Assistant-Surgeon Gordon was attacked the same day as

Lieutenant Stuart, and had yellow surface and black vomit, and died on December 7th. This officer arrived from England on November 14th, having never been in the tropics before; he went to Newcastle on the 19th, and had diarrhœa on the 24th and following days, and fever on the 28th; he resided in *b* room, above the hospital, the same in which Mr. G. was. Both these officers were among the sick, and Mr. Gordon, the morning before he was seized, had been present at a post-mortem examination of a man who died of dysentery, but in whose stomach black vomit was found.

Lieutenant Le Gallais, R.E., is the last case among the officers, and it is doubtful whether in him the disease be attributable to Newcastle or the low ground; he lived in *a* room, the first below the mess-room. On December 2nd he fatigued himself in the valley between Newcastle and the farm, passing through the bush in search of a place for ball practice. He took a cold bath on returning home. On the 3rd or 4th he went to Spanish Town, felt unwell on the 6th, but stated he had not been quite right since the 2nd; had a rigor on the 7th, followed by fever, and died on the 11th; yellow, with black vomit.

Though these cases may be referred to other localities than Newcastle, yet it is a significant fact that all of them occurred in persons who either lived, or passed a portion of their time, in the houses on the ridge between the mess-room and hospital. Seven of these houses were occupied by Europeans, and persons in four of them suffered, while officers in other parts of the cantonment escaped, though they were as much in contact with the sick, or absent from Newcastle, as those who were attacked.

Proceeding downwards, along the cantonment, the next locality which exhibited fever was the hospital. Its course in this building has been traced to the 23rd, the day when the sick were removed to rooms C and D, but as several cases occurred in these rooms, within a few days after the removal, which were in all probability referrible to influences in operation at the hospital, it is as well to consider them here.

The first case which occurred after the sick were removed was that of Private R. Box, who had been employed as hospital orderly since September 16th, and who was much in contact with those sick with fever. He was attacked on October 24th, and died on the 30th; yellow, with black vomit. The next attacked was Private S. Sharpley, who had been under treatment since April 9th, for stricture of the urethra; he exhibited symptoms of fever on the 25th, and died on October 30th, with incipient black vomit. Private John Field-house was the next case; he had been on the main-guard on October 18th, and lived in N room; he was in the hospital for a few hours on the 23rd, labouring under acute rheumatism; the complaint took the form of yellow fever on October 28th, and he died on the 31st; yellow, with black vomit. The next case was in Private John Draine, who had been in hospital from October 13th, with delirium tremens; he was attacked on the 29th, but recovered. Private John Wilson, the next case, had been in hospital from September 10th,

affected with ophthalmia; he was attacked on November 9th; he also recovered. The last two cases did not exhibit either yellowness of surface, or hæmorrhage of any kind. These men had all been in the hospital before it was evacuated, and, with the exception of Box, they were all in C room, until the fever declared itself, when they were removed with their bedding to D room, which was employed as the fever ward. The only other case in the hospital was that of Private Joseph Needham, who was admitted from the race-course on November 18th, under the head of dyspepsia, which, on the 22nd, was changed to dysentery; he sank rapidly on the 26th, and died; on examining the body, black vomit was found in the stomach, and ulceration in the colon. He had attended a man sick with yellow fever on August 28th. Needham was treated in E room, among the men convalescent from fever.

It is to be here observed, that though there were a considerable number of men under treatment at this time, none but Needham was attacked with yellow fever, who had not been in the hospital previous to October 24th, where it was then prevailing; and it is further to be remarked, that while occupied by the troops, no case of fever had come from either C, D, or E rooms. From the latter fact it is clear that, up to the date of removal of the troops, the causes of fever were not operating in these rooms with any intensity; and subsequently, when many cases were introduced from other places, they did not affect the hospital attendants, or spread beyond the men who had been exposed to those in operation at the hospital.

After the hospital come the tents, huts, and buildings, near A room, which are mostly situated between it and the abrupt edge of the ridge. The case of Private Smithson, who was in one of these tents, has been already noticed. The next which showed itself here was that of Private Patrick Hart, a tailor, who worked and lived in a tent at the south end of the tailors' shop; he was attacked on October 25th, and died on the 31st; yellow, with profuse hæmorrhage from the bowels. The next case there was Mrs. Lindup, who had been in B room until October 21st, and since then in the shoemakers' shop, which is under the same roof with the tailors'; she was attacked on the 28th, had neither yellowness nor hæmorrhage, and recovered. A boy, named Thomas Moore, who lived in the southernmost of the two huts at this point, was attacked on November 3rd; and another, Frederick Davis, who lived in the south end of the barrack store, on the 6th; both these cases were returned as common continued fever, and presented neither yellow surface nor hæmorrhage, but as both had large doses of quinine at first, it is possible the progress of the disease was checked before it arrived at that point.

On 4th November, a rainy and stormy period commenced, which lasted ten days, materially checking the onward progress of the fever. In the beginning of December, however, cases again appeared at different points, and nearly simultaneously.

The first case in this neighbourhood, in December, was that of Edward Bradish, the son of a serjeant, who, with his mother, lived in

the hut next to that in which the boy Moore was attacked. Bradish was reported sick on December 6th. On the 7th, he was removed to the race-course with his mother; the following morning she washed him and put on a clean shirt, shortly after which he threw up a quantity of black vomit, and soon expired; he was yellow. The next case in this locality was that of Serjeant-Major Wildbore, who resided in the north half of the staff-serjeants' quarters; he had been living very hard; he was attacked on the 7th, and died on December 12th; yellow, and with black vomit. Mrs. Bradish, the mother of the boy mentioned above, was attacked at the race-course on December 14th; she was yellow, and had hæmorrhage from the gums, but recovered. Her case can be referred with more propriety to this point than to the race-course, where she was when actually attacked. No cases occurred among the persons on the race-course subsequent to the introduction of these two, though there were then many persons there who had not undergone the disease.

The cases in A and B rooms have been already traced up to the time when these were evacuated, and their inmates distributed elsewhere. The next locality to be considered is that including the quartermaster's store, the cells, and bakery, which are situated round the top of a ravine to the east of the hospital, and under the range of officers' quarters, where the disease showed itself. The case of Private Leather, which occurred on October 12th, has been already noticed. The next was that of Private Michael McDonald, who was confined in the cells on October 25th, drunk; he had previously been in I room. He was admitted to hospital on the 26th, under the denomination of common continued fever, and was discharged on November 1st, the case not having any symptom of malignity. Private Marriott, a shoemaker, was the next case; he slept in G room from the middle of September, but wrought in a tent at the north end of the quartermaster's store from August 21st; it is therefore impossible to say with certainty to which place his case is referrible, as fever was common in both, though it seems more likely to be attributable to this one. Marriott was attacked on October 28th, and died on November 1st; yellow, with black vomit. On October 29th, Serjeant McGarry, provost-serjeant, reported himself sick; he had resided in the verandah of A room till the 25th, he then slept two nights in the cell in which Private Leather had been when attacked, and afterwards, two nights in a tent on the flat to the east of the cells; he died on November 1st; yellow, with black vomit. Private Lawrence Gordon was attacked the same day as Serjeant McGarry. Gordon had been absent at Middleton on the 19th and 20th, was in the guard-room from the 21st to the 25th, and in the cells from the 25th to the 29th; he died on November 3rd; yellow, with black vomit. The next case was Private Littlewood, a shoemaker, who since August lived and wrought in a marquee close to the quartermaster's store; he was reported sick on October 30th, and died the following day; yellow, with black vomit.

Robert Hines, a sickly child, who resided with his family in the

hut to the northward of the quartermaster's store, was the next case; he was attacked on November 3rd, became yellow, but had no hæmorrhage, and recovered. Private Woods, who had been absent without leave on November 4th, and was sent to the cells on the 6th, was the next case; he was attacked on the 8th, became yellow, but had no hæmorrhage, and recovered.

Here, as among the tents and huts at the opposite side of the hill, the disease now ceased for nearly a month, but reappeared on December 4th. The first case was Private James Warren, a bandsman, who had been in the cells for drunkenness and insubordination seven days previous to his attack; and he had previously been in a marquee occupied by the band, below N room; he was yellow, had black vomit, and died on December 8th. Private Edward Jones was next attacked in this neighbourhood; he was employed in the garrison bakery, and had slept there from September 3rd; he was attacked on December 11th, became yellow, had black vomit, and died on the 14th. The next case in this locality was that of Gunner Joseph Hownsome, Royal Artillery, who was attacked on the 11th; he was confined in the cells the previous day, for absence without leave and returning drunk; he was yellow, but had no hæmorrhage, and recovered. The last case referrible to this neighbourhood was that of Private Richard Eckworth, who was employed in the garrison bakery, and slept there until within five nights of his attack, and afterwards in G room; he was reported sick on December 21st, and died on the 23rd; yellow and black vomit was found in his stomach. There is reason to believe that this man had been feverish for some days before he went to hospital.

It has been remarked above, that no cases of fever occurred in C, D, or E rooms, while occupied by the troops. A case, which was returned as common continued fever, appeared on the 17th, in a corporal who lived in a hut to the westward of C room, and on the brow of the slope; but neither his wife nor son was affected. The hospital cook, who cooked in an open shed at the back of the kitchen, near D room, and also on the brow of the slope, was affected with common continued fever from October 25th. Neither case showed any symptoms of malignancy, and both recovered.

The garrison school and library come between E and F rooms. No case arose there; but in a hut to the westward, and at a somewhat lower level, a girl, Margaret Jackson, was attacked on November 6th; the case was returned common fever, it displayed no malignancy, and she recovered. The family consisted of the father, mother, and two other children, none of whom were subsequently affected.

In F room, below the garrison library, there was but one case of fever during the whole course of the disease; it occurred on October 23rd, was returned common continued fever, displayed no feature of malignancy, and recovered.

From C to F room the ridge is so narrow, that there is space for one room only on each terrace; below F, however, it spreads out a little, and admits of two rooms on each, placed end to end. The

rooms on the first terrace below F are G and H; the fall being rather abrupt, the scarp behind these is faced with a retaining wall of stone and lime, which is about eight feet behind the back wall of these rooms, and reaches as high as their eaves. This wall has five rows of holes in it for drainage. Immediately to the west of G room a gully commences, which is eaten deeply into the clay soil; and, ninety feet N.W., and on the same level, there is a privy with a cesspool, which is occasionally offensive. There is now a small building to the west of G room—a washhouse, but it was erected after the commencement of the fever, and not used during its progress. The position of the gully above noticed is such that the ascending current of air through it, caused by the sun's heat during the day, is thrown on the end of G room, and into the space between the back walls of it and H and the high retaining wall behind them, circumstances to be borne in mind.

In G room, during the course of the epidemic, there were two cases returned as common continued fever, and six as yellow fever; of the latter, four died. There were, besides, the cases of Marriott and Eckworth, previously mentioned, which might be referred to this room, though the evidence is on the whole stronger for their being placed as they have been above. In H room there were two cases classed as common fever, and three as yellow, two of which were fatal. In I room, in front of G, there were four cases returned yellow fever, but only one death; and in J room, at the end of I, there was not an attack of fever during the course of the epidemic.

The cases of Rowlands, on October 11th, and Hickey, on the 13th, from G room, have been already noticed. The next was Private Wright, who was reported on October 26th, had yellow skin and black vomit, and died on the 28th. This man did not appear to have been on guard since September 28th, nor absent from Newcastle for some considerable time before. After Wright, Private Price was affected on November 4th, had yellowness of surface and black vomit, and died on the 8th; he had been employed on the public works until two days before his seizure. On November 8th there were two attacks in this room; one, Serjeant Aren, was on guard on the 6th, and was out the whole night, in consequence of the guard-tent blowing down during a storm; he became yellow, but had no hæmorrhage. The other, Private Ryan, attended yellow fever cases on October 25th, in hospital, and on November 3rd was confined in the guard-room for absence without leave. Both recovered.

Here, as in the neighbourhood of the hospital, the disease now ceased for a time. On November 11th, as mentioned above, the men from F, G, and H rooms went to the farm, taking their bedding with them, and were succeeded by others from the other rooms. On December 3rd, a case of yellow fever made its appearance among the new men; the subject of it, Private Hearsey, had been employed on wood-cutting fatigue for the week previous to his attack, but had not been away from Newcastle, or the high ground behind it; he died on the 7th; yellow, with black vomit. On December 13th there was a

case of common fever in Private Noonan; this man had attended fever cases in hospital on November 4th, and been on guard three days previous to his attack; there was nothing malignant in his case, and he recovered.

In H room, the cases of Fallon and Mills, on September 19th and October 16th respectively, have been already referred to. The next case of fever from this room was Private Joseph White; he had been on the cell-guard on October 27th, and was attacked on the 30th. He became yellow, and had hæmorrhage from the gums, but recovered. Whether in this case the disease should be attributed to the exposure on guard at the cells, or to causes operating in H room, there is no means of discovering. The next case was that of Private Edmund Butler; he was attacked on November 4th, and died on the 12th; yellow, with black vomit. He had attended fever cases in hospital on October 21st, and was on escort duty as far as the Gardens on the day he was attacked. Serjeant Brough was the last case in this room; he was on the main-guard on the 6th, when the guard tent was blown down, and the men of the guard exposed to the rain. He had to be relieved in the evening, and was sent to hospital at once; he died on the 8th, having become yellow, and having had black vomit.

In I room there were but four cases of fever during the epidemic. These were returned yellow fever, but none of them were either yellow, or had black vomit. One of these, Private McDermott, has been already noticed. The next was Private Lucas, who had been on the main-guard on November 2nd, and employed on wood-cutting fatigue on the 8th. He came to hospital on November 8th, and recovered. In this room, as in the several localities mentioned, the disease ceased from this date until December 3rd, when John Bergen, a drummer, was attacked; he recovered. On December 9th, Private John Rostron was attacked; he was a stone-cutter employed on the public works, and got wet on the 8th; he died on the 15th. This was the last case in this room. Neither of these men had hæmorrhage, or became yellow.

In J room, as already stated, there was no case of fever of any description during the continuance of the epidemic.

In K room there were four cases, three of which were returned as common continued fever, and one only as yellow fever. There was no death. The first case, that of Private Poole, who came under treatment on September 15th, has been already noticed. The next was Private David Bell (not the same whose wife died), who was returned as being affected with yellow fever; he was seized on November 9th, and had neither yellowness of surface nor hæmorrhage, and recovered in a few days; he was employed on the public works. As in other rooms, there were no fresh cases in this from November 9th, for upwards of a month. On December 26th and 29th, two cases of common continued fever showed themselves, but neither displayed any trace of malignancy, and with them the disease terminated here.

In L room, at the end of K, there were in all six cases of fever,

and but one death. The two first were ordinary fever; they occurred in September, and have been already referred to. A case of yellow fever, Private Gunning, on October 22nd, has elsewhere been noticed. On the 25th, another man, Private William Price, was attacked; he had been on the main-guard on October 16th, and had cooked for his company in a kitchen on the brow of the slope, to the west of M room, for five days before admission; he had epistaxis, but was neither yellow, nor had any other hæmorrhage; he recovered. Private S. Beard was the next case; he had been on the main-guard on October 25th, reported himself on November 3rd, and died on the 5th; yellow, with black vomit. On November 8th, Private Pemblett was attacked, he had attended fever cases on October 30th; he had yellowness of conjunctivæ, and hæmorrhage from the gums, but recovered. With Pemblett the disease ceased in this room.

M room, on the terrace below K and L, was occupied by the artillery, and they had besides a number of men in tents on the lowest of the three plateaus, below this room. Two cases of fever were admitted on October 15th. One from this room, and the other from one of the tents; from this date until December 17th, there was no other case of fever among them. On that day Bombadier Lee, who lived in M, and had been on the cell-guard on December 12th, was seized; and on the 22nd another case came from one of the tents, who had been on the main-guard on December 8th; both were returned common fever, neither displayed any malignancy, and both recovered.

In N room, at the end of M, there were three cases of fever. The first, Serjeant Matthews, was employed on the public works. He was attacked on November 2nd. The next, Private Johnson, was attacked on the 9th. He had been on the main-guard on the 6th, during the storm. Neither of these displayed symptoms of malignancy, though classed as yellow fever. The next and last case, however, did. This was Private Leadom. He had been on the main-guard on Nov. 15th, and was attacked on the 21st, became yellow, and had black vomit, and died on the 25th.

Immediately below M and N rooms, the road makes a sharp turn in front of them, and below this there are three terraces, which were occupied by tents during the greater part of the epidemic. On the east end of the upper terrace, a marquee was placed; immediately in front of it, on the centre terrace, and about eight or nine feet lower, another marquee was pitched; to the right of this was a hut of wattle and daub, and to the right of that a number of bell-tents. On the other terrace, at a considerably lower level, were the artillery tents. The position of them will be easily understood by referring to the plan.

On October 29th, the band of the 36th, which up to that time had occupied E room, and had not had a single case of fever, were removed to the two marquees above noticed. The ground was somewhat uneven, and the men levelled it by cutting down a portion of the neighbouring

clay-bank, and filling up the irregularities. They also cut trenches around the tents, to carry off the water. While doing so, they reached some decaying thatch, a little under the surface, which gave out a very disagreeable odour, lasting for some time. After these occurrences, the first case of fever showed itself in this locality in Private Boyle. He lived in one of the tents to the west of the hut, on the centre terrace. He had been on the main-guard on October 28th, and had been drinking hard. He was attacked on November 2nd, and died on the 8th; yellow, with black vomit.

The next case was that of Private Tuer, of the band, who resided in the upper marquee. He was reported on the 4th, but seems to have been complaining a day or two before, and died on November 6th; yellow, with black vomit. Private Hogan, also of the band, was the next case. He was in the lower marquee. He was reported on the 7th, and died on the 10th; yellow, with black vomit. Private Dove, also of the band, though employed as clerk in the orderly room, was seized on the 7th likewise. He resided in the upper marquee. He was yellow, but had no hæmorrhage, and recovered. Private McCulloch was seized on the 9th. He had been on the main-guard on the 6th, and got wet. In him there was no symptom of malignancy, and he recovered. He lived in one of the tents to the west of the hut.

From November 9th, fever ceased here, as in the other parts of the cantonment, until December 5th, when Private Duff, a bandsman, who lived in one of the marquees, was attacked with ordinary fever, displaying no symptom of the more severe form of the disease. He recovered. On December 6th, the band was removed from this locality, and encamped at the farm along with the other troops there, and one of them, Private Connors, who had resided in the lower marquee, was attacked on the 9th, and died on the 10th; yellow, with black vomit. This man had been drinking very hard for some time, and the previous evening had attended the funeral of Assistant-Surgeon Gordon. Connors' case may possibly have arisen at the farm, but it seems more probable that it was connected with this position.

There were two cases in huts to the east of the cantonment, some way down the slope. These are situated near the top of a gully, but a little to one side of it. The first case from these huts was Serjeant Lane, who lived in the centre hut of those nearest the barracks. He was attacked on November 6th, and died on the 8th; yellow, with black vomit. He had been on the main-guard on October 28th. No other case occurred in this locality until December 3rd, when a woman (Mrs. Holmes) who lived in the hut nearest the farm was attacked. She had yellow surface and black vomit, but recovered. This woman had been in Kingston on the 24th November, and walked back, carrying a large parcel. Mrs. Holmes managed the washing for the hospital, and the personal clothing of the patients sick with fever was sent to her, and washed by black women in the neighbouring brook. On questioning this person as to whether she had counted the foul linen or had it in her house, she stoutly denied both, and stated that she always

sent her eldest son (who had never had yellow fever) for it to the hospital, and made him count the articles out to the women who washed them, outside the enclosure, around the hut.* The family in the hut, besides Mrs. Holmes, consisted of the father and three children, none of whom had previously had the disease, and none of whom were subsequently attacked.

On November 11th, two companies which had occupied D, F, G, and H rooms, and several tents, were sent to the farm, a small ridge running off to the southward from the high ground, and nearly parallel to that on which the soldiers' barracks are placed, but lower, and separated from it by a winding ravine. Its position will be readily understood by inspecting the plan. These companies took their bedding with them from the rooms they had occupied before they moved.

The first case of fever which occurred here was on November 22nd; it was returned as common fever, displayed no symptom of malignancy, and recovered. Here, as elsewhere, the operation of the causes of fever seems to have been suspended or modified in some way, until the first week of December, when another case of common fever presented itself on the 6th. On the 11th, another case was reported, which was returned yellow fever. The patient, Private McGowan, became yellow, but had no hæmorrhage. The same day another case, also denominated yellow fever, in Private Field, was reported. He was neither yellow, nor had any hæmorrhage; he had been drinking very hard for some time before he was attacked. The last case, Private McDougal, was attacked on December 14th. He had been absent at Kingston without leave to December 3rd. His case was ordinary fever, and there was no symptom of malignancy in it. All these cases recovered.

During the progress of the epidemic, men were sent from barracks to attend those sick of fever, in addition to the regular orderlies. These men went on duty about ten A.M., and remained in attendance on the fever cases in the fever ward, rendering them all the assistance they required, until the following day at the same hour. There were 156 men so employed; of these, forty-six were on similar duty a second time, seven a third time, and one a fourth time. Three of these men had had common continued fever shortly before they were so employed, and one yellow fever. Some of them may have had yellow fever before, but from all that could be learned, very few only were ever affected with this disease. During the epidemic, only eight of these fatigue-men were affected subsequent to being engaged near those sick with fever. They were as follows:—

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* Such is the statement Mrs. Holmes made to me, but I do not believe it; for on asking her the reason for adopting the precaution of keeping the soiled linen outside, she said she was afraid of infection; but on being asked why, if she feared that, she exposed her son to it, she could not give any satisfactory explanation. That the boy was much employed in the manner stated there is no doubt, but I question whether he was exclusively so.

Names.	Last attendance on fever cases terminated.	Date of attack.	No. of days elapsed between attendance and attack.	Forms of disease.	Room.
J. Needham	Aug. 29	Died Nov. 26	92 (died)	Dysentery, with black vomit in stomach	Died in E room; came from race-course.
Edm. Butler	Oct. 22	Attacked Nov. 4	13 (died)	Feb. icterodes	H.
Jas. Pemblett	Oct. 31	„ Nov. 8	8	Ditto	L.
Patrick Ryan	Nov. 2	„ Nov. 8	6	Ditto	G.
George Lucas	Nov. 3	„ Nov. 8	5	Ditto	I.
Jos. Hearsey	Nov. 10	„ Dec. 3	23 (died)	Ditto	G.
Mic. Noonan	Nov. 5	„ Dec. 13	38	Feb. c. c.	G.
Jas. Higgins	Nov. 30	„ Dec. 26	26	Ditto	K.

Taking these cases as they stand, the period which elapsed between the exposure and seizure, in the first ninety-two days, was far beyond that in which contagion usually operates. The man came to hospital with dysentery on November 21st, and died on the 26th, having black vomit on the stomach, and he was never in D room, which was the fever ward, but was treated in E room, which was used as a convalescent ward for fever cases, and in which there were none who were not convalescent at the time, and moving about. Under these circumstances, it does not seem reasonable to refer the supervention of symptoms of yellow fever on those of dysentery to the action of specific contagion after his admission to hospital.

In the second case in the above list (Private Butler), thirteen days elapsed between the last exposure in the fever wards and the attack, a period not incompatible with the action of specific contagion, were it existing. The subject of this case came from H room, and on referring to the list of attacks in that room, it will be seen that another man there was attacked on the 30th October, five days before Butler, though it cannot be positively asserted whether he got the disease in the room, or from exposure on guard at the cells, and another man was attacked two days after Butler, the immediate exciting cause being exposure to rain, on guard, the same day. Butler had been on escort duty as far as the Gardens, on the morning of the day on which he was attacked. This man, therefore, had been exposed to specific contagion if it existed, and likewise to the action of the causes of disease in operation in the hospital before it was removed, within a sufficiently recent period; he was exposed also to the causes of disease in and around H room, and to the air of the lower ground; but the men who were attacked on the 30th October and 6th November in the same room, were exposed to neither the first nor last, so far as can be ascertained. The weight of this evidence, therefore, is in favour of some local cause.

The third case in the list is that of Pemblett, who contracted fever eight days after having attended sick. He came from L room, and was attacked on November 8th. In this room, too, cases had preceded Pemblett's, in men who had not been in contact with sick, or away from Newcastle, though they had been exposed on guard or otherwise

within a short period of their attack, and it is unreasonable to conclude that his attack could have proceeded from contagion, while there is no ground for assuming that those who preceded him arose in this way.

The next of these cases was that of Private Patrick Ryan, who became sick on November 8th, having been in contact with fever cases last on the 2nd. This man lived in G room, from which several fatal, distinct cases of yellow fever had come within the preceding four weeks, none of whom had attended fever cases or been particularly exposed to them. Ryan was confined in the guard-room on November 3rd, it is believed for absence and drunkenness. His case did not present any of the more characteristic symptoms of yellow fever, and he recovered. In the face of such evidence, no one can attribute this case to personal communication with the sick.

The next of these cases, that of Private G. Lucas—the last exposure was on November 3rd, and he was attacked on the 8th. This man lived in I room; he was neither yellow nor had any hæmorrhage, and recovered. He had been employed on wood-cutting fatigue on the day of admission, an employment involving considerable exertion and exposure. A similar case had occurred in the same room, on October 21st, in a man who had not been in attendance on sick; and two others occurred subsequently; so that here, as elsewhere, the attendance on fever cases seems to have been the accidental circumstance, and not the essential one in the production of the disease.

The case of Private Hearsey is the next. This man lived in G room, where, as already stated, there had previously been much fever. His last exposure in attendance on fever cases was on November 10th, and he was attacked on December 3rd, the interval being twenty-three days. This man died on December 18th; yellow, with black vomit. He had been on wood-cutting fatigue for the week previous to his attack, and was therefore undergoing considerable exertion and exposure. The date of the attack, too, is the same as that on which several other cases occurred in other parts of the cantonment, who had never attended fever cases, nor, so far as is known, were exposed to contagion. Here, again, it is not only impossible to refer to contagion as the cause of the disease, but the whole weight of the evidence is against that view of the case.

The next of these men who attended fever cases who were attacked was Private Noonan, who resided in the same room with Hearsey. Noonan's last exposure in the fever wards was on November 5th, and he became sick on December 13th, or thirty-eight days after exposure in this way. Noonan had been on the main-guard on December 10th. This case did not present any trace of malignancy, and he recovered.

The last of these men who was attacked was Private James Higgins. This man lived in K room, and was in attendance in the fever wards to the morning of November 30th; he became sick on December 26th, twenty-six days after the exposure; his case was returned Febris C. C., and presented no trace of yellow fever: he recovered. Higgins was employed on the public works previous to his attack.

These facts have a very important bearing on the question of the propagation of the fever. They show that out of 156 men, taken indiscriminately from the different rooms, very few of whom could have had yellow fever before, and who afford 210 instances of exposure for twenty-four hours to the emanations from the sick in the fever wards, that only 8 were subsequently affected with fever of any sort, of whom 3 died; while, from the remainder of the troops in the cantonment, amounting, at the commencement of the epidemic, to 523, there were 89 attacked with fever, of whom 38 died. Putting those numbers into the form of a centesimal ratio for the sake of comparison, they stand:

	Total strength.	Attacked per cent.	Died per cent.	Died per cent. of attacked.
Men *who attended* fever cases ...	156	5·1	1·9	38
Men who *did not attend* fever ...	523	17·0	7·3	43

These numbers most fully warrant the conclusion that exposure to the effluvia from the sick was not an active cause in propagating the yellow fever at Newcastle in 1856; and if it be considered that of the eight men who attended on sick and were subsequently themselves attacked, four presented none of the prominent characters of yellow fever, while of the four who did, three came from rooms in which persons had previously been attacked with decided yellow fever, without communication with sick, so far as is known, there is no alternative but to limit the conclusion in these cases still more, by excluding the operation of specific contagion altogether.

The following conclusions seem fairly deducible from the preceding details. To render them clearer, the principal facts have been appended:

1st. That yellow fever prevailed at Newcastle, in 1856, in well-defined zones, alternating with others which presented a much smaller amount, and, for the most part, a different form of fever, attended with a much smaller mortality. These zones embrace:

	Cases.	Deaths.
A. Officers' quarters above mess-room and race-course encampment (including last two cases at race-course, the others being referrible to A room)	2	0
B. The buildings between the mess-room and parade-ground, including officers' quarters, hospital, A and B rooms, bakery, cells, and all tents and huts in the neighbourhood (excluding first six cases in hospital as referrible to low ground, and the last as indeterminate)	60*	31*
C. Rooms C to F inclusive	4	0
D. Rooms G and H inclusive	13	6
E. Rooms I to N inclusive	19	3
F. Tents on two upper plateaus below M and N	7	4
G. Artillery tents on lowest plateau	2	0
H. Huts near graveyard	2	1
I. Farm encampment	5	0

* If the cases which occurred in the officers' quarters be set aside, as of doubtful origin, these numbers will be, cases 54, deaths 28, presenting exactly the same characters for a more limited locality.

In consequence of the frequent changes which took place, it would be very difficult to ascertain the mean number exposed in these localities; and the persons being exposed at different periods of the epidemic, the resulting ratios of attacks and deaths would not be strictly comparable. The rooms from F to N, however, were occupied during the whole course of the disease by soldiers, and as each room contained on the average thirty-four men, the comparative progress of the fever in these may be determined with tolerable accuracy.

Rooms.	Strength.	Attacks.	Deaths.	Per-centage of strength		Per-centage of deaths on attacks.
				Attacked.	Dead.	
F ...	34	1	0	3·0	0·0	0·0
G and H ...	68	13	6	19·1	8·9	46·1
I to N ...	204	19	3	9·3	1·5	15·8

These ratios show conclusively that the causes of fever operated with much greater intensity in some localities than in others, and that these unhealthy spots were distinctly circumscribed. It is questionable how far the three deaths in the rooms from I to N were due to these localities, one of the men having been permanently engaged on the public works, and the other two having been on the main-guard (which brought them into an unhealthy locality), one nine days and the other six days, before his attack; were these cases produced by exposure on guard, the healthiness of these rooms would appear still greater.

2nd. That bodies of men moving from an unhealthy to a healthy locality soon lost the disease, though they carried most of their bedding and their clothing with them; and, in the healthy spots, did not communicate the disease to others who were from other healthy spots.

The light company moved from A and C rooms to the race-course, about October 24th; four of them, from A room, were attacked up to the 30th (one of them decided yellow fever), but no man from C room was attacked. On December 7th, a woman and child were removed from near A room to the race-course; the child had decided yellow fever, and a week after the woman was attacked, but the disease stopped with them.

After the removal of the hospital to C and D rooms, no patient except Needham, or permanent hospital attendant except the cook, who had not been in the regular hospital, was attacked with fever. Previous to this removal, and immediately after it, several hospital attendants and patients suffered from the disease in its most aggravated form, but all had been exposed to the morbific influences in the first situation.

The married people and their families were removed from B room on October 21st, and distributed in various places. Three cases occurred within the next two days, but then the disease ceased among them, except in one woman, who went to the shoemakers' shop to reside—itself an unhealthy locality.

On November 11th, two companies were removed from F, G, and H rooms to the farm, and carried most of their bedding with them, yet the aggravated form of fever did not continue among them.

3rd. Persons going from healthy to unhealthy localities to reside, caught the disease.

The Band removed from E room (where they had been quite healthy) on October 29th, to the upper two plateaus below M and N rooms, where fever appeared among them; and there are many instances in which people went to the cells, or went to the hospital, from healthy localities detailed above, in which they were soon after affected with the disease in an aggravated form. An argument will undoubtedly be advanced here by some, that the Band having occupied E room previous to removal, were within reach of the contagion from D room, then the fever ward. This is met by the fact that the first case in this locality was that of Private Boyle, who lived here before the arrival of the Band, and did not belong to it, and had not been near the sick, so far as is known. Boyle came sick on November 2nd, and Tuer, the first of the Band, on the 4th, though he seems to have been unwell a day or two before. Both died of decided yellow fever. The fact stated above, too, of those who actually attended the sick suffering much less than those who did not, is adverse to the idea of the Band having been affected by contagion previous to removal.

After the removal of the men from F, G, and H rooms, on November 11th, F and G were occupied by men who, up to that time, had been in I and F rooms; and fever appeared among those in G in December.

4th. The activity of the causes of the fever seems to have been much diminished by a course of wet weather commencing on November 4th, accompanied by a severe storm, and heavy rain on the 6th and 7th; and yellow fever disappeared after December 21st, on the accession of strong cool northerly winds.

The admissions from fever of every description in November and December were as follows:

November 2nd	3	December 3rd	3
„ 3rd	3	„ 4th	1
„ 4th	3	„ 5th	1
„ 5th	0	„ 6th	2
„ 6th	4	„ 7th	2
„ 7th	2	„ 9th	2
„ 8th	5	„ 11th	4
„ 9th	4	„ 13th	1
„ 10th to 20th	none	„ 14th	2
„ 21st	1	„ 17th	1
„ 22nd	1	„ 21st	1*
„ 26th	2	„ 22nd	1
„ 28th	3	„ 26th	1
		„ 29th	1

5th. The disease showed itself in its most malignant form in persons who had not been away from Newcastle for many months, and who were not exposed to others previously affected with it, or to their clothes, or other media usually considered as likely to convey contagion.

* The last case of yellow fever.

The cases of Private Monk in A room, on September 21st, and of Mrs. Bell in B room, on the 22nd; and again, Private Leather, on October 12th, from the cells, are clear instances of this.

An additional proof of the possibility of such an occurrence is given by the appearance and progress of the fever in the family of the schoolmaster-serjeant of the 97th, as recorded by Dr. McIlree, in 1848, noticed above.

6th. Persons in contact with sick in a healthy locality did not contract the disease more frequently, or indeed as frequently, as those in barracks.

The list of the men who attended the sick of fever in hospital shows that of 156 who were so employed, giving 210 separate instances of exposure for twenty-four hours to the emanations from the sick in the fever wards, only 8 were afterwards attacked with fever—a smaller proportion than among those in barracks, though their exposure to contagion, were it existing, was of course infinitely greater.

Further, no hospital attendant, or patient, except Needham, who had not been in the hospital building, contracted fever after the sick were removed from it and the surrounding influences; though, had contagion been the exciting cause of the disease, there was as much or even more reason for the attendants becoming affected after the removal than before it; 32 of the 41 deaths of soldiers having occurred after the removal, and the ventilation of the rooms not being better than that of the hospital.

Taking these facts together—and in this argument they must be taken together, unless they can be shown to be unfounded—they appear utterly opposed to the view that the disease either arose from, or was propagated by, specific contagion.

That a cantonment of about 800 yards in length, on a narrow descending mountain ridge, should present four well-defined healthy zones, alternating with three others in which a disease supposed to be contagious prevailed, while the communication from one extremity to the other was free and unrestrained (save with those actually sick in hospital), is contrary to all experience, and of itself, were there no other evidence, would go far to overthrow the idea of specific contagion having acted; but with the additional weight of the evidence adduced above, this position seems quite untenable, and there is no alternative but to look for the explanation of such circumscribed effects to the influence of causes equally local in their operation.

The first unhealthy zone, noticed above, embraces the buildings between the mess-room and the parade-ground; by referring to the projection it will be seen that these follow the course of the ridge, pass on to the hospital, B room of the men's quarters, quartermaster's store, bakery, and cells, and form a sort of crescent round the head of a deep abrupt gully, which at its upper part runs nearly east and west. The valley may be said to have a southerly exposure, as the bounding height to the north is much higher than that to the south, a point that will be hereafter alluded to. On the western side of this zone,

A room, the tailors' and shoemakers' shop, and some huts are situated; these are immediately over the upper extremity of a watercourse, and a considerable gully, formed by a land-slip; both the watercourse and gully having a southwesterly exposure, and descending at an angle of about 40° below the horizon.

The next unhealthy zone comprises G and H rooms. As mentioned above, there is a high retaining wall supporting the bank behind these rooms, about eight feet from them, and as high as the eaves; about thirty feet from this space, and directly in a line with it, a gully commences, which drains that part of the barracks, and is so placed with regard to G room as to throw the current of air which ascends through it on the end of that room, and into the space between it and the wall at its back.

The last situation where the disease showed itself severely was on the upper two plateaus below the barracks, where it appeared after the disturbance of the ground in levelling, and the exposure of some decaying vegetable matter from cutting trenches to carry off the surface water. There is no gully or watercourse near these spots, such as those above mentioned.

There is a large gully on the east side of the barracks, beside the grave-yard, but it is wider than those just referred to; it is less steep, and from the form of the ground at the top, the ascending currents of air through it are not directed immediately on any of the buildings. That it was not perfectly innocuous may be inferred from the occurrence of two cases of yellow fever (one of which proved fatal) in persons living in the huts on its northern side. At all other points where the men remained healthy, though the ground of the ridge occupied by the buildings was narrow, the ground on either side of it sloped away gradually for a little distance before terminating in the steep descent of the mountain side; and there were no gullies or ravines opening near the houses, or the natural undulations of the ground had more or less of a northern exposure.

The valley terminating to the east of the hospital had its bottom and sides covered with the thick bush usually seen in such localities; this grew over its whole extent, from the lowest point in the plan almost to the road under the quartermaster's store; between this road and the store there was a quantity of old thatch, which had been pulled off the roof of the store, and thrown down there in June, 1856. This had been covered with earth, and it was not until going over the ground early in 1857, that, on examining the ruts cut in it by the water, the straw became apparent, and led to further examination, when it was found extending over an area of some thirty or forty yards.

The gullies to the west of the hill did not contain any bush; but there was a small quantity of open bush beyond them, on the side of the hill. A quantity of refuse—such as bones, ashes, pieces of cloth, &c.—had gradually accumulated over the slope and about the outlets. This was cleared away in the middle of October, and the men employed on the duty complained of the unpleasant odours evolved, but,

unfortunately, it was not remarked whether any of them were subsequently attacked with fever. The large gully near the grave-yard, besides having a more gradual slope than the others, is almost completely clear of bush; its bottom and sides presenting the bare red clay, with little or no vegetation.

All these hollows have a southerly exposure; and, during the prevalence of the fever, the sun passing to the south of the zenith, shone into them some portion of the day, causing ascending currents of air through them, which impinged on the buildings around their upper outlets. It has been shown that in these buildings the disease was more prevalent and fatal than in others; and a very short removal from the course of the current seemed to give almost complete immunity from the disease.*

The privies on the west side of the hill were frequently offensive during the progress of the epidemic. The emanations from privies have been referred to as exciting causes of fever elsewhere; and the occurrences at Newcastle, in 1848, show they are not innocuous here; but they do not seem to have exercised any marked influence during the late epidemic, for rooms D and E, and I and K, which are near privies, were almost free from fever; and while G suffered severely, F, which is nearer the privy, escaped.

The meteorological phenomena were not observed during the progress of the epidemic with as much minuteness as would have been desirable. The thermometer was registered daily at six A.M., two P.M., and six P.M.; but, unfortunately, the instrument was kept in the surgery, and its indications were much affected by the temperature of the room—standing higher in the morning, and lower at two P.M., than it would have done if properly exposed. On October 23rd, when the hospital was evacuated, the thermometer was placed in a small house, jalousied all round, through which the air could pass freely at all times, and there was an immediate and considerable change. The mean temperature as indicated by the thermometer was:

	Six A.M.	Two P.M.	Six P.M.	Mean.
July . . .	67·5°	74·2°	72·5°	70·8°
August . .	67·1	73·8	72·0	70·5
September .	67·4	73·7	71·8	70·6
October .	65·3	72·7	70·1	69·0
November .	62·2	69·2	64·2	65·7
December .	60·1	68·8	63·5	64·5†

* In January, 1857, there was an excellent illustration of the influence of the form of ground in determining the direction taken by the ascending current through the valley to the east of the hospital. Some of the thatch alluded to above was being burnt in the hollow in front of the quartermaster's store, and it gave out a pungent ammoniacal odour. There was a north-easterly wind blowing fresh at the moment, and the odour from the burning thatch was quite strong under M room. When there, I stated to Drs. Foss and Jopp that, from the form of the ground, I anticipated we should find the odour quite perceptible on the hill above the hospital, though to the north of the point where the fire was, and 200 feet above it, and on proceeding to the rooms C and D of the officers' quarters, we found the odour very powerful.

† Since April, 1857, meteorological observations have been made at Newcastle more systematically. The results for July to December, 1858, are given below; they agree

This table shows that the often repeated opinion, that the causes of yellow fever could not exist unless where the mean summer temperature reached 80°, is erroneous, the disease having prevailed, as an epidemic, at Newcastle, with a mean temperature 10° lower, and continued until the mean temperature had fallen 5° more.

Mere heat did not seem sufficient to call the causes of the disease into operation; for in July and August there was none, and, though a few cases occurred in September, it did not attain its greatest force until October and November, when the temperature was diminishing. It ultimately disappeared about December 21st, when cool weather came on, accompanied with strong northerly winds and some rain. It will be remembered that the disease stopped about November 10th, that a few cases occurred in the latter part of that month, and that early in December they were more numerous, but that the last was on the 21st of that month. Taking the mean temperature for periods of ten days in each month, they are—

	Six A.M.	Two P.M.	Six P.M.	Mean.
November 1st to 10th	62·5°	70·2°	67·0°	66·4
November 11th to 20th	62·7	68·8	62·9	65·7
November 21st to 20th	61·5	68·5	62·7	65·0
December 1st to 10th	61·2	70·0	65·8	65·6
December 11th to 20th	61·2	70·7	63·3	66·0
December 21st to 31st	58·2	66·0	61·5	62·1

The periods of aggravation of the disease were thus coincident with increased temperature during the day; such increase, however, was accompanied by a clearer sky and stiller state of the air than when the mid-day temperature was less. There were unfortunately no observations of the absolute maximum temperature of the day, or of the amount of the sun's radiation.

The dew point was not observed during the course of the epidemic, but the quantity of rain collected was as follows:

Months.	Inches.	Wet days.	Remarks.
July . . .	0·00	0	
August . .	5·52	12	Well distributed.
September .	5·27	12	Ditto.
October . .	3·37	5	On 5th, 12th, 15th, 16th, & 17th.
November .	17·30	14	Between 4th & 13th, 12·3in. „ 18th & 21st, 5·0in.
December .	5·00	5	On 17th, 22nd, 24th, 26th, & 28th.

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pretty closely with those for 1856 as to temperature and distribution of rain, while in 1858 there was no serious disease:—

1858.	Temperature: Mean minimum.	Temperature: Mean maximum.	Temperature: Mean of month.	Mean monthly dew point.	Rain in inches.
July	64·3°	74·7°	68·0°	60·9°	4·11
August ...	64·4	74·8	68·5	60·9	6·42
September ...	65·0	74·8	68·6	61·8	11·10
October ...	63 7	73·1	67·9	61·5	12·12
November ...	62·8	72·3	66·0	61·0	15·24
December ...	60·8	70 7	65 2	59 1	5·15

From this table it appears that the occurrence of the disease was preceded by a moderate quantity of rain; and its cessation, in November, soon took place under the influence of the heavy rains which commenced on the 4th. The causes of the fever, however, do not seem to have been altogether removed by the rain, but their action merely suspended, or rendered less intense for a period, but soon resuming their force with a return to dry and warm weather. Thus, after the cessation on November 10th, the rains went on to the 14th, and on the 15th there was fine weather, which was terminated by heavy rain on the 18th, continuing to the 21st inclusive. A case of yellow fever occurred on the 21st, which proved fatal. A man died in the hospital with black vomit on the 26th; and other cases appeared in the officers' quarters above the hospital, though it was not before December 3rd they again showed themselves in barracks.

This fact of the suspension of yellow fever under the influence of heavy rain is one of much importance; it has been observed in every epidemic of yellow fever at Sierra Leone; and while cases of the yellow form of the disease, in its most malignant character, have shown themselves in the breaks of the rains, or at their termination, the disease which appeared during the continued heavy rain was always pure remittent fever, and of that there was generally no scarcity. Can this be explained on the assumption of yellow fever being propagated by specific contagion? It seems much more in accordance with fact to conclude, that the origin of yellow fever is intimately connected with (though not altogether dependent on) some local emanation, the production of which is either suspended or modified by heavy rain, but which, on a return to dry weather, may again be produced with its former properties.

The above facts with reference to Newcastle seem to leave open no other conclusion, than that the yellow fever there in 1856 arose from local causes. Whether similar causes were in operation there in other years, and if so, why they did not lead to a similar result, are questions that the present information on the subject does not admit of being answered. It would seem, however, that in addition to the ordinary local causes of disease, an epidemic constitution is necessary to account for the prevalence of fever.

Much difference of opinion seems to exist as to the nature of an epidemic constitution; some limiting its influence to a comparatively circumscribed locality; others claim for it a more extended operation, but assert at the same time that its effects should be manifested by the same form of disease in all places within its sphere of action. Both views seem the result of overstrained deductions from too limited observations; as there is reason to believe that a more extended investigation would show that an epidemic constitution influences mortality from all forms of disease, and that its operation may be traced nearly contemporaneously from Hindostan to Mexico, and from Lapland to the Cape of Good Hope.

It will be sufficient, to prove the existence of an epidemic constitution in the present instance, to state that during the summer of

1856 yellow fever prevailed pretty extensively in the West Indies and around the Gulf of Mexico; and was therefore sufficiently general to warrant the conclusion of there having been something in operation beyond mere local influences.

While engaged on this paper I learned that some of the medical officers at Newcastle were of opinion that yellow fever was imported there from Stony Hill. With the view of getting every information on this point, I called for the opinions of Staff-Surgeon Foss, Surgeon Jopp, and Assistant-Surgeon Tobin, 36th Regiment. The first and last have expressed their belief that it arose from local causes, and was not imported. Dr. Jopp thought it had been imported, and his reasons for that opinion are contained in his official 'Report of the Newcastle Epidemic of 1856.'

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22

Contributions to the Natural History of "Insolatio," chiefly from the Medical Records of H. M.'s 43rd Light Infantry. By ALEXANDER BARCLAY, M.D., Surgeon 43rd Light Infantry.

THERE are few, if any, diseases to which British soldiers are liable, concerning which it is so difficult for a medical officer, inexperienced in the diseases of tropical climates, to procure authentic information, as that singular and fatal affection from protracted exposure to extreme heat, to which so many of our men fell victims during the great Indian mutiny, and to which in official nosology, the term "Insolatio" has been applied. No accurate description of it is to be met with in any of the Standard works on Indian diseases; and, although it has of late years formed the subject of several valuable papers in various Indian and British periodicals, it must, I think, be admitted, if it were only from the evidence furnished by these papers themselves, that we are still far from having arrived at any certain ideas as to its pathology. Such is the variety of the views which have been put forward on the subject, that any endeavour to acquire a knowledge of the disease from these papers alone, without an opportunity of personally observing it, can scarcely lead to anything but perplexity and bewilderment. Any one making such an attempt would find the disease described in one place as an aggravated form of fever—in another as apoplexy—and in a third as asphyxia, to say nothing of minor discrepancies; and he would find equally striking differences in the modes of treatment recommended. It is hard to say what the conclusion might be at which he would arrive, after having completed the study of all the materials at his command, but it is probable that it would be little favorable to the accuracy of the powers of observation evinced by the writers, as a body.

Had he previously had any opportunity of personally observing the disease, however, the conclusion at which he would probably arrive would be, not that there had been any want of accuracy in the recorded observations, but that there had been in most instances too hasty a generalization, from an insufficient number of observations. There is nothing, I think, more clearly established by the history of the disease as presented to us in the papers referred to, than that its symptoms are liable to be modified, very much, by acci-

dental causes; and that those which are most prominent under one set of circumstances, are either absent altogether under another, or so very much less urgent as scarcely to attract observation—that the disease, in fact, varies in several important points, according to the nature of the circumstances in which it *occurs*.

That it does so I am satisfied, not only from the observations of others but also from my own; but I am satisfied, also, that whatever may be the differences as to accidental complications, there is something common to all cases of it; and I believe it to be of the utmost consequence, that we should keep this in mind, not only in our endeavours to arrive at the truth as to its pathology, but, also, in deciding on the treatment appropriate to the different forms which it assumes.

If the opinions expressed above are correct, it follows, I think, that we can only arrive at correct ideas as to the true nature and essential characters of the disease by a comparison of the symptoms which it has presented under various circumstances, and that, for this purpose, we cannot have too many separate accounts of it by independent observers. In no other way shall we be able to eliminate that which is accidental from that which is essential in its symptoms and progress.

Such are the reasons by which I have been induced to submit the following account of what I have seen of the disease. I do not pretend to give a complete account of it, or to describe all the forms which it assumes under every variety of circumstances; but I have had opportunities of observing it such as have fallen to the lot of few; and although my account of it must necessarily be imperfect, and of comparatively little value, from the nearly total want of *post mortem* examinations, I trust that it may not be altogether unacceptable as a contribution to the natural history of the disease.

The first cases of "coup-de-soleil," as it was then called in official nomenclature, that I had an opportunity of seeing, occurred on the frontier of South Africa. In the glorious climate of that colony such cases are extremely rare; and, as a general rule, exposure at any period of the day, and at any season, is not attended with the slightest degree of danger. During a lengthened period of service there, however, several cases came under my notice.

The first of these that I saw may be considered a fair exam-

ple of the disease as it is met with in that, and probably, in other temperate climates. It occurred in the beginning of 1845. The subject of it was a young officer, of moderately robust frame, unimpaired constitution and temperate habits. He was attacked while "out shooting," on foot, in the neighbourhood of his post, and after having been exposed to the sun for an hour, or an hour and a half. At the moment of his attack he was walking along the edge of a precipice of considerable height; and, without having had any premonitory symptoms, he fell down suddenly in a state of complete insensibility, with his head within a yard of the brink. No one being near him at the time, he lay there until he regained his consciousness, which did not happen for upwards of a quarter of an hour, and he then got up and rejoined the remainder of the party a few hundred yards farther on. When he did so the only sign of disease about him was slight suffusion of the eyes. To the best of my recollection his pulse was scarcely accelerated. I advised him to go home at once, but he declared that he felt perfectly well, and would not listen to me; and it was only by a little indirect management that I succeeded in getting the programme for the day curtailed, and so getting him back to his quarters some hours earlier than had been intended. On his arrival there I advised him to avoid farther exposure, and to diminish his moderate allowance of wine for a few days. At this advice, however, he laughed, assuring me that he had never in his life felt better; but he told me afterwards that he had found that I was right, and that for some little time he was more easily affected by wine than he had previously been. All bad effects, however, speedily passed away, and although frequently exposed to the sun afterwards, he never again had any similar attack.

During the remainder of my service on the frontier, or in Kaffraria, I saw several such cases and heard of others. I remember only one during field operations. In it, a man, previously in perfect health, fell down suddenly in the ranks, in a state of complete insensibility, with contracted pupils, and a frequent wiry pulse, but was restored to consciousness at once by cold affusion, and recovered completely without any subsequent serious febrile symptoms.* I never saw or heard of a fatal case. One man of a battalion under my charge, however, who was reported by his comrades to have had an attack while on detachment, fell into a state of "melancholia" soon afterwards, and ultimately (within three

* These were slight febrile symptoms, however, to the best of my recollection, for several days.

or four months) committed suicide, by shooting himself through the body, in his barrack-room. A careful examination of his body was made, and the only diseased appearances found were congestion of the meninges, opacity of the arachnoid, and serous effusion under it, and in the ventricles of the brain.

All the cases that I saw or heard of in that colony occurred in the open air—in bright sun-shiny weather—and all, or nearly all, early in the day.

At the outpost on the Great Fish river, near which the officer whose case is above described was attacked, and at the other outposts in the deep valley of that river, the thermometer during the hot season often stands higher than it does at most Indian stations; and it is always many degrees higher during the day, than at the nearest stations on the high ground beyond the valley. I have known it to exceed 100° in a well thatched house every day for three weeks together; and it occasionally reaches 112° or 115° for a few hours, during the hot desert winds which frequently precede the violent thunderstorms for which that district is famous. The nights, however, are almost invariably cool. During the time that I was in charge of that outpost, the men of the European detachment were employed daily on working parties in a neighbouring quarry, extracting and preparing stone for the construction of a bridge; but there never was a case of sun-stroke among them; and during the three hottest weeks of the season there was not a single case of sickness of any kind. I remember well noting this fact in the first "Annual Report," that I ever wrote, and remarking upon it that *there*, at all events, heat alone did not seem to be a very powerful exciting cause of disease.

When I next saw the disease, if indeed I am right in supposing that it was the same disease, viz., during the hot weather campaign in Bundelcund in 1858, it was under very different circumstances. Instead of being an affection of extreme rarity, transient in its nature, and seldom leaving any permanent bad effects behind it, it was then a most formidable malady, for a time of every day occurrence, and attended with a very high degree of mortality.

That the circumstances under which it occurred may be fully appreciated, the following short account of the previous history of the regiment under my charge (H. M.'s 43rd Light Infantry) since it left England, and of its constitution on

taking the field, may not, perhaps, be considered unnecessary.

The regiment embarked for foreign service in October 1851 ; arrived at the Cape of Good Hope in the end of the same year ; and was at once employed in the operations against the Kafir tribes on the frontier then going on. These operations were of the most arduous character. The fatigue undergone by the troops during them was excessive. While in the field the men were exposed to every variety of weather, from heat equal, or nearly equal to that of India, to cold approaching to that of a European winter,—for the most part without tents or shelter of any kind : and the food with which they were supplied was of a very indifferent character, fresh vegetables of any kind being seldom procurable. As was to be expected in a regiment employed on such service immediately on its disembarking from a transport, there was at first a very serious amount of sickness and mortality. Dysentery and fever prevailed to a formidable extent, and ultimately scurvy made its appearance, and affected more or less a considerable proportion of the men. In not a few of them, also, disease of the heart or great blood-vessels was brought on by frequent over-exertion during the operations in the rugged mountainous country occupied by the hostile tribes. After the conclusion of these operations, however, the men soon regained their health and vigour, with the exception, of course, of those suffering from organic disease ; and for some time before the regiment left the colony the number in hospital at head-quarters was lower than I expect ever to see it again.

In November 1853 the regiment embarked for India, in several detachments, all of which, as well as the Depôt Companies from England, arrived and disembarked at Madras in the beginning of 1854. From that time, until it took the field in the end of 1857, one wing was stationed at Madras, and the other at Bangalore—with the exception of about two years (from March 1855 to March 1857) when the whole regiment was stationed at Bangalore.

Soon after its arrival the strength of the regiment was raised to upwards of 1,200, by the addition of volunteers from various corps in different parts of India. Most of these volunteers were, of course, old soldiers. Most of them had been many years in India ; and many of them had previously served through one or more campaigns. Before the regiment took the field, a considerable number of them had

been invalided and some had died; but at that period many of them still remained.

The part of the regiment at Bangalore generally enjoyed excellent health, and the mortality there was exceedingly slight. At Madras the sickness and mortality were greater, but neither was ever excessive. The only occasion on which a serious loss was sustained in either part of the regiment was on the march of the left wing from Bangalore, in March 1857, when it encountered a severe epidemic of cholera at the foot of the Ghât, and suffered very severely. The men were never overworked at either station, except for some months at Madras, during the chronic state of panic which ensued there after the out-break of the mutiny in Bengal; when their time was wholly spent either on guard or on picket. In November 1857 the left wing was sent up to Bangalore by transit. A company which had been detached from head-quarters to Mysore was withdrawn at the same time, and the whole regiment was once more concentrated, for the purpose of taking the field. Difficulties as to carriage, however, delayed its march for about six weeks, and it did not start from Bangalore till the 24th December. Before that time all sick and weakly men had been carefully selected to be left behind, and every sanitary arrangement for the welfare of the men on the line of march that could be thought of, and that was practicable, had been made. We started, however, with a great deficiency of suitable carriage for the sick. Considerably less than half the number of doolies sanctioned by regulation were supplied to us—more not being procurable—and, in lieu of the remainder, we were provided with an extra number of sick carts; vehicles, which, if the object had been to carry sick soldiers with the smallest possible amount of comfort, might have been said to have been devised with considerable ingenuity. By the forethought of the Deputy Inspector-General of H. M.'s Hospitals we were provided with a sufficiency of quinine for occasional use as a prophylactic; and tarpaulins were prepared for the floors of all the mens' tents.

The personal equipment of the men as to clothing, &c., was most carefully looked after by the Officer in Command, and arrangements were made by him to enable each man, throughout the march, to have some refreshment (a cup of coffee and a biscuit) every morning before starting, and again at the half way halt.

We took the field exactly a thousand strong, including 31

officers. I am unable to give the exact constitution of the regiment as it marched from Bangalore; but the following Tables show its constitution on the first January 1858, all men belonging to it, then in India, being included. The idea which they give of the proportion of the different classes is substantially correct, as the men who were left behind were merely such as happened to be sick or debilitated at the time—none being left on account of length of service alone.

Return of Strength according to periods of Service.

Periods of Service.	Strength on 1st January, 1858.				Total Strength.
	Serjeants.	Corporals.	Buglers.	Privates.	
Upwards of 21 years -	1	0	0	3	4
From 19 to 21 ,,	2	2	0	58	62
From 15 to 19 ,,	13	8	4	154	179
From 10 to 15 ,,	22	18	5	242	287
From 5 to 10 ,,	11	13	5	275	304
Under 5 years - - -	7	9	10	206	232
Total - -	56	50	24	938	1,068

Return of Strength according to Age.

Age.	Strength on 1st January, 1858.				Total.
	Serjeants.	Corporals.	Buglers.	Privates.	
Under 18 years -	0	0	4	8	12
From 18 to 30 ,,	26	28	15	545	614
From 30 to 40 ,,	29	21	5	363	418
From 40 to 50 ,,	1	1	0	22	24
Upwards of 50 ,,	0	0	0	0	0
Total - -	56	50	24	938	1,068

Return showing numbers from each Country.

Country.	Strength on 1st January, 1858.				Total.
	Serjeants.	Corporals.	Buglers.	Privates.	
English - - - - -	42	37	17	628	724
Scotch - - - - -	1	0	0	7	8
Irish - - - - - -	12	13	7	303	335
Foreigners - - -	1	0	0	0	1
Total - -	56	50	24	938	1,068

Number of men wearing distinguishing marks ..... 616.

The average height of the men at this time was a fraction under 5 feet 8. They were for the most part country recruits, and generally robust and well formed. As a body they were extremely temperate, and they were in a perfect state of discipline. A more efficient body of men did not exist in Her Majesty's Service.

It is not my intention to give here any detailed account of the long and weary march northwards which we commenced, as above stated, on the 24th December 1857; or of the sanitary precautions to which, I believe, we owed in part our extraordinary immunity from sickness during the greater part of it. We proceeded by the usual stages and with the usual halts, via Gooty and Kurnool, to Secunderabad, where we arrived on the 8th February 1858, and were detained for eight days. Marching again on the 17th, we proceeded through the Neermull jungle, to Kamptee, where we arrived on the 27th March. On the 1st April we marched again for Jubbulpore, and we arrived there on the 17th of the same month, having crossed the Nerbudda the day before.

During the first part of this long march throughout the greater part of the length of the Madras Presidency, viz., while we continued in the Mysore territory, we had cool and bracing weather. When we descended into the Ceded Districts, however, the weather became sensibly hotter; and by the time that we arrived at Secunderabad the residents at that station were already complaining of the severity of the heat. On the march from Secunderabad to Kamptee, and on that from Kamp-

tee to Jubbulpore, the weather was for the most part very oppressive, the thermometer frequently exceeding 100° in the tents during the day; but the nights were still, generally comparatively cool. During this long march we had singular good fortune. We did not lose a man from sickness, and we only left two sick men behind us. We had no epidemic disease, and very little serious sickness of any kind. The march, however, had told seriously upon the men in general. They had lost their condition, and in a great measure their robust appearance, and they were obviously in urgent need of rest. This, however, they were not destined to obtain.

At Jubbulpore we received orders to proceed at once to division head-quarters at Nowgong, via Dumoh and Saugor, leaving a detachment of 250 men at the latter station and another of 50 men at Jubbulpore. We marched again accordingly, on the 22nd April, 50 of the men most urgently requiring rest having been selected and left to form the detachment ordered, and on the 27th we arrived at Dumoh. While there we received orders from the Governor-General to alter our route to Nagode, and, in compliance with these orders, we arrived at that station on the 8th May; having marched 163 miles since leaving Jubbulpore. The heat on this march was excessive, and it told very much on the health of the men, already exhausted as they were, by a march of almost unexampled length. Our first casualty took place on the 5th May, at which date we had been four months and thirteen days in the field, and had marched, according to my journal, nine-hundred and sixty-nine miles. The cause of death in this case was paralysis, the first symptoms of which occurred suddenly on the line of march, on the 27th April. They were not attended with any degree of loss of consciousness until within a short time of the fatal termination. Next day a fatal case of "insolatio" occurred, and from that date cases of that disease gradually increased in frequency.

We remained at Nagode eight days. On our arrival at that station the indications of exhaustion in the altered looks of the men, their loss of flesh, and their evidently failing strength, were so obvious that they forced themselves on the observation of every one. Having communicated with the Brigadier commanding on the subject, I wrote to him officially, at his suggestion, calling his attention to the fact, and expressing my belief that serious consequences might be

looked for, if rest and shelter were not speedily found for the men. My letter was forwarded to a high authority by the Brigadier, who fully concurred in my views; but, unfortunately for the regiment, it was not considered possible to act upon them, and we were ordered to continue our march to Banda.

At this time the periodical hot winds were blowing with scarcely any intermission day and night, and the heat of the weather was almost unbearable. We marched from Nagode on the morning of the 15th May, and reached Punnah on the 17th. On the 20th we descended the Bisramgunge ghât, twelve miles from Punnah, a steep and rugged pass, about two miles in length, in the range of hills which separates the high land of the Central Indian plateau from the low lying plains on the banks of the Jumna and Ganges. This pass is so steep that no wheeled carriage has ever been able to ascend it; and although we were assisted by the Rajah of Punnah with a large number of coolies, camels and elephants, it took us four whole days to get down the baggage of the regiment. During this time we were encamped in the bottom of a deep and narrow ravine, with nearly precipitous sides upwards of a mile in height. The heat in this valley was insufferable, and exceeded anything that we had been exposed to before, or that we were exposed to afterwards. There was no means of escape from it, as there was no better ground within five or six miles, a distance which military reasons forbade our placing between us and our baggage. During the day the thermometer varied from 115° to 118° in the largest tents, and in the smaller ones reached 127°; and night brought but little relief. On one occasion I observed the thermometer standing at 105° at mid-night. Such was the overpowering effect of the heat in this valley, that some even of the native followers were struck down by it, and died with all the symptoms of "insolatio" in less than an hour. The number of cases among the men of the regiment, especially during the first day, was very great. They were brought to the hospital tents at every hour of the day and night; and, although a large proportion of them recovered, two officers and eleven men were buried under one tree in the neighbourhood of the camp.

On the 24th May we resumed our march. On the 25th and 26th some rain fell, and there was a good deal of thunder and lightning in the distance. The air became considerably cooler in consequence, and it continued rather cooler during

the remainder of the march. On the evening of the 27th we arrived at Banda, where the remainder of the division had been resting and under cover for the previous six weeks. On the march from Nagode to that station, a distance of about 100 miles, by the route that we followed, we had lost two officers and nineteen men.

While we remained at Banda the health of the men improved daily; but they were still in a miserable state of exhaustion, when we marched again for Kirwee on the 3rd June. On the evening before we marched the whole of the sick, sixty-two in number, and a guard of 200 men were transferred to the palace of the rebel Nawab. The remainder of the regiment reached Kirwee (a distance of 48 miles) on the 7th June, having had no casualty, and not much sickness by the way; and we remained in camp there till the 18th, when we commenced our return march to Banda, a detachment of 200 men, including 13 sick, having been transferred to Narrain Rao's palace the night before. While we were at Kirwee the heat of the weather was excessive, the thermometer varying from 105° to 115° during the day; and the men were entirely without shelter of any kind, except that afforded by a straggling tope of small mango trees, in which most of their tents were pitched. A spacious building on the outskirts of the town near the opposite side of the camp was taken possession of as a hospital for the division, but no part of it was allotted to the 43rd Light Infantry. ×

While at Kirwee we lost five men from "insolatio," and on the march back to Banda we lost three more. We arrived at Banda on the 23rd June.

On the 28th June we marched again for Humeerpore and Calpee; our orders being to leave at the former station a detachment of 200 men, including the whole of the sick (whom we took with us from Banda, extra carriage being supplied for the purpose), and to push on to the latter with head-quarters, and the remainder of the regiment. The distance from Banda to Calpee by the route that we followed is 77 miles. The air had been cooled before we started by some heavy rain; and it continued much cooler until we arrived at Humeerpore. On that part of the march we sustained no loss. On the march from Humeerpore to Calpee, however, the weather was again excessively hot and the men suffered very severely. They were by this time completely worn out and prostrated. There was scarcely a man

× It was allotted to the Company's European troops who had not been

in the regiment whose strength was not reduced to a level with that of a child; and the officers were not in a very much better plight. Many men, broke down altogether, and had to be carried, as it could best be managed, in doolies and sick carts, and, after they had been filled, on baggage or Commissariat carts. It was painful to see many others who, a few months before, had been in robust health and full of vigour, staggering from weakness as they endeavoured to keep up with the column, throwing themselves down completely exhausted at every halt, and scarcely able to rise from the ground when the "assembly" sounded.

At length, however, we reached Calpee on the 5th July; and on the 7th the men were put under cover, in some deserted cotton stores which had previously been occupied by the 5th Fusiliers. Up to the latter date, since leaving Humeerpore, we had lost one officer and five men.

Beyond this date it is unnecessary, for my present purpose, to continue the account, already far too long, of the movements of the regiment in the Central Indian Campaign. Several fatal cases of "insolatio" occurred on detachment afterwards, including three in a skirmish with rebels at Kirwee, in the beginning of August; but no more cases occurred at head-quarters, and when the regiment next took the field the rainy season was at its height.

Few such opportunities of observing the effects of protracted exposure to intense heat in a body of men in the field, and debilitated by fatigue and want of rest, as that afforded by the march above described, have probably ever occurred.* Had an experiment been instituted for the express purpose of acquiring information on the subject, no more efficient means of bringing it to the test of observation could well have been devised. There was but one drawback to its completeness; but that was a serious one, and one which, if it always existed, would, I am afraid, prove a formidable barrier to the advancement of physiological and pathological science; viz., that observers and observed were exposed to the same "treatment," and with, to a certain extent, similar results. I am not at any time wont to make an appeal "*ad misericordiam*"—particularly as to matters of duty;

* For the information of those who have had no opportunity of acquiring by experience a knowledge of the severity of the Central Indian climate during the hot season, a table showing the daily maximum and minimum of the thermometer during the months of March, April, May and June, is given at the conclusion of this paper.

but I may state here, once for all, that the chief reason why *post mortem* examinations were not made in the many fatal cases of the interesting disease under consideration which occurred on the march, was physical inability on the part of either of the two medical officers with the regiment to undertake the task; and that it required a constant effort, such as those only can appreciate who have been placed in similar circumstances, to perform the necessary duties to the living, and to meet the constant calls which were made upon us at all hours of the day and night. There were, however, other difficulties in the way of *post mortem* examinations in the field. We had no very good means of performing them in camp, without giving annoyance to others; and the rapidity of decomposition was such that it was necessary to bury every body a few hours after death. In one case it was found to be a most unpleasant duty to follow to the grave, in the early morning, the body of an officer who had died late on the previous afternoon. It is scarcely necessary to add, that in all cases a blanket had to be substituted for a coffin; and that this alone would have been a serious objection to the performance of *post mortem* examinations.

It has been stated that the deterioration of the health of the men in the field was progressive. For a long time before the occurrence of the first cases of "insolatio," in fact from the commencement of the hot weather, every one in camp had suffered more or less from prickly heat; the severity of that troublesome affection being, as a general rule, in proportion to the amount of perspiration from each individual.

When the heat of the weather became more intense, one of the first symptoms of its producing an injurious effect was the gradual disappearance of this cutaneous eruption; the skin becoming rough and scaly, and perspiration ceasing. In many cases the interruption of perspiration seemed to be complete,—not the slightest feeling of dampness being perceptible in any part of the dress, at any period of the day. The heat of the surface became at the same time increased. The bowels became constipated—often obstinately so. The appetite gradually failed, and a feeling of nausea was generally complained of—the sight of food often exciting loathing. In other instances there was merely complete anorexia. The urine became rather copious (but not excessively so) and limpid, and the calls to pass it were frequent. Sleep was from the first much interrupted; and the periods during

which it could be obtained became gradually shorter, until at length it was common to hear patients complaining of not having been able to sleep at all during the night. The pulse was for the most part frequent, sharp, and rather small. The tongue was frequently rather white posteriorly, but seldom either very foul or dry. Thirst was seldom very urgent. Vertigo was frequently complained of, but headache rarely. In fact, as a general rule, there was no complaint of pain. What the men complained of when they came to hospital in camp, or fell out on the line of march, was extreme debility and weariness—prostration on any exertion —vertigo—nausea—and in many cases more or less incontinence of urine, more particularly after any exposure to the sun. The latter symptom was often that first complained of, "I cannot hold my water," being a very general answer to the first enquiries as to the ailments of men applying for medical aid. It has been already mentioned that rapid emaciation took place during the prevalence of these symptoms.

From such symptoms, or at all events from some of them, almost every one who was exposed to the intense heat in the ravines of Northern Bundelcund in the end of May, suffered in a greater or less degree. If, therefore, they are to be considered as premonitory of "insolatio," inasmuch as no one during the march became the subject of that affection without having previously suffered from them, it must be kept in mind that they prevailed in a much larger proportion of cases in which symptoms of that affection did not supervene at all. I look upon them rather as predisposing to it, than as premonitory of it, in the usual sense of the term. The diseases of men admitted into hospital with such symptoms were returned as Febris Cont. Com. As a general rule they were certainly not cases of remittent fever; although I do not mean to say that the symptoms were not aggravated at the period of the day when their cause, viz., the heat of the weather, was in greatest intensity. They were not attended, so far as I could discover, with congestion of any particular organs, and there was not the slightest reason to suppose that they were in any degree of malarious origin. The regiment up to that date had never been quartered at a malarious station; and the men had not then acquired the malarious diathesis which subsequent exposure, I regret to say, has rendered almost universal among them. Had they been then as thoroughly saturated with the malarious poison as they are

now, I have not the slightest doubt that the symptoms would have assumed a paroxysmal character.

As to the appropriate treatment for such cases there cannot be any doubt. Perfect rest—cold sponging of the body—cold applications to the head—regulation of the bowels—and removal to a tent, the air in which has been cooled and moistened by wet "tattees," and thermantidotes, are the measures immediately indicated; but circumstanced as we were in 1858, the last, which is by far the most important part of the treatment, was, of course, quite out of the question. Great relief generally followed the operation of a purgative. It has been mentioned that constipation was almost an invariable symptom. It was replaced, however, in a few instances by a mild attack of diarrhœa, and always with immediate and marked relief to the feelings of weariness and languor previously existing. Saline diaphoretics were generally employed after the operation of the purgative, and in cases attended with much sleeplessness, an opiate at night was occasionally given with advantage.

Very many of the less severe of such cases, in fact the great majority of them, were not admitted into hospital at all. The hospital tents afforded no better protection from the heat than those occupied by the companies. Rest was provided, as far as was possible, by allowing the men who complained to ride in sick carts; and the necessary medicines were given in camp.

The subjects of the cases of "insolatio" were for the most, part, and especially at first, some of the stoutest and most muscular men in the regiment. A considerable proportion of them were, certainly, men who at some former time had been addicted to intemperate habits; but this rule was by no means universal; and from the circumstances in which the regiment had been placed, none of them had, for the previous three or four months, had any opportunity of habitual over-indulgence in intoxicating liquors. It was very evident, however, that men who had injured the tone of their nervous systems by intemperance were much more predisposed than any others to attacks of "insolatio."

There never was any reason to suppose that alarm acted in any degree as a predisposing cause. Even at the time when deaths were most frequent there was no sign of any feeling of the kind among the men. An equal mortality from cholera would certainly have produced more or less panic among them; but, instead of that, feelings of apathy

and listlessness seemed to be very generally prevalent. The danger was not a hidden one, as in the case of "the pestilence which walketh in darkness," and this, I believe, is the true explanation of what has been above stated.

The attacks of "insolatio" came on, with very few exceptions, when the men were in their tents; generally during the day, but in several instances during the night; never except in one instance, on the line of march. The patient had generally been lying down, it is scarcely necessary to say in very easy costume, and often *seemingly* asleep—or, as it would probably be more accurate to say, attempting to induce sleep. Sometimes the attention of his comrades was first directed to him by his hurried and heavy breathing; and, on an attempt being made to rouse him, he was found to be insensible. In other instances he started up suddenly and attempted to escape from the tent, staggering about,and struggling violently when laid hold of; evidently much alarmed and apparently anxious to escape from some imaginary object of terror; but in a very few minutes becoming insensible.

In one or two instances the first symptom of the disease was reported to have been an incontrollable burst of laughter without any apparent cause, and in sad-enough circumstances, insensibility and death speedily following.

In a few cases, in which the patient had come to hospital himself or with the assistance of a comrade, complaining of the symptoms before mentioned (debility, nausea, vertigo, incontinence of urine, &c.) insensibility and the other symptoms of "insolatio" gradually supervened; but such cases were extremely rare. In a few more of the same kind an almost unconquerable tendency to sleep came on soon after admission. What, however, might have been the result of sleep under such circumstances we had no means of judging from experience, as, in all such cases, care was taken to prevent the patient from falling asleep, until the usual remedies had been employed, and time had been allowed for their effect to be produced. None of these cases proved fatal. This lethargic tendency appeared to be most frequent after exposure to the sun.

The symptoms of "insolatio," when the disease was fully formed, were very constant and regular. The patient lay on his back, without sense or motion, breathing rapidly, and as death approached, more and more noisily. The presence of true *stertor* in any case of the disease has, I am aware, been denied; but if by stertor is meant merely noisy breathing from vibrations of the uvula and "velum pendu-

lum," I can state distinctly that it was present in most fatal cases, although never approaching in degree to that which is common in true apoplexy.

The eyes were *fixed and slightly turned upwards,* becoming gradually more and more glassy, as if from the formation of a film over the cornea; *the pupils greatly contracted* (generally to the size of the head of a pin); *the conjunctivæ pinky, the color gradually becoming deeper*; the congestion being at first *deep seated,* the first symptom of it being a pinky zone around the cornea, and the superficial vessels afterwards becoming affected.

The face was invariably pale; never in any instance bloated or flushed as it has been observed and described by others. *The surface was dry, harsh and burning to the touch,* far beyond what I have ever felt it in any other disease.

The heart's action was very rapid and sharp, *the impulse and the pulsation in the carotids* being perceptible to the eye from a considerable distance.

The pulse was frequent and sharp, and at first moderately full, *giving the idea of a thinner fluid than blood circulating beneath the finger.*

Frothy mucus, sometimes clear, at others of a brown colour was in most instances ejected from the mouth and nose for some time before death, and often in large quantity. This symptom, however, was not present in the beginning of the disease nor was it present in all cases. If the disease did not yield to treatment, the heart's action soon began to fail; the pulse became fluttering; the respiration irregular; and in a period varying from a few minutes to a few hours, death closed the scene.

In a large proportion of cases, from the commencement of the attack till its termination in death, the patient never moved a limb or even an eyelid.

A comparatively small number of cases, however, were from the first attended with convulsions. These generally began in the upper extremities, or in the muscles of the face, and in some cases they did not extend farther, the patient either becoming rapidly insensible, or recovering; but in other instances they extended to the whole of the voluntary muscles, and were of the most violent description,—ceasing frequently for from two or three, to fifteen or twenty minutes and recurring again with increased severity.

In a few instances the nervous irritability was as much increased as it is in hydrophobia; and in some of these the

patient, so far as his mental faculties were concerned, seemed to be in a state in some respects analogous to somnambulism. Although to a great extent unconscious of what was going on about him, and quite incapable of understanding or answering a question, his whole appearance was indicative of the greatest terror; his eyes rolled wildly about; and a few drops of water poured on the ground near him were sufficient to throw him into the most violent convulsions, and to elicit from him screams of agony. In most of these cases the convulsions ceased some time before death, and the symptoms then became identical with those which characterized the ordinary cases of the disease; but in a few the convulsions continued to the last, and in one or two death took place while the body was contorted by them. They were never confined to any one set of muscles; and they seldom displayed anything approaching to tonicity.

The number of cases of "insolatio"* included in the Annual Return for 1858 was 111; and the number of those which proved fatal was 44. Exclusive, however, of three cases which occurred on detachment, and which were returned under the head of "Apoplexia," although probably cases of "insolatio," six fatal cases which occurred out of hospital (five of them on detachment), and which were not included in the return at all, were undoubtedly cases of the same disease. Adding these, the number of cases would be 117, and the number of deaths 50; the mortality being thus 42·734 per cent. Four cases which occurred among the officers, (three of them fatal) are not included in the above numbers.

It is difficult, however, to give an accurate statement of the mortality from "insolatio," in proportion to the number of cases of the disease; and until the boundaries between it and the peculiar febrile state which has been described as often preceding it, are better defined than they are at present, statistics on the subject must always be received with a certain amount of distrust. Probably no two medical officers would classify in the same way a number of cases of the two affections occurring at the same time. If the term "insolatio" were to be confined to those cases alone, in which there is complete insensibility or convulsion, the number would be greatly limited, and the mortality would considerably exceed one in two. If, on the other hand, it were to include all cases in which vertigo, nausea, pros-

* At that time its official designation was "Ictus Solis."

* In these numbers all cases are included whether they were treated in hospital or not.

tration and dribbling of urine are present and clearly attributable to the heat of the weather, the number would be greatly increased; and in the return from which I have quoted, it should have included, not only numerous cases returned under the head of Febris Cont. Com., but very many others which, as above stated, were not admitted into hospital at all.

I endeavoured to draw a line between the two sets of cases by classifying all those in which insensibility, more or less perfect, or convulsions, were present under the head of "Insolatio," and all those in which these symptoms were absent under that of Febris Cont. Com.; and in doing so, I was guided by the belief that the two sets of cases differ not only in degree, but in nature,—to, at least, as great an extent as cholera differs from choleraic diarrhœa, or delirium tremens from the every day tremors of the drunkard.

Of the following tables the first two show the ages of the patients, and their periods of service in India in 50 fatal cases. The third shows the age of the patient and the duration of the disease in each of the fatal cases that occurred at the head-quarters of the regiment. The fourth shows the same as to each of the cases at head quarters in which the result was favorable.

Ages of patients in 50 fatal cases of "Insolatio."		Period of service in India in 50 fatal cases of "Insolatio."	
Age.	Number.	Service in India.	Number.
Under 20 years -	1	Under 2 years -	0
From 20 to 25 years	12	From 2 to 4 years	2
„ 25 to 30 „	10	„ 4 to 6 „	39
„ 30 to 35 „	15	„ 6 to 8 „	0
„ 35 to 40 „	12	„ 8 to 12 „	4
Upwards of 40 „	0	„ 12 to 18 „	5
Total - -	50	Total - -	50

Duration of disease, and age of patient, in 31 *fatal cases of "Insolatio," at head-quarters. (Cases arranged according to the date of their occurrence.)*

No. of Case.	Age of Patient.	Duration of disease in hours.	Remarks.	No. of Case.	Age of Patient.	Duration of disease in hours.	Remarks.
1	36	7		16	25	11	
2	38	1		17	25	1	
3	24	3		18	27	2	
4	31	19		19	31	2	
5	31	4		20	29	32	
6	39	3		21	24	2½	
7	36	3		22	32	1	
8	26	10		23	37	13	
9	16	¼		24	32	6	
10	34	4		25	32	4	
11	32	8		26	35	6	
12	23	19		27	34	7	
13	35	1		28	38	10	
14	39	5/60	Died while being carried from his tent to hospital, a distance of a few yards.	29	32	21	
				30	31	3	
				31	33	9	
15	23	21					

Duration of disease, and age of patient, in 47 *cases of "Insolatio," at head-quarters, in which recovery took place. (Cases arranged according to the date of their occurrence.)*

No. of Case.	Age of Patient.	Number of days in Hospital.	No. of Case.	Age of Patient.	Number of days in Hospital.
1	38	9	24	30	18
2	28	6	25	41	15
3	24	6	26	29	12
4	35	7	27	36	21
5	28	8	28	31	12
6	32	4	29	32	3
7	37	4	30	39	18
8	28	36	31	39	10
9	25	7	32	34	4
10	35	7	33	24	19
11	31	9	34	39	8
12	26	8	35	39	6
13	25	10	36	24	16
14	24	10	37	25	9
15	38	7	38	27	9
16	39	7	39	25	9
17	35	4	40	26	37
18	24	20	41	25	9
19	30	47	42	25	9
20	38	38	43	27	5
21	29	8	44	34	4
22	38	4	45	20	3
23	38	3	46	29	8
			47	29	7

During the period embraced by these cases, 104 cases of fever were admitted into hospital at head-quarters, viz., 86 of Febris Cont. Com., 2 of Febris Quot. Intermittens; and 16 of Febris Remittens. Two cases of Febris Cont. Com. proved fatal. In the one symptoms of "insolatio" supervened before death on those of fever. In the other febrile symptoms supervened after recovery from those of "insolatio."

During the hot season of 1859 the regiment was partly in camp and partly in quarters, at Saugor and Nagode; and we had not a single case either of "insolatio" or of the peculiar febrile state (sun-fever it might very well be called,) which prevailed so much at the same period during the previous year. It is worthy of remark, also, that, with the exception of one case of long standing hepatic abscess, which proved fatal on the 1st May, we had not a single fatal case from any cause at Saugor, where the head-quarters of the regiment were stationed, during the whole of the hot season. The next death to that which has been mentioned took place on the 18th August.

In the beginning of the present year the regiment marched from Saugor and Nagode to Mirzapore; proceeded from there to Calcutta, partly by the river, and partly by bullock train; and, embarking at the latter station, arrived at Madras on the 18th March. The hot season which followed immediately is said to have been of unusual severity; and there was also an unusual want of rain, none having fallen at Madras between November 1859 and June 1860. Soon after their arrival the men began to suffer from febrile attacks; and they have continued to do so up to the present time (July 31st), to an extent quite unprecedented in the regiment, except during the height of the malarious season, last year, in Central India. These attacks are no doubt directly attributable to the heat of the weather; but they are almost invariably paroxysmal (in the great majority of cases intermittent), and there can be no doubt that they owe this character to the malarious diathesis acquired by the men at Saugor and Nagode. They are, in fact, relapses of the Central Indian fever, brought on by heat, as they might be by any other debilitating cause. They do not in any way resemble the febrile attacks which prevailed during the hot season of 1858; and by which attacks of "insolatio" were then invariably preceded.

Of that disease, however, we have had three more cases, besides several others in which there were premonitory

symptoms of it. They all occurred on one day, viz., the 27th May. The weather for some time previously had been very hot and oppressive; but it was not so hot on that day, as it had been on some others previously, (the maximum of the thermometer in the hospital was 98°), and it has been considerably hotter on several occasions since. I am unable to give any information as to the state of the atmosphere at the time, as to electricity and ozone, no observations on these points being made at Madras; but I may state that for the first time during the season a thunderstorm passed so close to the station on the afternoon of the 27th May, that the thunder was distinctly audible here. Thunderstorms, however, had been visible in the distance, passing generally to the westward, every evening for a week or ten days previously. This fact is worth noting, as it is difficult to understand why all the cases of the season should have occurred in one day, and that by no means either the hottest, or to the feelings, the most oppressive.

All these cases differed materially from those which occurred in the field, and much more closely resembled those which are described as having occurred at the different military stations on the banks of the Ganges. In the five or six slighter cases, returned as Febris Cont. Com., in which the peculiar symptoms were checked at an early period, before they could be said to amount to symptoms of "insolatio," all the patients made the same complaint, viz., of excruciating headache, very severe pain in the chest, and oppressed breathing; and all had an anxious and alarmed look. The three cases of "insolatio" were of a more serious character, and one of them proved fatal. It will be seen from the following detailed account that they differed from one another in several important respects.

Case of Pte. Richard Catchpole, aged according to his record 26. Completed years of service two,—in India $1\frac{7}{12}$ths.

An Englishman, a labourer, height 5 ft. $3\frac{1}{2}$ inches, moderately stout, dark brown hair and hazel eyes, florid complexion, bilious temperament, evidently many years older than he is represented to be, of rather weak intellect and slovenly habits, but not intemperate. Has been repeatedly in hospital, chiefly with slight febrile attacks. Was attacked with fever while on guard on the 26th May, and came to hospital on the evening of that day.

On the morning of the 27th was quite free from fever,

but rather weak, and was detained in consequence. He lay on his cot during the forenoon without making any complaint. About noon was observed to be in a state of insensibility and breathing heavily. He was removed at once to the coolest verandah in the hospital, the cold douche applied over his head, chest, and back, and 8 leeches applied to his temples, by the Apothecary on duty.

I saw him at 1.20 P. M. He was then completely insensible, his face paler than usual, his eyes fixed and slightly turned upwards, the pupils somewhat contracted, but much less so than was usual in the cases in the field. His skin felt burning to the touch. His pulse was frequent and rather full. The pulsation in the carotids was very strong and could be seen from a distance. There was not at first any discoloration of the conjunctivæ. He had no convulsions, nor could the slightest movement of any of his limbs or of his eyelids be observed for hours. On stethoscopic examination, loud, moist, crepitant râles were heard all over the chest. The first sound of the heart was natural, the second rather indistinct. The leeches, which had drawn very little blood, were removed, and there was scarcely any bleeding from their bites. The cold douche was applied assiduously for some time, but without any good result; and it had to be discontinued on account of failure of the pulse. An attempt was made to give a stimulant, but nothing could be swallowed. A purgative enema was given at once, and a considerable quantity of thin feculence was brought away by it. Enemata of brandy and water, with 15 or 20 min. of chloroform, were given repeatedly, but they were never retained for more than a few minutes, and no effect seemed to be produced by them. A blister was applied to the nape of the neck, sinapisms to the chest and extremities, and ammonia to the nostrils. His head, and the whole surface of his body, were kept wet, and the face was fanned assiduously.

During the afternoon he became gradually worse. His pulse became imperceptible, his conjunctivæ pinky, and his hands and feet livid. His head continued for a couple of hours firmly bent backwards, and his hands, fore-arms and toes, flexed. By the evening the blister had risen well, and he then improved considerably. The spasm disappeared, the lividity of his hands became less, his pulse returned, and he regained a certain amount of consciousness, and was able to swallow, though with difficulty. A small quantity of brandy and water was then given every half hour; and the bronchial tubes

being evidently loaded with mucus, he was occasionally turned over on his face, his head projecting over the edge of his cot. This change of posture was generally followed by efforts to vomit, by which his breathing was greatly relieved. About midnight he began to sink again. The insensibility became more profound, and the breathing more stertorous and oppressed. A blister was applied to the vertex without any benefit. The pulse gradually failed, and he died at 3.20 A. M. on the 28th.

"Sectio Cadaveris" 5 hours after death.

Body rigid, and of a dark purple colour posteriorly.

Head,—integuments exsanguine, scarcely a drop of blood escaping until the calvarium was removed, vessels of dura mater congested, arachnoid opaque, a small quantity of serous effusion under it, vessels on the surface of the brain every where intensely congested; substance of brain natural, very little fluid in the ventricles. In each lateral ventricle there was a tumour the size of a very large green pea, and of pyriform shape, feeling gritty between the fingers, and containing several small deposits of calcareous matter, attached to the choroid plexus. Substance of cerebellum and tuber annulare congested.

Thorax,—cavities of right side of heart full of dark colored blood, and firm fibrinous coagula. Cavities of left side empty. Valves and muscular substance of heart healthy. Both lungs, but especially the right intensely congested, more particularly posteriorly, bleeding freely when cut. Sections of a mottled reddish colour.

Abdomen,—liver enlarged and congested, its upper surface adherent to the diaphragm; spleen, rather large, congested, and friable; kidneys healthy.

Case of Serjeant Richard Govier, aged 34 years, completed years of service 14,—in India $6\frac{4}{12}$ths.

An Englishman, a labourer, height 5 feet 9, stoutly made, dark brown hair and hazel eyes, temperate habits. Had an attack of "sun-fever" in Central India in May 1858, and while stationed at Saugor last year had frequent attacks of intermittent fever, from the effects of which he has still a sallow, unhealthy appearance. Has been suffering from a slight daily attack of fever since the 23rd, and was admitted, in consequence, yesterday morning. At 1.25 P. M. was attacked suddenly with severe pain in the head, vertigo, intense pain in the chest, and extreme anxiety.

His pulse was very frequent and sharp, his face pale, and his skin every where burning to the touch. His pupils were slightly contracted. His expression was indicative of great alarm, and his arms were tossed about wildly. On stethoscopic examination, the heart's action was found to be tumultuous, and loud blowing respiration was audible all over the chest. The cold douche was applied at once over the head, chest, and back. An ounce and a half of brandy and water was given, but immediately rejected, the effort of vomiting appearing to relieve the chest. A sinapism was applied to the chest, and a blister to the nape of the neck, a purgative enema was given at once, but it had to be repeated before his bowels were acted on. The urgent symptoms gradually subsided, and the head and surface were kept cool and moist during the remainder of the day. There was at first (about an hour after the commencement of the attack) considerable tendency to somnolence, but a comrade was employed to prevent him from sleeping till night. During the night he slept little. This morning he is evidently better, but still alarmed, and he complains much of vertigo. Bowels quite free. Blister has risen well.

St. Mist. Salinæ ℥ i. interdiu.

Ap. Aqua Frigida Capiti.

Diet—spoon, with ice ad libitum.

29th May.—Continues to improve, but is still giddy, and his pulse continues frequent, though less so. Pergat and St. Quinæ Dis : gr. ii. ter in-die.

Diet as before.

30th.—Pulse much reduced—in frequency, skin moist, giddiness much less, bowels not open.

Pergat and St. Pulv. Rhei : Comp : ℥ i.

From this date he gradually improved, his bowels, however, requiring to be regulated by medicine for some time ; and he was discharged free from complaint on the 10th June, his diet having been gradually increased as his appetite returned.

Case of Pte. John Linehan, aged 26 years; completed years of service 8 : in India 6 $\frac{6}{12}$ths. Date 28th May.

An Irishman, a labourer, height 5 feet 7, moderately stout, sanguine temperament, hair formerly brown but now grey, eyes grey, generally a healthy man, but of intemperate habits. Suffered repeatedly from intermittent fever in Central India last year. Came to hospital on the night of

the 26th with a slight return of that disease, and complaining of constipation and uneasiness at the epigastrium. A dose of Pulv. Rhei. comp: was given, which opened his bowels, and a sinapism was applied to the epigastrium. Yesterday morning he was quite free from fever. At 3 P. M. he was attacked suddenly with violent maniacal excitement. His pulse was frequent, full and bounding, his skin hot but moist, and his face flushed. His breathing did not seem to be affected, but from his violence it was impossible to make a stethoscopic examination of the chest. The cold douche was applied over the head, chest, and back. Four leeches were applied to each temple. An ounce of antimonial mixture (containing Ant. Pot. Tart. gr. $\frac{1}{4}$) was given every two hours; and his bowels were freely moved by a purgative enema. The excitement gradually subsided, he has slept a little during the night, and is now much better and quite collected. Pulse still accelerated and firm.

Cont. Mist. Antimonii.
Ap. Aqua Frigida Capiti.
Diet—Spoon, with ice ad libitum.

29th.—Slept during the night, and his pulse is going down, but he complains of headache and vertigo, and his pupils are slightly dilated.

Pergat; et, Ap. Emp. Lyttæ. Nuchæ.

Vesp.—Headache increased, pulse more accelerated; bowels not open.

Ap. Hirudines ij. temporibus et hab: enema purg.

30th.—His bowels were freely moved by the enema, and he has been much better since. Pulse perfectly quiet, no headache, pupils rather dilated.

Omit. Mist. Antimonii. St. Mist. Salinæ ℥ i. interdiu.

31st.—Was rather restless during the night and did not sleep well. Pulse slow, pupils dilated, bowels free.

Pergat ~~and~~ St. Quinæ Dis. gr. ii. ter in-die

1st June.—Slept well last night, and is free from complaint to-day except of debility. Pupils less dilated, pulse slow, bowels open, skin cool and moist.—Pergat.

From this date he continued to improve steadily, and he was discharged free from complaint on the 10th June, his diet having been *gradually increased.*

From what has been stated in the preceding pages, it must, I think, be admitted that the opinion expressed in the beginning of this paper, viz., that the symptoms of "insolatio" vary very much under different circumstances, has

been established by the results of experience. What then is the true nature of this disease? Is there any one symptom, or pathological state, common to all cases of it, others being added according to various modifying circumstances; or, is it simply an affection of the brain resembling concussion, from heat applied directly to the head, according to one opinion—or apoplexy, according to another—or fever, according to a third—or asphyxia, according to the latest, and seemingly the most prevalent at the present time?

My object in the present paper is rather to give an accurate statement of facts, than to deduce any new theories from them; but the question is one upon which it is necessary for every one who may be called on to treat the disease to form an opinion; and I shall, therefore, endeavour to express shortly the views which I have been led to form on the subject.

1st. It will scarcely be doubted that in cases such as those described as occurring in South Africa, in which a person previously in perfect health falls down suddenly in a state of complete insensibility, on being exposed to extreme heat and a bright glare of light, and recovers completely, in a short space of time, with or without treatment, and without any permanent bad effects, the affection is purely a nervous one, totally unconnected with blood disease and uncomplicated with any serious local congestion. This seems to be admitted even by those who look upon the disease in India as of a totally different nature.

Under such circumstances I do not know to what the symptoms can be attributed, except the over stimulation of intense heat, acting on the surface of the body, assisted probably by the effect of a bright glare of light on the eyes. Of the effect of the latter on the nervous centres any one may satisfy himself by a very simple experiment, viz., by walking "in the sun," on a hot and bright day, with a "wideawake" hat of the usual shape on his head, until he begins to find discomfort from the exposure, and then observing what an extraordinary amount of relief follows immediately the simple expedient of turning down the brim; relief not confined to the eyes alone, but apparently extending to the whole nervous system.

As to the precise state of the nervous system induced by the sun's rays in cases of "insolatio," under such circumstances it is needless to speculate in the present state of our knowledge. It must suffice for us to know that

the effect of heat on the nervous periphery on the surface generally, produces directly symptoms of "insolatio," as it does to know that the shock to the nervous system produced by a blow on the stomach sometimes causes sudden death.

It is obvious, however, that the affection of the nervous system which produces symptoms of "insolatio," occurs in such cases suddenly, although the cause may have been in operation for some time; and that it must be, to a considerable extent, of a reflex nature.

2nd. In cases of "insolatio," occurring in the field and in quarters, in India, I believe that a similar affection of the nervous system, from the over stimulation of intense heat, forms in general the first link in the chain of diseased action; that it constitutes the whole disease in many rapidly fatal cases; and that the far more serious nature of the ensuing train of symptoms, in ordinary cases, is due partly to the much greater intensity of the exciting cause, but chiefly to the occurrence of various complications, the result of peculiar predisposing causes and of other modifying circumstances. That the affection of the nervous system is always precisely the same, I do not mean to say: on the contrary, from the account given above of the symptoms as they occured on our march to Calpee, it is obvious that it often presents important differences, even in cases occurring at the same time. It would probably be more correct to speak of the affection as one of the nervous *systems*, than of the nervous system generally, for there is little doubt that the sympathetic system is involved in it to as great an extent as the cerebro-spinal. Is it possible that a disturbance of the equilibrium normally existing between these systems may be the cause of the derangement of the balance of the circulation so often ensuing in cases of "insolatio," in which the immediate effect of the impression on the nervous periphery is not sufficient to produce failure of the heart's action, and sudden death.?

The chief complications which the disease presents, in ordinary cases, are cerebral and pulmonary congestions. In Catchpole's case, the liver and spleen were also found to be congested, and it is probable that more or less congestion of the various organs in the abdominal cavity would frequently be found, if it were carefully looked for. Congestion there, however, is of very secondary importance in this disease. The painful state of exaltation of nervous irritability, descri-

bed as having been witnessed occasionally, is fortunately only of very rare occurrence.

The most common complication is undoubtedly pulmonary congestion, evidences of which are found on *post mortem* examination in the majority of fatal cases. This was first pointed out, so far as I am aware, by Dr. Marcus Hill, in the Vol. of the "Indian Annals" for October 1855; and the correctness of his statements has since been confirmed by many examinations. Some have even gone so far as to say that pulmonary engorgement is always present; and that the disease is simply asphyxia, from imperfect aëration of the blood, owing to the rarefaction of the air from heat. To this opinion, however, it is impossible to assent, without disbelieving the observations of various medical officers who have found the lungs to be perfectly healthy on *post mortem* examination in not a few instances, and so slightly affected in others, as to debar all idea of death having been the result of arrestment of the circulation through them. This complication seems to be much more common in cases occurring in Quarters than in those which occur after protracted exposure in the field. There can be no doubt that engorgement of the lungs would have been found, had examinations been made, in a large proportion of the cases which proved fatal in H. M. 43rd L. I. in 1858, and that the copious discharge of frothy mucus which so often preceded death, was an evidence of its existence towards the termination of the disease; but that it existed in the slighter cases, or in the commencement of the disease, I do not believe. No patient either in the commencement of the attack, or after recovery, ever complained to me of pain or any uneasiness in the chest; nor were any of the cases in which recovery took place, followed by cough, or any other sign of pulmonary lesion; although in some of them complete insensibility had lasted for hours, and if the disease had been simply asphyxia, some sequelæ of so formidable an affection might surely have been looked for.

In all, except one, of the cases which occurred here, however, the affection of the lungs was evidently present from the first, and, from the accounts which have been published, of the disease, as it has appeared at various other stations in different parts of India, it is obvious that such is the general rule *in Quarters.*

It is difficult to account for this difference in the course of the disease in the field and in quarters. From the state of

the blood in men who have undergone protracted exposure in the field, it might have been expected, a priori, that the difference would be found to be the other way; but, perhaps, the smaller quantity of the circulating fluid may more than compensate for its greater impurity; and the greater prevalence of plethora in quarters may be the true explanation of the greater frequency of pulmonary congestion there. It has been already mentioned that our first cases in the field occurred in some of the stoutest men in the regiment. It has appeared to me, also, that the disease is more rapidly fatal and more frequently attended with symptoms of pulmonary engorgement in men of plethoric habit than in others.

Nearly the same may be said of cerebral as of pulmonary congestion, except that evidences of it are not so constantly found on *post mortem* examination. It is a secondary complication of a very serious nature, and of very frequent, but by no means of invariable, occurrence.

The peculiar affection of the eye which I have noticed as characterizing the disease as it occurs in the field does not seem to have attracted the attention which it surely deserves. I do not know any more constant symptom of any disease. It was never wanting except in a very few convulsive cases, and in one rapidly fatal case in a young officer, in which death took place in quarter of an hour from the moment of attack. It does not appear, however, to be nearly so well marked in cases occurring in quarters; and perhaps its more constant occurrence in the field may be attributable to the long previous exposure of the eyes to the glare of the sun in camp. With this symptom, at all events, obstruction of the pulmonary circulation can certainly have nothing to do.

The peculiar pallor of the face and of the surface generally, which has been noticed, seems also to be more an attribute of the disease in the field than in quarters; and I do not know how its being so is to be accounted for, except by the greater prevalence of plethora in quarters.

Before proceeding to notice the treatment employed in the disease, and the prophylactic measures which the experience of the late campaign points to for its prevention; a few remarks on the chief predisposing causes, and their modus operandi may not, perhaps, be out of place.

These may, in a few words, be said to be—

1. Plethora and unacclimatization.

2. Debilitating causes of every kind; particularly such as lower the tone of the nervous system, or increase its irritability; and

3. A febrile state, from whatever cause.

As to the first of these, I have little to add to what I have already stated, viz., that the disease appeared to me to be more frequent, and also more fatal in men of plethoric habit than in others. Some such men certainly escaped throughout the campaign, when many of their slighter comrades perished; but there can be no doubt that, as a general rule, they incur greater danger from exposure than others. That unacclimatized men are more liable to the disease than others seems to be an established fact; but I can say nothing on the subject from my own observation, as, during the late campaign there were, fortunately, no such men in the regiment under my charge. That they should be more liable to the disease on exposure than others might be expected, a priori, from their constitutions not having yet accommodated themselves to the great change of climate and circumstances, to the limited extent even to which the European constitution can accommodate itself to such a change; and from their more plethoric state generally; and their greater nervous irritability.

2nd.—That exhaustion acts as a most powerful predisposing cause, the experience of the late campaign, I think, abundantly proves. The men had been exposed to an extreme temperature for a long time before the occurrence of the first case of the disease—a reference to the table at the end of this paper will show for how long ——————, but it was not till the 6th May, by which time they had lost flesh greatly, and in a great measure their robust appearance, that the first case of "insolatio" occurred.

In the field they had, of course, few or no opportunities of indulging to excess in intoxicating liquors; but, as has been already stated, many of the men first struck down had at some former time been addicted to intemperate habits; and there can be no doubt that such habits produce the strongest predisposition of all to this disease. Of this predisposing cause, however, the same may be said as of plethora. Not a few drunkards escaped during a campaign which proved fatal to many of their more temperate comrades.

We had, fortunately, few serious cases of disease on the march from Bangalore to Jubbulpore; and such as there were, were left at the latter station. There was, therefore,

no opportunity of estimating the effect of debility from sickness as a predisposing cause; but there can be no doubt that it would be found to act as such. The same might be said of debility from improper or insufficient food, of the effect of which, also, we had no opportunity of judging. Impure air may, and probably does, act as a powerful predisposing cause in quarters; but it can scarcely do so in the field, unless the men are greatly over crowded in their tents. At the season at which "insolatio" prevails, malaria is never present in the air in any great degree of intensity. It may be so on the banks of the great rivers, or in the neighbourhood of extensive swamps or jungles of unusual density, but it certainly is not so in the open field, or, so far as I had an opportunity of observing, in any part of Central India. The few cases of paroxysmal fever which occur at that season are generally slight, and occur from ordinary exciting causes, in men who have previously acquired the malarious diathesis.

3rd.—That a febrile state, from whatever cause, if occurring during exposure to extreme heat, causes a strong predisposition to "insolatio," there cannot, I think, be any doubt. I have seen symptoms of that disease supervene, and proceed rapidly to a fatal termination, in a case of modified small-pox, in which, until the occurrence of these symptoms, there had been no reason to apprehend any danger. I have seen the same several times in cases of common continued fever of some standing; and there can be no doubt that the same has often been observed in cases of remittent fever. So often, indeed, has this been observed, that the symptoms of "insolatio" have been attributed to the presence of malaria in an unusually intense form—an opinion which I shall not stop to refute.

The peculiar febrile symptoms which have been described as prevailing to so great an extent during the hot season of 1858, and which were evidently the result of protracted exposure to extreme heat, in men exhausted by a continuous march of upwards of a thousand miles, were regarded by several medical officers as differing only in degree from those of "insolatio." In this opinion, as I have already said, I cannot agree; but there cannot be any doubt that these symptoms produced a very strong predisposition to the more formidable disease. The heat of the weather, in producing them, probably acted in at least three ways, viz.:

1. By producing the dry, harsh, state of the skin which

has been described, and by causing total interruption of perspiration.

2. By rarefying the air and thereby producing less perfect depuration of the blood in the lungs, and

3. As pointed out by Assistant Surgeon Wrench in his report on the left wing 12th Lancers, by constantly overstimulating the nervous system, and so bringing on gradually, a state of irritability and pervigilium, much in the same way, as that state is brought on by the continued abuse of alcoholic stimulants.

The effect of the interruption of the function of the skin must, of course, have been in the first instance a great increase of the watery and saline constituents of the blood; the slightly increased discharge from the kidneys being quite out of proportion to the increased duty thrown upon them. The temperature of the blood must also have been materially increased by the total cessation of the cooling process by evaporation from the surface;* and the noxious organic matters usually thrown off by the skin in combination with, or in addition to, the perspiration, must also have been retained in the circulating mass, and have gradually accumulated in it. The bowels, it has been stated, were almost invariably constipated, so that no part of the functions of the skin was vicariously performed by them.

The imperfect depuration of the blood in the lungs, from the rarefaction of the air, has been a good deal insisted on. That it must exist to a certain extent, when the heat of the weather is sufficient to produce cases of "insolatio," is unquestionable; but I am not sure that the effect of the rarefaction of the air *per se*, has not been over-estimated. Cases of "insolatio" seem to be of much less frequent occurrence on high than on low ground; and they are, I believe, nearly unknown at the most elevated hill stations, where the air must always be greatly rarefied. During the campaign in Central India, however, there were other causes in operation tending to produce impurity of the blood. As has been already stated the noxious matters usually eliminated by the skin were retained in consequence of the failure of its function; and, from the great waste of tissue constantly going

* The fluidity and increased temperature of the blood must, of themselves, have tended to produce pulmonary congestion; but in quarters where that complication seems to be most frequent, attacks of "insolatio" do not seem to be generally preceded by this peculiar febrile state. The effect of the direct application of over heated blood to the nervous centres is still a subject for investigation.

on, the circulating mass must have been loaded to an unusual extent, with effete matters. It is possible that the compensating effect of more frequent respiration may not have been sufficient to ensure the performance of the extra amount of work thus thrown upon the lungs. Is it possible, also, that the continued inspiration of hot dry air may have produced to any extent a similar effect on the pulmonary mucous membrane, to that which exposure to the hot winds undoubtedly produced on the skin, and that its powers as an exhaling surface may have been diminished?

The effects of the constant stimulation of excessive heat, in producing nervous irritability and pervigilium have already been described, and it is unnecessary farther to allude to them. From personal experience I can bear witness to the extreme misery resulting from them, in combination with the other states which have been described.

Before leaving the subject of predisposing causes, it is necessary to allude to an opinion which I have several times heard mooted, viz., that the electric state of the atmosphere is in some way connected with the production of cases of "insolatio." For this opinion there are, at all events, plausible grounds. Every one is familiar with the depressing effects on the nervous system produced by an atmosphere overcharged with electricity; and it has often been observed that cases of "insolatio" occur with increased frequency immediately before a thunderstorm, and that they cease as soon as the electrical discharge has taken place. It has already been mentioned that a thunderstorm passed close to Madras on the afternoon of the only day of this season on which any cases of "insolatio" occurred in the 43rd Light Infantry here; and also that the severest outbreak of the disease, if such a term is admissible, during the hot season of 1858, viz., that at the foot of the Bisramgunge ghât, was followed by a similar storm on the 26th May. Several similar facts are recorded in the published accounts of the disease. It is undoubtedly true that the greatest heat generally occurs before a thunderstorm; and that the cooling of the air by the rain which accompanies these storms is generally sufficient to account for the cessation of the disease after them; but the day on which the cases of "insolatio" occurred here, as has been stated, was not by any means the hottest of the season; nor did any rain fall here on that occasion. That exposure to an atmosphere highly charged with electricity does cause a predisposition to "insolatio," I have not

the slightest doubt; but that it does more than that I do not believe. Cases of the disease occurred weeks before the storm of the 26th May 1858; and after that time many more cases occurred before the next electrical discharge.

No observations, so far as I am aware, have ever been made as to the quantity of ozone during the prevalence of "insolatio;" but the subject is well worthy of investigation.

With reference to the treatment of "insolatio" it is necessary to keep in mind the different ways in which death may take place from that affection; and these I believe to be four in number.

1. The affection of the nervous system alone, there can be little doubt, is the cause of death in many of the most rapidly fatal cases; more particularly in those which occur during active exertion "in the sun," when, of course, the exciting cause acts on the surface with greatest power; death, in such cases, being often nearly instantaneous. The manner in which death is produced in such cases, is probably by arrest of the heart's action. The affection of the nervous system, however, may not be of itself sufficient to produce death at an early stage, and it may do so at a later period, in combination with either of the complications which have been described, viz.:

2. With obstruction more or less complete of the pulmonary circulation.

3. With cerebral congestion.

(It is, perhaps, needless to say that these states may, and generally do, exist together, and that the latter may be, to a great extent, the result of the former; but that symptoms of either may predominate.)

4. The patient may recover from the nervous affection—from the pulmonary obstruction, if it has existed, and from the symptoms of cerebral congestion, his breathing becoming free, and his intellect perfectly clear; and still he may die, two or three days afterwards. In such cases the attack of "insolatio" is followed by a severe febrile attack, and death seems to be the result of serous effusion within the cranium. Perhaps it would be more accurate to say, as to cases occurring in the field, that the febrile symptoms which existed before the attack of "insolatio" continue after its termination, aggravated, of course, by the occurrence of so serious a disease during their course; and that, in consequence of this aggravation, they proceed to a fatal termi-

nation. I have seen death take place in this way in more cases than one ; and it has appeared to me to be most apt to do so in cases attended at first with much convulsion. Whether or not this termination has been observed in cases occurring in quarters I do not know.

As to the treatment of the first class of cases little need be said. Treatment is not likely to be of much avail in them ; and, from the early period at which death often takes place, there is frequently no opportunity of employing it. The measures indicated are, I believe, the cold douche, keeping the surface wet and exposed to a current of air, or assiduously fanned, exclusion of light as far as is possible, and the immediate employment, if practicable, of stimulants, both external and internal. Depletory measures of any kind, in such cases, are of course quite out of the question.

In the ordinary, and less rapidly decided cases, there can be no doubt as to the benefit often derived from treatment ; but, to be attended with success, it is necessary that it should be employed with the utmost promptness ; and there is probably no other disease in which any delay in the application of remedies is fraught with so great danger. The treatment adopted in such cases in the field was as follows. The patient having been stripped of his outer clothing, if he had any on, as speedily as possible, and placed in a sitting or semi-recumbent posture, the cold douche was applied from a height of three or four feet over his head, and along his spine and chest ; his extremities being at the same time sponged over with cold water. In many cases consciousness was speedily restored by this remedy alone ; the first symptom of convalescence being, generally, relaxation of the pupils ; but it had frequently to be repeated several times, on account of a return of insensibility. Its effect, however, had to be carefully watched ; and in a considerable number of cases it had to be discontinued altogether, on account of failure of the pulse evidently occasioned by it. In such cases the application of cold to the head was all that could subsequently be borne. After the employment of the douche the hair was cut short, and a blister applied, in all cases, to the nape of the neck ; the surface having previously been well sponged over with acetum lyttæ. The best effects were often produced by this remedy. In all cases in which the first violence of the attack had been got over, I felt greatly increased confidence as to the ultimate result, as soon as vesication had taken place. In several instances insensibility recurring after an interval of

ten or twelve hours was completely removed by the application of a second blister to the vertex; and in a few cases the remedy had to be repeated still oftener. There was no room for doubt as to its effect. A blister was also sometimes applied along the spine; but this was only done in a few of the worst cases, and I never observed any effect from it. Sinapisms were generally applied to the extremities, and to the chest or sides. As soon as possible after the employment of the douche, a strong purgative enema was invariably given: and it had often to be repeated several times before any effect was produced on the bowels. To this remedy also I attach much value. The relief which followed a free action on the bowels in the febrile attacks so prevalent during the hot weather, has been already mentioned; and I believe that the same measure is equally indicated in cases of "insolatio."

A few leeches were applied to the temples in some instances, with the view of relieving the congestion evidenced by the state of the eyes; and in a few cases more or less relaxation of the pupils followed their application; but, beyond this, I cannot say that I ever saw much, or indeed any good produced by them. I should be inclined to continue the practice, however, in suitable cases, not with any hope of thereby curing the disease, but simply with the view of obviating or removing some of its effects. Venesection was not employed in any case. When danger is to be apprehended from failure of the heart's action, in consequence of the intensity of the nervous affection, there cannot be any doubt as to its inexpediency; and the prevailing opinion among officers of experience in the treatment of this disease is certainly against its employment even in ordinary cases. In the cases which have been recorded in which it was employed, it seems to have been generally hurtful, and to have hastened the fatal termination. It is still, however, recommended by some; and there may be exceptional cases in young men of plethoric habit, recently arrived in the country, and not exhausted by fatigue, sickness, or intemperate habits, in which it may be employed with benefit; but I doubt if even in all such cases it would be found to be unattended with risk. In a paper in the last number of the "Indian Annals," various symptoms are mentioned as either indicating or forbidding the employment of bleeding. These symptoms, however, are such as never occur, or, at all events, such as I have never seen, *in a body of men in the*

field, and exhausted by previous fatigue and exposure. A damp cool head, profuse cold perspiration, and cold extremities, on the one hand; and, on the other, dilated pupils, slow pulse, and laborious respiration with stertor, if by that is meant the slow snoring breathing of true apoplexy, are symptoms which were not presented in any of our cases. The observations on which such rules are grounded must have been made under very different circumstances.

In a paper in the May number of the "Edinburgh Medical Journal," arteriotomy has been recommended as the measure upon which chief reliance should be placed; and it is stated to have been successful in nine out of eleven cases in which total insensibility was present. Such an amount of success is certainly far beyond what can be expected from any other mode of treatment; and, if anything like the same results should be obtained on more extensive trials, there will be no room for doubt as to the advisability of the measure. To enable us to form a just estimate of its value, however, and to decide on the cases to which it is applicable, a much more minute account of the symptoms in each case in which it has been employed, and of the circumstances under which they occurred, will be necessary.

As a general rule, no medicine could be given by the mouth, as the patient was incapable of swallowing; but in the slighter cases, or in those seen at a very early period, a stimulant was sometimes given and a purgative always. Benefit was certainly derived from stimulants occasionally, especially in those cases in which the pulse was extremely small and weak; but it appeared to me that the stimulant should always be a mild one, and repeated, if necessary. In a few instances in which it was impossible to give anything by the mouth, stimulants were given in the form of enemata. In these cases, however, no effect at all seemed to be produced by them. In such cases the continued inhalation of ammonia appears to be a more efficient method of stimulation. Turning the patient occasionally over on his face, (as described in Catchpole's case) is a measure which should not be omitted in any case in which the breathing is much oppressed, and the bronchial tubes are loaded with mucus. Great temporary relief invariably follows it; and, if it is still possible for the pulmonary circulation to be restored to its normal state, the removal of the fluid by which the bronchial tubes are filled, must add greatly to its chance of being so.

During convalescence the treatment consisted of regulation of the bowels, always inclined to be constipated; the employment of saline diaphoretics and small doses of quinine; and occasionally the exhibition of an opiate at night, in cases in which sleeplessness continued. Such cases were not infrequent. The acetate and hydrochlorate of morphia were the preparations used, and they were, for the most part, given in combination with a small quantity of the antimonial solution. They certainly did good in some cases, and, so far as I could see, they never did harm in any. The skin frequently remained dry, and the pulse extremely rapid for some days; and the patient had often a heavy look for a still longer period. In a few cases congestion of the conjunctivæ and a copious serous discharge continued for some time after all other symptoms of the disease had been removed, and required the ordinary treatment.

It is scarcely necessary to say that so serious a disease was followed by debility, varying in degree according to the severity of the symptoms in each case, and the previous state of the patient; and that the system only regained its tone and vigour by slow degrees. Many men complained for a long time of vertigo on any exposure to the sun; and most suffered from fever during the ensuing malarious season. The prevalence of fever at that season, however, was not by any means confined to men who had suffered from "insolatio."

The treatment which has been described is that which was adopted in all the ordinary cases of "insolatio" in the field; but, without modification, it is not adapted for the rare cases of the convulsive form of the disease attended with extreme nervous irritability, which have been described. Having witnessed the uselessness of the ordinary remedies in several such cases, (the douche is, of course, inadmissible from the agony which it occasions,) I was induced to try in several others the effect of the inhalation of chloroform. The result was highly encouraging. After a few inspirations the convulsions for the most part ceased, and as a general rule sleep was very easily induced. In one or two instances certainly, after a considerable interval of consciousness, the febrile symptoms increased in severity, coma supervened, and was followed by death; but I am satisfied that in some instances life was saved by this remedy, and that in all in which it was employed, life was prolonged. The cases in which it can be employed, however, are comparatively few,

and further observations on the subject are required. I may add that very great care is necessary in its employment, and that the inhalation must be suspended at once as soon as any effect is perceptible on the pulse.

There are many cases, I believe, in which chloroform might also be given with benefit internally.

The length to which this paper has already extended prevents me from going into the subject of prophylactic measures for the prevention of "insolatio," on field service, so fully as I had intended. By what has been said as to the predisposing causes of the disease, however, much that might have been brought under this head has been anticipated ; and I shall endeavour to avoid repetition. I shall, therefore, say nothing as to the medical measures rendered necessary by the presence of any of the predisposing causes that have been described.

It is scarcely necessary to say that before a corps takes the field for service during the hot weather, and especially if the service is likely to be protracted or severe, all weak and sickly men should be carefully weeded out to be left behind ; and that, while it is in the field, it is of much more importance than at other seasons that all the usual sanitary precautions should be strictly enforced.

These precautions it is unnecessary, and it would be out of place, to detail here, the danger from "insolatio" being only one of many that have to be guarded against ; but there are some precautions which, with reference to the prophylaxis of "insolatio," it is necessary to keep specially in mind.

1. As to the dress of the men in the field.

As the marches are generally conducted during the early hours of the morning, for the most part before sunrise, it is necessary that the costume should be suitable for this period of the day, as well as for the scorching period which follows, when the men are for the most part in their tents. It is necessary, also, that it should not be too conspicuous, that it should consist of materials readily procurable everywhere, of sufficient strength, of slow conducting power, of a color by which heat is not very readily absorbed and not requiring too frequent washing, and that it should be as loose and as light as possible. It would be very easy to devise a dress affording much better protection from the heat of the sun than any now in use, if there were no other conditions to be fulfilled ; but, for practical purposes,

I do not think that the *light* khakee uniform adopted towards the end of the late campaign is likely to be much improved upon. It is necessary, however, that a flannel shirt should be worn under it, as when moistened by perspiration, the cotton material of which it consists becomes a good conductor of heat, and the men would otherwise be liable to sudden chills, when exposed to the influence of the hot winds, either on leaving their tents, or during the halts on the line of march. Except during the very hottest weather, I believe that a flannel belt round the loins may also be worn with advantage. The dark slate colored dress now frequently worn instead of khakee, is of course objectionable from its color.

The stiff leather stock has now been abolished as a part of the Military costume, and a soft neck cloth substituted for it, how much to the comfort of the soldier it is needless to say. The stock, however, was rather a theoretical than a practical evil on field service. I never knew it to be worn on such service, either here or elsewhere, except by such men as preferred it to anything else. During hot weather it is of importance not only that the neckcloth should be perfectly loose, but that the shirt collar should either be open or made so wide as to prevent all risk of its pressing injuriously on the veins of the neck. This may seem a small matter, but it is one which exercises not a little influence upon the comfort of the men during such weather.

A suitable head dress for troops in India is still a desideratum; all those in use being more or less objectionable. Helmets, such as those described by Mr. Jeffreys in his elaborate work on the subject would, no doubt, be found much cooler and more comfortable during exposure to the sun than any which have as yet been tried; but there is little chance of so complicated a head dress being adopted for soldiers; and if there were, it is doubtful, how far it would stand the usage to which it would sometimes be exposed by them. The principles upon which it is constructed, and which are very clearly laid down in Mr. Jeffreys' book, might, however, be carried out, not so perfectly perhaps, but to an extent which would be practically sufficient, by a more simple mechanism; and it is to be hoped that the attention of some ingenious manufacturer may be directed to the subject. The present helmet of wicker work, covered with khakee cloth, and a diminutive turban of the same material, is a very imperfect substitute. The principles of convection

and slow conduction are taken advantage of to a very limited extent in its construction, and that of reflection is altogether ignored. The most serious objection to it, however, is, I believe the hard unyielding nature of the part which presses against the circumference of the head. The circulation in the scalp cannot fail to be more or less arrested by the pressure of this part, and it is needless to say that any such interference with the superficial circulation must re-act injuriously on that within the cranium. This is not a theoretical objection, but the result of many observations made years ago with hats of different shapes and materials. It is one, however, which, in the construction of a new head dress, it would be very easy to avoid. The projecting brim, if of inflexible material, cannot be made of sufficient length to give the desirable amount of protection to the eyes without being so long as to interfere with the use of the rifle; but this might be obviated by a hinge and spring in the forepart of the brim. Posteriorly it is impossible to make the brim long enough to protect sufficiently the back of the neck, and in any head dress that may be devised that must be done by a thick screen of slow conducting material.

2. As to precautious on the line of march. These may be very shortly stated. The hour of marching must, of course, be regulated by the distance to be marched, and the nature of the road. The most usual mistake is, I believe, marching too early. The coldest period of the day, it is well known, is generally that immediately preceding sunrise; and the temperature seldom rises very much for the first hour after sunrise. If the troops are on their new ground at the end of that time, it is, as a general rule, early enough; and at no period of the year can it be necessary for them to be on the ground more than half an hour earlier. If the march is commenced at an earlier hour than is necessary to enable them to arrive at that time, they are needlessly deprived of a corresponding amount of sleep, at the period when it is most refreshing, and at which alone it is possible for many of them to obtain it. While on the march, the pace should never be allowed to exceed 3½ miles an hour; and in a hilly country ample time should always be allowed for the rear to come up, after the head of the column has reached the top of an ascent. There should be a halt for seven or eight minutes, every hour, or oftener if the men are much exhausted, and a longer halt, half way, when, as well as before starting in the morning, each man

should have a cup of coffee and a biscuit. An ample supply of water should be provided for the men by bheesties being attached to each company and always compelled to march with it. These individuals, to do them justice, are seldom out of the way when they are wanted; and, loaded as they are, they keep up with the column in a wonderful way; but they, of course, require to be looked after; and during very hot weather it would be well if their number were somewhat increased.

No man should be allowed to fall out for any purpose without being accompanied by a Non-Commissioned Officer, whose duty it should be to bring him up to a medical officer at once, if sick; and if not, to bring him up to the column at the next halt. I have found it to be a good plan to have *all* men falling out on the march brought up to the hospital tents for examination, immediately on the arrival of the regiment in camp. I have often in this way detected disease which would otherwise have escaped observation at the time.

A medical officer, with one or two coolies carrying a few bottles of the medicines in ordinary use, and a small supply of brandy, should always remain between the rear guard and the column; and all men complaining of sickness or exhaustion should be at once prescribed for by him, and, if necessary, put into sick carts or doolies, some of which should always be at hand for the purpose. The supply of doolies during a hot weather campaign should never be, as it was with us, below that sanctioned by regulation. It would be a great boon to the sick, if some of the doolies were supplied with kus-kus mats instead of canvass at the sides, and if some of the coolies employed for other purposes in camp during the day, were directed to keep these mats wet on the line of march. In the event of their failing to do so, the patients themselves might keep the parts of the kus-kus next their heads sufficiently moist to ensure a considerable degree of coolness, by taking a few bottles of water with them in the doolies for the purpose.

It is scarcely necessary to say that the men should carry nothing on the march, but their rifles and ammunition—the quantity of the latter being kept as small as may be consistent with safety—and that care should be taken to prevent them from filling their haversacks with a quantity of rubbish, as they are very apt to do. They should, of course, be allowed to march "easy," and loosely, when military reasons ad-

mit of their being so, more particularly in passing through jungle or ravines; and no halt should ever take place on such ground, when there is any better within a moderate distance. After the sun is up, halts may be advantageously timed so as to admit of the men taking advantage of the shelter afforded by open topes of trees, but, before sunrise the more open and bare that the ground is, the better it is adapted for the purpose.

3. As to encampments and duties in camp.

Camps should invariably be formed on as high and open ground as possible. Topes of trees are often chosen for the purpose, but it is doubtful if the advantages offered by them are not more than counterbalanced by their disadvantages. Tents pitched under the shelter of trees are undoubtedly cooler during the day than others pitched on open ground, but they are, on the other hand, very much hotter during the night, and it is impossible, as a general rule, to sleep so soundly in them. I would never, from choice, pitch my own tent under a tree; and, unless the ground occupied by a tope were found to be the best in other respects in the neighbourhood, I would not select it as a site for a camp. It is the more necessary to insist upon care in the selection of camp grounds, as in marching through the greater part of the length of India, I have generally observed that the sites marked out by the "official" pillars are the most objectionable that could have been selected in the neighbourhood. In pitching the camp, as much space should be allowed between the tents as the ground will admit of; and it is needless to say that the tents should be pitched as speedily as possible. For their transport, camels and elephants should invariably be provided—carts never. The latter are always longer of reaching the new ground than the former, and, in spite of every care, they frequently break down or get upset—the consequence of such accidents being that the men are much longer exposed to the sun than is advisable or safe. Kus-kus mats should be provided for the doors of all the tents, or at all events for one door of each tent, and they should be so constructed as to ensure the doors being completely filled up by them. Mere screens hung up to the top of the doors, and swaying about with every breath of wind, are of very little use. Mats fixed on frames are more difficult to carry, but much more serviceable. They should be put up at the windward doors as soon as the tents are pitched; and these doors need not

be opened again till the evening. A sufficiency of coolies should be entertained for the sole purpose of keeping the mats wet. Unless this is done the mats will be found to be of very little use. There is no chance of their being kept wet by any other means.

For the hospital a better description of tents than that now in use ought to be supplied. When the 43rd Light Infantry was encamped at Nagode, there was, generally, a difference of from 20 to 30 degrees between the temperature of our hospital tents and that of some private tents, the property of the political and civil officers then at the station; the latter, of course, being provided with the best procurable cooling apparatus. The cost of one such tent, complete in every respect, would probably be nearly equal to the money value of one European soldier; and I am satisfied that if we had been supplied with one such tent, several lives would have been saved by it. Leaving all considerations of humanity out of account, it would be found, I believe, to be good economy to supply troops serving in the field, during the continuance of the hot winds, with the best description of tents for hospital purposes that can be procured, and with the best known means for keeping them cool. An abundant supply of water in camp is of the utmost importance; and care should be taken that the bags for containing it are in good repair—that they are hung up so as to be within easy reach of the men, and that they are kept constantly full.

The men in camp should not be employed on any kind of duty involving active exertion, when it can possibly be avoided; and they should be prevented from exposing themselves unnecessarily during the heat of the day. Cover of some sort should be provided for the sentries, during the heat of the day, and the number of sentries should be kept as low as is consistent with the performance of the necessary duties. The latrines should of course be on the leeward side of the camp, and not at too great a distance from it. During the hot winds they may be nearer the tents than at other times, without unpleasant effects, owing to the steadiness with which these winds blow. If there is no natural cover within a moderate distance, tents should be pitched for the purpose. The men should be instructed, when obliged to go out in the sun, never to leave their tents without having taken the precaution of putting a wetted towel or thick handkerchief over the head, under the cap, and around the

back of the neck and the face. No one who has not tried it can appreciate the effect of this simple precaution.

During the cooler hours of the evening the men should be encouraged to take some exercise, or at all events to leave their tents, so as to admit of their thorough ventilation, and, whenever it is practicable, a bathing parade should not be omitted. Many, perhaps most, of the men, of their own accord take advantage of every opportunity of personal ablution; but there are others, and those not a few, who object most strongly to contact with cold water under any circumstances. I have often been amused at the arguments by which they endeavour to procure exemption from attendance at bathing parades, and at the train of ills which they seem to consider the necessary consequents of cleanliness. It is scarcely necessary to say that it is of much more importance at the hot season than at any other that the skin should be kept perfectly clean by frequent ablution, and the performance of its functions thereby preserved *to as late a period as possible.*

There is still some difference of opinion as to the expediency or otherwise of continuing the present ration of spirits. There can be no doubt that men who have never been accustomed to the use of such a stimulus, would be much better without it in the field; but, taking soldiers as they are, I doubt if it would be advisable to deprive them altogether of stimulants, or to reduce those in use at once, from arrack and rum, to tea and coffee. On the contrary, during the continuance of the debility resulting from protracted exposure to intense heat in the field, I believe that a moderate stimulant is generally beneficial to men who have been long accustomed to it. There cannot be any doubt, however, that three or four ounces of raw spirit taken on an empty stomach must be injurious; and that it would be for the benefit of the men if some less fiery stimulant were substituted for the present ration. An allowance of malt liquor with their dinner would probably be the best form in which it could be given; but that would seldom be practicable in the field. The impossibility of carrying a sufficient supply for any considerable time would, alone, prevent it from being so. Wine, however, might, I believe, be substituted with advantage. It might be procured of sound quality, and at a moderate price from the Cape, without any difficulty; and I believe its substitution for spirits, not in the field only, but in all canteens in quarters, would be

attended with the best results—not the least of which would be that many young soldiers, whom the present system gradually converts into drunkards, would be saved from the risk of acquiring a taste for ardent spirits.

There is not much chance of the men indulging very freely in any of the usual intoxicating drinks while, in the field, simply because it is generally impossible for them to procure any of these drinks; but, in many parts of India, it is difficult to prevent them from indulging freely in "toddy," notwithstanding its nauseous taste, and the disagreeable effects well known to result from indulgence in it to a sufficient extent to produce intoxication—the end which the soldier has in view.* In many parts of the Dekhân, in particular, where the camp grounds are often surrounded on all sides by groves of palmyra trees miles in extent, it requires the utmost vigilance to prevent quantities of this noxious beverage from being brought into camp and speedily disposed of.

If an opportunity occurs of attacking the enemy during a hot weather campaign, it is unlikely that it will be possible to choose any particular period of the day for doing so, or, at all events, to confine the operations to any particular period. From an engagement under these circumstances both good and evil may be anticipated. The prospect of attacking an enemy will always raise the spirits of British troops; and the excitement of a successful engagement will also, invariably, prove a healthful stimulus to them; but, on the other hand, if the men are much debilitated, over exertion "in the sun," such as an engagement with a nimble footed enemy almost necessarily implies, is pretty certain to be followed by the occurrence of some fatal cases of "insolatio." These are risks from which it is out of the power and out of the province of the medical officer to protect the men. He may do something, however, by recommending that debilitated or unusually plethoric men should be employed on camp guard, or any other duty which will save them from much exposure; and it is certainly his duty to do so, although

* It is difficult to account for the comsumption of this filthy stuff by soldiers whenever they have an opportunity of getting it—its taste resembling that of a mixture of yeast, water, and very inferior vinegar. Perhaps the answer received some years ago by a commissariat officer at Bangalore, from a man whom he questioned on the subject, and who had previously admitted that he did not like it, may throw some light on the matter. The answer was, "I dont know, Sir, why we drink it, unless it be that we are forbidden to."

the chances are that he will receive little thanks from the men themselves for his interference on their behalf. On such occasions no exertion should be spared to have an abundant supply of water in the field, not only to quench the thirst of the combatants, but also for the treatment of any men that may be struck down by "insolatio."

A word in conclusion as to the name of the disease which forms the subject of this paper. It seems to have become customary, of late years, for every one who writes upon it to suggest a new name for it, in accordance with the views which he has been led to form as to its pathology. This, however, I shall not attempt to do. We ought, I think, to be contented with its official designation "Insolatio," and, although the application of that term to an affection which not unfrequently occurs at midnight, is certainly a "curiosa felicitas," I believe it to be the least objectionable of those which have been suggested. It describes a common, and certainly the most powerful exciting cause of the disease, and it does not imply any incorrect ideas as to its pathology, as, for reasons which have been given, I believe that some of the other names which have been proposed, do. The term "Erythismus tropicus" may, perhaps, be more appropriate; but, before adopting it, it is necessary that some definite meaning should be attached to the term Erythismus, which, so far as I am aware, has not been done yet.

Daily Maximum and Minimum temperature of 24 *hours in hospital tents, in the field, during the months of March, April, May, and June* 1858 ; *(Minimum taken between* 1 *and* 8 A.M., *except in a few rare instances, when, from the effect of a thunderstorm in the afternoon, the lowest temperature was at night.)*

Day of Month.	March.		April.		May.		June.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
	°	°	°	°	°	°	°	°
1	96	73	105	78	108	83	101	93
2	95	66	107	82	110	81	105	90
3	93	73	105	75	109·5	85	111	83
4	95	70	104	76	111	88	115	85
5	101	75	100	81	113	81	112	90
6	99·5	80	99	72	113	86	113	92
7	100	73	96	70	115	83	116	97
8	95	73	97	68	*114	88	114	92
9	92	71	101	66	107	78	114	89
10	95	68	104	63	109	80	115	95
11	95	78	105	67	109	83	113	94
12	99	76	103	80	108	83	109	93
13	89	75	102	74	108	81	110	93
14	101	66	104	82	112	86	109	94
15	104	70	104	76	114	83	106	88
16	106	75	107	75	111	85	109	88
17	106	75	104	75	108	88	110	90
18	104	80	104·5	72	109	88	111	91
19	91	81	107	68	108	82	112	86
20	102	68	102	79	115	90	112	94
21	103	74	106	77	117	98	108	91
22	102	70	107	73	118	97	105	91
23	102	69	111	82	113	91	‡ 100	93
24	103	74	111	78	113	95	98	92
25	104	76	112·5	77	110	95	97	92
26	105	64	113	85	103	76	93	80
27	105	69	109	88	103	79	96	82
28	105	72	103	86	† 97	84	93	85
29	105	77	109	86	98	87	90	80
30	104	67	111	83	100	86	101	82
31	105	55	0	0	101	90	0	0

* While at Nagode kus-kus screens for the doors of the hospital tents were supplied by the kindness of the Political Agent, and the tents were afterwards cooled by them, to a certain extent, but very imperfectly, as they did not fit accurately.

† From 28th May to 3rd June the record of the thermometer was kept in the house occupied as a hospital at Banda.

‡ From 23rd to 28th June the record was kept in the same house ; on both occasions wet "tatties" were employed to keep the hospital cool.

name *Keera-mar*, or worm-killer. It is reported to prove fatal to most kinds of worms, and may, therefore, be not only administered internally, but the infusion may be used in the form of enema, for the removal and destruction of the Thread-worm.

We may remark, in conclusion, that all enemas employed for the dislodgment of *A. vermicularis* from the rectum, by the addition of a small quantity of common salt, are rendered far more effectual than when employed in an uncombined state.

REMARKS UPON A TABULAR RETURN (No. 1), OR SYNOPSIS OF SIXTEEN CASES OF HEAT-APOPLEXY,

Which occurred at the Head-Quarters of H. M.'s 19th Regiment, stationed at Barrackpore, between May the 23rd and June the 14th, 1858.

By Depy. Inspr. Genl. of Hospitals T. Longmore, late 19th Regt.

The accompanying Synopsis exhibits the leading facts connected with the history, treatment, results, and, in fatal cases, the post mortem appearances, of all the cases of Heat-Apoplexy, sixteen in number, which have occurred at the Head-Quarters of H. M.'s 19th Regiment at Barrackpore to the date of this report. They took place between the 23rd of May and the 14th of June: a period marked by an unusually elevated degree of temperature, and generally by great dryness of the atmosphere.

With regard to the Station of Barrackpore, it may be premised that, while possessing nearly as many sanitary advantages as could be obtained in any part of Lower Bengal, there, at present, exists this disadvantage for European Troops: *viz.* the accommodation is only of a temporary and imperfect nature, in consequence of the station having been, hitherto, only occupied by native regiments. The soldiers of the 19th Regiment were quartered in nine different detached buildings, four of them being hired bungalows; an arrangement necessarily causing more exposure, and involving less constant supervision, than if the regiment were quartered in an ordinary barrack.

A few additional observations appear necessary to elucidate a little more the history of the cases above referred to; and, in doing so, I will follow the order of the headings above the several columns of the Synopsis.

Rank.—The nature of the duties and habits attached to the different ranks renders this of some interest. Of the 16 seizures, 5 occurred in Non-Commissioned Officers, and 11 in Privates of the Regiment. No case occurred among the

† 2 more cases occurred subsequently. See Table No. 3.

Commissioned Officers. If simple exposure to the external atmosphere and solar heat were sufficient, of themselves, to cause the disease known as "Heat-Apoplexy," these cases might have been looked for among some of the Commissioned Officers, as, from the absence of restriction, habits of life, and the nature of some of their duties, they were more exposed in the day time than the men who were confined to Barracks. Less general fatigue, however; better protection in respect to dress—the Officers wearing solah helmets, while the men wore the ordinary forage cap;—but, more especially, a purer atmosphere in their houses, and, consequently, a healthier habit of body, and greater power of resistance against morbific influences; apparently rendered them less liable to be attacked. The Non-Commissioned Officers appeared to run most risk. The proportion of Non-Commissioned Officers attacked was 1 in 14, while of Privates it was 1 in 61, of the strength at Barrackpore. Their occupations, especially when on orderly duty, caused them to be more exposed than the men with whom they lived. Of the 5 Non-Commissioned Officers attacked, 2 (cases II. & III.) were, at the time, on duty as orderly sergeants; 1 (case IV.) had had fever for several days, but was not exposed to the sun on the day of attack; 1 had been only slightly (case X.), the other (case I.) not at all, exposed to the sun on the day of attack. Of the Privates 8 were attacked by the disease within doors, 3 while on sentry. It may be mentioned that the ordinary number of sentries was considerably reduced, in the day time, during the prevalence of the hot weather referred to in these remarks.

Age.—Of the ages, 21 years was the youngest, 34 years the oldest ages, at which the seizure took place. Between 21 and 26 years, inclusive, 7 were attacked; 9 between 26 and 34 years. The ages of the men at Barrackpore were—

Under 18 years	and from 18 years	to 20 years	...	217
„	from 20 „	to 25 „	...	299
„	from 25 „	to 35 „	...	175
„	from 35 „	to 45 „	...	13

Habits.—Intoxication does not appear to have acted as an exciting cause in the cases which have occurred at Barrackpore. Of the men attacked one had been a teetotaller (case V.) for 4 months previous to the attack, 14 were men of temperate habits, and 1 intemperate. One man (case VIII.) though not addicted to intoxication, was known to be very intemperate in eating,—his habit being to devour a large quantity of food, and that rapidly. In him, the attack occurred

shortly after dinner, and, his habits being known, a mustard oil emetic was administered, which led to large pieces of unmasticated and undigested food being ejected from his stomach.

Where the Attack Occurred.—Of the 16 cases, 7 occurred in barracks, 6 in hospital, and 3 while the men were on guard. Of the 6 cases in which seizure took place in hospital, 1 had been admitted from barracks; 1 one hour; 2 one day; 1 two days; and 1 six days previous to the seizure: all for symptoms of remittent fever. The sixth of these patients was living in hospital as Hospital Sergeant, a strong, stout man, and apparently well in health before the symptoms of the attack came on. Of the three men on guard, 2 were seized while on sentry, 1 just after completing his duty as sentry. Although the two men attacked while on sentry duty were seized suddenly with dizziness, loss of muscular power, and, in one instance, with insensibility (cases XII. & XIV.), the attack could hardly be said to have commenced at that time, as, in each case, it had been preceded by a sense of heaviness, and oppression of breathing the whole day.

Date and Time of Seizure.—The figures in the columns connected with these headings answer this point in each case.

It will be noticed that no case occurred at night, and only one case in the morning (case V.) at 11 A. M. Ten cases occurred between 2 and 5 o'clock P. M.: the remaining 5 cases between 5 and ½ past 9 o'clock P. M. Whatever other causes may have been in operation to produce these attacks, it is impossible to avoid associating their particular appearance at these hours, with elevated temperature. The thermometer generally indicated the maximum temperature of the 24 hours to be about 4 P. M., but during the most of the period in which these cases occurred, the variation in thermometric range was very slight from 2 P. M. to sunset. Even for some hours after sunset the temperature scarcely at all declined; owing, doubtless, to radiation of the great quantity of caloric previously absorbed by the dry ground and buildings, while the absence of moisture deprived the atmosphere of the usual cooling effects of evaporation.

History and Symptoms.—No cases occurred of sudden sunstroke, or coup de soleil: that is, of insensibility instantly induced by the direct rays of the sun in a man previously healthy. The cases of the men seized while on sentry (cases XI., XII., XIV.) have been before referred to in this respect.

Of the 16 cases, the attack of apoplexy may be said to have been direct in 11 cases; that is, to have come on without other preliminary symptoms than those of the apoplexy itself, and to have supervened on previous illness (remittent fever) in 5 cases.

When the attack was direct, the leading symptoms varied according to its intensity. If it were gradual in its advance; then, listlessness, torpidity, tendency to lie down, drowsiness, perhaps headache, desire to micturate frequently, preceded the more grave symptoms for several hours; if its approach were more rapid; then faintness, sense of great oppression, or sudden pain about the head and chest, vertigo, &c. &c. quickly led to the more urgent symptoms.

In the cases where the apoplexy supervened on previous fever, the symptoms of the last stage appeared suddenly without any preliminary indications of their approach.

The symptoms of the disease, in its advanced stage, were: intense heat of the skin, greatly exceeding that occurring in pneumonia: partial unconsciousness; excited and irregular action of the heart; difficult respiration; contracted pupils; convulsions of the extremities; these speedily ushering in a complete state of coma, in which state the patient gradually sank. In nearly all the fatal cases there were occasional convulsive muscular movements up to the time of death.

In the cases which terminated favorably, a gradual relief of the urgent symptoms took place; but, in some, it was observed that irregularity of the heart's action, and oppressed breathing, continued even through the next day, after recovery from the seizure.

In all the cases in which there was an opportunity of ascertaining the point, a remarkably frequent desire to micturate preceded the attack. One patient only who recovered, could not say whether he had, or had not, this symptom; and it was doubtful whether, having had it, he had either not taken notice of the occurrence, or had forgotten it. In a private letter respecting the case of Lt. Colonel S—— which occurred at Dum-Dum, it was mentioned to me that, "The first thing "for which Col. S—— spoke to his Surgeon was irritability "of the bladder amounting almost to inability of retention: "heaviness, languor, and a sense of constriction over the "chest afterwards, and his death at last was very sudden." If this symptom should be found to be a general precursor of the attack, it might be rendered valuable as an indicator of the approaching danger, which then, by early and proper care,

might probably be averted. It is probable that this frequent desire for micturation is only an exaggerated example of the ordinary metastasis of function to the urinary apparatus on the secretion from the skin being diminished; and, perhaps, in these cases of Heat-apoplexy there may be a more complete suppression of the perspiratory function than occurs in other diseases. In Remittent Fever, judging from touch, there is apparently suppression of all perspiration; but, after all, this suppression may really be only partial, while, in Heat-apoplexy, it may be absolutely complete.

The intensely pungent heat of the skin in these cases, without parallel that I know of, shows that some extraordinary condition exists in this organ. In carrying out this supposition, the non-carbonization of the blood, enfeebled and irregular action of the heart, passive congestion of the lungs, congestion of the vessels of the brain, are farther explained. The more practical result, however, if extended observation should prove this symptom to be constant, has been already alluded to; *viz.* its presence, at a time when Heat-apoplexy was prevailing, would make the Surgeon be on the alert to obviate the more serious symptoms which might be expected to follow.

Distention of the urinary bladder was found to exist in some cases as the attack was subsiding. In one (case XIII.) a large quantity of urine was taken away by the catheter; the patient feeling desire, but not having the power, of voiding it; in another, there was such pain over the region of the bladder on pressure, that leeches were locally applied to relieve it.

Treatment.—The treatment which proved to be the most successful was cold affusion by mussucks of water poured over the head, chest, and also along the spine, the patient being placed under a punkah and supported while lying on his side; counter-irritation by the application of mustard poultices to the chest; purgative enemata; and subsequently when the head remained oppressed, blistering to the nape of the neck. Venesection was tried in one of the early cases (case II.) without benefit. The flow of blood from the opened vein was very sluggish. As the blood was drawn from one arm by Mr. Apothecary Simons, I carefully watched the effect on the pulse at the wrist of the other. The patient at the time was insensible, his breathing stertorous, and there had been previously a spontaneous discharge of blood, mixed with mucus, from the mouth and rectum. The pulse was intermitting but moderately full, when the bleeding was commenced; as, however, it was carried on, the pulse became more irregular and

smaller, without any apparent relief being afforded to the internal congestion of the lungs or brain. The bleeding was, therefore, stopped in this case, and was not adopted in any of the subsequent cases. Leeches were occasionally applied to the temples, when there was much fulness of the superficial veins about the head and neck, I think, with advantage.

Duration of Disease.—Of the seven fatal cases one died in 1 hour, one in 2 hours, one in 4 hours, one in 4½ hours, one in 10½ hours, one in 18½ hours, and one in 46 hours after the attack.

Previous Health.—It is remarkable that by far the greater proportion of the men attacked were of robust frame and previously good health The exceptions were cases I., II., XV., XVI. Case I. occurred in a man of strong and stoutly proportioned frame, but he had, perhaps, been weakened by having been in hospital for 34 days under treatment for bubo, just prior to his apoplectic attack.

Appearances on examination after Death.—It will be noticed that, in all the cases, much the same appearances have been presented as if the patients had died asphyxiated from some cause. Excessive engorgement of the lungs, amounting generally to complete obstruction of the pulmonary circulation, and, in parts, having all the appearance of true interstitial apoplexy, was the most striking necroscopical indication. The cerebral congestion, less marked in character, and less constant in amount, seemed to me secondary to the failure of the due performance of pulmonary functions; and, perhaps, resulting from loss of tone in the vessels, and from the enfeebled action of the heart consequent upon the imperfectly oxygenized blood it was receiving. The symptoms, more especially the oppression about the chest, the gradually increasing stupor, the suppression of the action of the skin, with its necessary physiological consequences, and, finally, the insensibility combined with muscular convulsion, support the probabilities of pulmonary obstruction being the prime and most serious feature of this disease. I am inclined, therefore, to think that Heat-asphyxia would be a name more in accordance with the characteristics of the disease than Apoplexia; more especially as the term apoplexy conveys so commonly, in general language, the idea of a cerebral lesion.

Meteorological Notes.—The weather throughout the period included in the return was excessively hot, sultry, and oppressive. The highest temperatures, as indicated by Fahrenheit's Thermometer placed in one of the hospital wards, varied from 91½° to 97½°. About the time 7 of the cases

occurred, the thermometer was standing at 97°, or above, and above 95° F. at the time 12 of the cases occurred. The particular degree of temperature named in the Synopsis was noted at 4 P. M.; but from about 2 P. M. to 8 P. M. there was scarcely any difference in the height of the mercury during this hot season. I am less inclined to attach importance to a degree or two, more or less, of temperature as connected with these cases, than I am to the *duration of the high temperature*, and to the *dry and rarefied state of atmosphere* which existed in conjunction with it. During the time when the cases occurred, the characteristic feature in regard to the temperature was the little variation night or day. There was no rain; and the ground, and buildings, became so heated, that, long after sunset, the caloric emitted by radiation prevented any relief being experienced, at least within doors, from its absence. The first heavy fall of rain which occurred in conjunction with great electric disturbance, on the afternoon of the 11th June, may be said to have put a stop to the cases of apoplexy, as it did to remittent fever. Only one case of apoplexy has occurred subsequently to this fall of rain up to the present date, and this was 3 days afterwards, on the 14th of the month.

Other Diseases Prevalent.—Fevers were by far the most prevalent diseases. During the period in which the cases of Heat-apoplexy occurred, there were admitted into hospital 94 cases of Febris Remittens. Of these, 90 were admitted between the 23rd of May and the 11th of June; the day on which the storm appeared to arrest the farther progress of the disease. Many slighter cases of fever were also treated without admission into hospital. The applications to be relieved from costiveness of the bowels were frequent at the same time.

Probable Causes.—There can be little doubt, I think, that the *prolonged high atmospheric temperature* before mentioned, was the essential cause of these attacks, though other causes were associated, which determined their occurrence in the particular individuals subjected to them.

Nervous depression resulting either from solar exposure, from fatigue, or from previous illness, was evidently joined as a cause in some of the cases. In one case (case VIII.) eating voraciously a full meal seemed to act as an immediately exciting cause. It has been already mentioned that of the 16 soldiers attacked, the majority were robust, and seemingly healthy men. Convalescents and patients in hospital reduced by long sickness, exhibited no tendency to similar symptoms, though otherwise suffering from the heated atmosphere. Perhaps, therefore, relative fullness of

blood-vessels in men laboring under nervous depression may be one of the conditions pre-disposing to this disease.

I can hardly regard the disease as simply an exaggerated form of remittent fever, however intimately associated with it, as it has sometimes been described; for my experience has not tended to show that cases of remittent fever which progress unfavorably, whether from constitutional or extraneous causes, are liable to decline into symptoms such as those of Heat-apoplexy. Some cases were not preceded by any symptoms of fever as far as could be ascertained. In case VIII. for example, the soldier was in good health just prior to the seizure, as ascertained from testimony, and in a great degree proved by his strong appetite for food just before the attack. That remittent fevers were very numerous at the same period proves only, that, in some men, Fever, in others, Heat-apoplexy, were probably produced by similar causes. In the few cases of remittent fever which terminated fatally by apoplexy, there was every appearance of the apoplexy supervening as a sudden fresh disorder, as cholera might do, not as if the former symptoms were merely aggravated. There were other cases of remittent fever in hospital at the time, of a much more severe nature, to all appearance, than those which were suddenly seized, and sank under apoplexy. Besides, it is hardly credible, if Heat-apoplexy were a form of remittent fever, or, an aggravated state of it, that out of 100 cases it should have only been manifested in 5 instances,—all being subjected to the same circumstances of temperature, and locality.

Some physicians have speculated on there being a close analogy between Heat-apoplexy and Asiatic Cholera. The malignity of the disease, the suddenness of its attack, correspondence of some symptoms, the maloxygenation of the blood, and the occasional occurrence of fluid in the small intestines, similar to the choleraic exudation, seem to have led to this supposition. The post mortem examinations in the cases in this return did not lead me to trace such an analogy, any more than did the symptoms, during the progress of the disease. The most characteristic feature of malignant cholera, perhaps, is the total and consentaneous suspension of all secretions; in Heat-apoplexy the urinary secretion, at least, is not arrested, but appears to be considerably increased.

It has been remarked that, the cases of so-called Heat-apoplexy can hardly depend upon the effects of temperature, it being known that many persons have subjected themselves to temperatures double or threefold that of air heated by the sun

with perfect impunity. There can, however, I think, be little found in common between the condition of those who submitted themselves to these experiments, and that of the patients seized with Heat-apoplexy. In the former, the persons were doubtless in good health in all respects; the air pure though heated; the increased heat to which they were subjected suddenly, and comparatively for a short period, was balanced by the natural compensating actions of the skin and circulatory system; and the experimenters returned to the ordinary atmosphere of a temperate climate. In the latter case, the elevated temperature was continued throughout a long period producing nervous depression, languor, and, as a secondary result, imperfect decarbonization of the blood; while the atmosphere, greatly rarified, supplied the oxygenating principle less fully, and, at the same time had a greater capacity for containing malarious emanation.

The following tends to show that, among the cases in the accompanying return, some were influenced by the habit of breathing the malarious atmosphere which is generated when men are congregated, without sufficient ventilation for ensuring the complete removal of the emanations from their bodies, and the carbonic acid gas liberated in respiration. I extract the following remarks from my Sanitary Diary of June the 15th, 1858. "No. 9 Company moved from the Pucka building in the old hospital barracks, to the new temporary barrack given over this day. During the hot weather, this company has suffered greatly. Out of the 15 cases of apoplexy which have, as yet, occurred in the seven companies of the Regiment at Barrackpore, 6 cases have been from this company in the Pucka Barrack; and, of these, 3 have been fatal, the total number of fatal cases in the Regiment being 7. The roof of the building is low, the area within contracted, and while the Pucka walls retain a large amount of heat, the building is so enclosed on all sides that there cannot be as free a circulation of air as in the hired bungalows. These circumstances sufficiently account for the large proportion of cases of Heat-apoplexy in this, as compared with the other companies of the Regiment: but, in addition, the room is divided into several compartments by large screens, for the purpose of separating the sailors, who are quartered at one end of the building, from the men of the 19th Regiment; and these, again, from a portion set apart as the sergeants' mess room; and another portion occupied as the canteen; and thus the circulation of air is still farther prevented." Nor was it only that this barrack was the worst constructed in respect to

the ventilation, but it was also the worst provided with punkahs; and not the least of the advantages of these instruments is the agitation and *change of air* caused by their movement. The building consisted of a central compartment and two side passages, the whole enclosed by brick walls, the only openings in which were the doorways and certain jalorised windows. From the crowded state of the barrack, the side passages were occupied by men, but no punkahs were provided for these passages, and a considerable portion of the central apartment was without them. The other six companies of the Regiment were quartered in thatched bungalows, comparatively open, both at the ends and sides.

It is thus a striking fact, that one-third of the cases, and nearly half the deaths, from Heat-apoplexy occurred in one company of the regiment; and that this company was quartered in the barrack which was manifestly the worst conditioned in respect to ventilation and, indeed, in every sanitary requirement. It was remarked that the patients, seized with apoplectic symptoms in hospital, were lying in two wards on the leeward side, and, from circumstances of situation, the most confined, and at the same time warmest in the hospital. The hospital was very full of sick at the time.

From these considerations it may be deduced, that men in good health, actively employed, mentally and bodily, may be exposed to solar influence in the open country with less risk, than soldiers, though sheltered in a barrack, on account of the comparatively impure and confined atmosphere which they are placed in under such circumstances. And such immunity from insolation is actually found to exist among Indigo planters, and other Europeans, who, from their occupations, are compelled to be in the open air in the day time away from large towns. Add to these circumstances, the usual habits of soldiers both in and out of barracks, and there is no difficulty in accounting for the greater proportion of insolation among them than among other classes of the community.

Thus, while much remains unexplained respecting these instances of this disease;—why some were seized and so many others, apparently under similar circumstances, escaped, —still it seems clear that prolonged external heat, nervous exhaustion, and a contaminated atmosphere, acted as the predisposing causes in those who were attacked, and that, in most of these instances, a certain increase of the average prevailing temperature sufficed to act as the exciting cause of develop-

ment of the apoplectic symptoms. Several other cases of this disease have proved fatal among men of Her M.'s 19th Regiment, but these took place while the men were away from Barrackpore on detached duty. Two cases terminated fatally in the Detachment Hospital at Calcutta, but were returned as cases of Febris Cont. Com. One of these patients had been 15 days, the other 13 hours, under treatment for fever, at the time of the apoplectic seizure. One soldier of the Regiment, invalided under scrofula, died from this disease while a patient at the Medical College Hospital in Calcutta. Another, on a day's leave of absence to Calcutta, was seized while walking in the street. He was at once taken to the Medical College Hospital, and died a quarter of an hour afterwards. He was in good health when he left Barrackpore on the morning of the day of this attack. One case which proved fatal in the detachment 19th Regiment stationed at Dum-Dum, is returned under "Paralysis." Another case which occurred in this detachment proved fatal before those who were carrying the patient could reach the hospital. The former of these men had been acting as orderly sergeant, the other superintending the native cooks at the detachment cook-house, at the back of which he was found lying insensible. Two cases occurred in Non-Commissioned Officers of the Regiment at Allahabad. I regret that I have not been able to obtain such information respecting any of the cases which occurred away from the Head-Quarters, as would enable me to include them in the tabular return.

Barrackpore, *July*, 1858.

P. S. After the above report was made, two other cases of Heat-apoplexy occurred at the Head-Quarters of H. M.'s 19th Regiment, at Barrackpore, in September 1858. Notes of these two cases will be found appended to the Tabular return.

Thomas Longmore,
F. R. C. S.

1st Battthe 14th, 1858.

Sergeants, ... 38
Corporals, ... 32
Drummers & Privates, 671
Total ... 741

Commissioned Officers and Men.

No.	Duration of Disease.	Other Diseases Prevalent.	Supposed Cause.	Remarks.
1	Discharged cured on the 5th June.	Remittent Fevers.	Heat of atmosphere, and perhaps constitutional want of tone from having been discharged from Hospital after 34 days' treatment.	

8	Private Thomas Horsley, No. 9 Co.	31	Temperate in drink, but a great eater.	Barracks.	6th June 1858.	2 P. M.	Brought in a state Does not appear to have been exposed or out of	Good.	

A Tabular Return (No. 1) of Sixteen Cases of "Heat-Apoplexy" which occurred in the 1st Battalion H. M.'s 19th Foot, stationed at Barrackpore, between May the 23rd, 1858, and June the 14th, 1858.

Sergeants, ... 28
Corporals, ... 32
Drummers & Privates, 671

Strength 25 Officers, 741 Non-Commissioned Officers and Men. Total ... 741

No.	Rank, Names and Company.	Age.	Habit.	Where attack occurred.	Year, Month and Date.	Time of Seizure.	History.	Symptoms.	Treatment. Special.	Treatment. General.	Duration of Disease.	Mode of Death.	Previous Health.	Post Mortem results. Head.	Post Mortem results. Thorax.	Post Mortem results. Abdomen.	Meteorological Table. Temperature.	Meteorological Table. Other states.	Other Diseases Prevalent.	Supposed Cause.	Remarks.
1	Sergeant Thos. Murphy, No. 2 Co.	30	Temperate.	Barracks.	23rd May 1858.	2 P. M.	Commenced with headache, and listlessness, shortly after sunrise on the day of attack. Was not exposed to the sun.	Great restlessness. Face full and of a livid purple color. Eyes suffused; pupils not acting freely, more inclined to remain contracted; pain across the forehead; embarrassed and heavy breathing; a sense of weight over the lower part of the sternum; heart's impulse strong; pulse full and soft; benumbed sensation down both arms. Abdomen very puffy; bowels moderately opened the previous evening. Relieved of the urgent symptoms by 5 P. M. Recovery rather tardy.	Leeches to temples and sub-clavicular region. Cold application to head.	Mustard poultices to chest and abdomen. Haustus purgans. Enema purgans. Afterwards tonics.	Discharged cured on the 5th June.	....	Very good previous to the formation of a bubo, for which he was in hospital 34 days, and was sent out only 3 days before this attack.	....	....	....	93·5	Very sultry, strong S. E. breeze.	Remittent Fevers.	Heat of atmosphere, and perhaps constitutional want of tone from having been discharged from Hospital after 34 days' treatment.	
2	Lance Serjeant Mark Ayres, No. 9 Co.	22½	Temperate.	Barracks.	24th May 1858.	½ past 6 P. M.	Had been exposed much that day, and on the day previous, to the heat of the sun, from the nature of his duties as Orderly Sergeant. While lying on his bed in the barrack room, and feeling weak and torpid, was suddenly seized with a fit of shivering, and soon afterwards became almost senseless.	Was drowsy, and partially unconscious when brought into Hospital, and scarcely noticed questions. After a short while seized with convulsions, and became completely comatose, with stertorous breathing; frothy mucus appeared at the mouth mixed with blood; and some blood issued from the rectum. Skin pungently hot, to a remarkable degree, and dry; the forehead, though not perspiring and above the natural temperature, did not offer the same pungency of heat on being felt. Pulse quick and moderately full. Heart's action excited and tumultuous. Pupils contracted and insensible to light. V. S. failed to produce relief. Pulse became more small and intermittent. Before the extreme coma, a small quantity of fecal matter passed from the bowels.	V. S. ad. ℥xx. Leeches to temples and subclavicular region. Cold affusion, after convulsions changed to cold applications and sponging.	Purgative Enema. Diaphoretic mixture. Liq. ammon. fort: as a vesicatory to head and neck, as also to chest. Sinapism to thighs and legs.	2 hours.	After a convulsive fit.	Delicate. In Hospital for Dysent. chronica in October 1856.	Vessels of pia mater engorged. About ℥viij. of dark blood escaped into the base of the skull on removing the brain. Substance of the cerebrum firm, studded with blood-puncta. Choroid plexus purple and turgid. Scarcely more than the natural quantity of serum in the ventricles. The appearance of the brain indicated general sanguineous determination, without serous effusion into the sub-arachnoid space.	Lungs free from adhesions; resilient under pressure, but filling up the space of the pleural cavities. Lining membrane of the trachea and bronchi dark and turgid from congestion of the vessels of the mucous membrane. The whole of the substance of both lungs much congested, very dark in patches. Apices of both lungs particularly congested. Heart's structure healthy.	Viscera of this cavity generally healthy.	91·5	Very sultry. Breeze S. E., strong.	Remittent Fevers.	Exposure to sun and heat.	
3	Corporal George Mihill, No. 9 Co.	21	Temperate.	Barracks.	26th May 1858.	½ past 5 P. M.	Exposed much to the sun and heat that day, as he was acting as Orderly Serjeant. After dinner felt his head much affected, with considerable pain, and sensation of fullness. Had frequent desire to micturate, but only able to pass a small quantity of urine at a time.	When brought into Hospital he was wildly delirious; after a short time he became heavy and inclined to coma. Cheeks and forehead flushed; pungency of heat of the skin great; breathing heavy and oppressed. Some frothy mucus collected about the lips. Heart's action strong; pulse moderately full; abdomen puffy and tympanitic. These symptoms subsided in 2 hours, and he went off to sleep. On the following day, the breathing continued difficult, otherwise felt well. Had a copious discharge of urine about 2 P. M., after which he convalesced fast.	Cold affusion and ice to head. Leeches to temples and left subclavicular region.	Mustard poultices to chest and abdomen. Pills of Gamboge, Scammony, Extr. Colocynth Co: & Sapo. Enema purgans. Stimulating draught on the following day.	Discharged cured 2nd June 1858.	....	Generally good.	....	....	....	93·5	Sultry. Cloudy at 2 P. M.	Ardent fevers of the Remittent type.	Exposure to sun and heat.	
4	Corporal John Evans, No. 9 Co.	30	Temperate.	Hospital.	26th May 1858.	½ past 5 P. M.	Complaining of feverish symptoms for some days. Admitted into Hospital the day previous to attack. At 3 P. M. suddenly seized with pains in the head. Pulse full. The tongue coated with dark brown fur and dry in the centre.	Wandering suddenly came on at ½ past 5 P. M. Became violent and tried to jump out of bed very often. The skin very hot and pungent; pulse full and bounding; heart's impulse strong and irregular. At 6 P. M. became comatose; passed a motion involuntarily; stertorous breathing supervened, and he never rallied.	Leeches to temples and sub-clavicular region. Blister to head and neck. Cold applications to head.	Diaphoretic mixture. Calomel with Pulv. Jalap. Sinapisms to thighs and legs.	4 hours.	Comatose.	Apparently good.	General indications of sanguineous determination to the encephalon, including the membranes, without serous effusion into the sub-arachnoid space. Cerebral substance firm.	General engorgement of both lungs: the engorgement being exceedingly dark in various detached patches. The apices of both lungs much congested and very dark colored. Frothy mucus in all the ramifications of the bronchial tubes. Both lungs everywhere resilient on pressure. Some old bands of adhesion connecting the right lung with the costal pleura.	Liver rather large and pale. Gall-bladder distended with bile. Viscera of abdomen generally healthy.	93·5	Sultry. Cloudy at 2 P. M.	Ardent fevers of the Remittent type.	Heat.	Post mortem examination 2 hours after death.

A Tabular Return (No. 1) of Sixteen Cases of "Heat-Apoplexy" which occurred in the 1st Battalion H. M.'s 19th Foot, stationed at Barrackpore, between May, the 23rd, 1858, and June the 14th, 1858.—(Continued.)

No.	Rank, Names and Company.	Age.	Habit.	Where attack occurred.	Year, Month and Date.	Time of Seizure.	History	Symptoms.	Treatment. Special.	Treatment. General.	Duration of Disease.	Mode of Death.	Previous health.	Post Mortem results. Head.	Post Mortem results. Thorax.	Post Mortem results. Abdomen.	Meteorological Table. Temperature.	Meteorological Table. Other states.	Other Diseases Prevalent.	Supposed Cause.	Remarks.
5	Private Martin Phelan, No. 4 Co.	28	Some years at Barrackpore; previously a bombardier, previously had been intemperate.	Hospital.	3rd June 1858.	11 A. M.	Admitted into Hospital with fever an hour previous to attack. Had slight symptoms of fever for some days previously.	Found, an hour after admission into Hospital, lying in an unconscious state; the breathing stertorous; frothing at the mouth; pulse bounding; skin very hot; and pupils contracted. He continued in this state, with slight twitchings of the eyelids and muscles of the face, and muscular movements of the arms, to the time of death.	Leeches to temples; cold application to the head. Blister to head and neck.	Croton oil and Calomel as purgatives. Enema purgans.	18½ hours.	Comatose.	Apparently good.	Pia mater congested. Two ounces of fluid beneath the arachnoid membrane. Substance of the brain firm; two ounces of fluid in lateral ventricles.	Heart very large, and imbedded in fat. Valves not thickened. Both lungs generally engorged.	Viscera generally healthy.	93·7	Very oppressive.	Ardent Remittent Fevers.	Heat.	Post mortem examination 7½ hours after death.
6	Private J. M. Donough, No. 7 Co.	22	Temperate.	Hospital.	4th June 1858.	7 P. M.	In Hospital with remittent Fever from 2nd June. Ailing for several days previously. The morning of the attack fever high, and tongue furred.	Suddenly became delirious, and made several attempts to jump out of bed. A quarter of an hour afterwards coma supervened, and the breathing became stertorous, with frothing at the mouth. Skin of body pungently warm, although the forehead was not above natural heat. Passed his motions and urine involuntarily. Pupils contracted and insensible to light. Convulsive muscular movements of the arms and fingers occasionally.	Cold affusion. Blister to nape of neck and head.	Purgative Enema. Diaphoretic mixture, with Spirit Ammoniæ Aromat. & Liq. Ammoniæ Acet. in draughts. Nitro-muriatic acid sponging every hour.	4½ hours.	Comatose.	Good.	Vessels of pia mater much congested. The cerebral hemispheres studded with blood-punctæ on section. Substance of brain firm. The lateral ventricles greatly distended with serum, slightly tinged with blood.	No collapse of the lungs on removal of the anterior walls of the chest. Resilient on pressure. No adhesions. Both lungs much engorged with blood, throughout their entire extent; the upper lobe of the right lung especially so. Heart normal, empty.	Liver large, pale and firm. Gall-bladder distended. Urinary bladder empty. Other abdominal viscera in a normal state.	95·7	Very warm and clear, but not so oppressive as the day previous.	Ardent Remittent Fevers.	Heat.	Post mortem examination 8½ hours after death.
7	Private John Carter, No. 1 Co.	26	Temperate.	Hospital.	6th June 1858.	4 P. M.	In Hospital with remittent fever from 4th June, for which he was treated with Calomel and Jalap, &c. He was considered better on the day of his attack by Heat-apoplexy.	Suddenly seized with a convulsive fit. At first, the general surface of the skin became quite pale, a few minutes after changed to a mottled purple, when he became comatose, and the breathing stertorous. The convulsions continued, and the pulse gradually failed, till he sank.	Mustard poultice to chest and spina.	Antispasmodic mixture, with pills of Cal. Camphor, and Ammoniæ sesquicarb., &c.	1 hour.	Convulsions.	Apparently good.	Vessels of pia mater much congested. Cerebrum everywhere studded with blood-punctæ. Choroid plexus congested. Substance of brain rather soft. No serum effused in lateral ventricles, beyond the normal quantity.	Both lungs completely filling up the cavity of the chest; resilient on pressure. General old adhesions of left lung. Both lungs congested throughout, their substance very dark in patches. Right lung particularly darkly congested. Frothy mucus in all the ramifications of the bronchi, and clogging the air-cells. Heart empty and normal.	Liver rather large, pale. Gall-bladder distended. Veins of the mesentery and great omentum unusually turgid. Other abdominal viscera normal.	97·5	Intensely bright sun all day, very sultry and oppressive.	Ditto.	Heat.	Post mortem examination 12 hours after death.
8	Private Thomas Horsley, No. 9 Co.	31	Temperate in drink, but a great eater.	Barracks.	6th June 1858.	2 P. M.	Brought into Hospital in a state of insensibility. Does not appear to have been exposed to the sun, or out of barracks all day.	Seized suddenly after dinner. Respiration labored and stertorous. Pupils much contracted and insensible to light. Skin very hot and dry. Pulse quick and chord-like. Vomited frequently large quantities of undigested food, and dark green bilious matter. About 9 P. M. became somewhat conscious, and looked about him; the pupils were then sensible to light. At 12 P. M. became suddenly convulsed, coma followed, and he died ½ an hour after.	Leeches to head. Cold effusions. Blister to head, nape and chest.	Mustard oil emetic. Had previously Zinci sulphas, which did not act. Cal. camphor and ammoniæ, in pills every hour. Nitro-muriatic acid sponging.	10½ hours	Convulsions.	Good.	Pia mater congested. Loss of transparency of the arachnoid membrane over lobes of the cerebral hemispheres, almost of a milky appearance. Substance of the brain slightly softened, studded on section with blood-punctæ. Choroid plexus congested. Three or four drachms of serum in the lateral ventricles.	Right lung tightly bound by old adhesions to costal pleura. Left lung free. Both lungs much congested, with particles here and there darker than the remaining parts of the substance. Both apices particularly congested. Frothy mucus in the bronchial branches. Heart's structure normal, filled on the right side with dark fluid blood.	Stomach containing a quantity of dark green fluid. Patches of congestion on its mucous surface. Liver turgid. Gall-bladder distended. A few ounces of urine in the bladder. Other abdominal viscera normal.	97·5	Ditto.	Ditto.	Ditto.	Post mortem examination 7 hours after death.

une the 14*th*, 1858.—*(Continued.)*

ogical Table. Other states.	Other Diseases Prevalent.	Supposed Cause.	Remarks.
Very oppressive.	Ardent Remittent Fevers.	Heat.	Post mortem examination 7½ hours after death.
Very warm and clear, but not so oppressive as the day previous.	Ardent Remittent Fevers.	Heat.	Post mortem examination 8½ hours after death.
Intensely bright sun all day, very sultry and oppressive.	Ditto.	Heat.	Post mortem examination 12 hours after death.

n H. M.'s 19th 1858.—*(Continued.)*

on Use.	Mode of Death.	Pre... He...	...er Diseases ...revalent.	Supposed Cause.	Remarks.
rs, 2	Convulsions.	Go	dent remittent Fevers and t-apoplexy.	Heat	Post mortem examination 17 hours after death.

Note.—In recording the notes of these cases of insolation ...ses of the same disease
Post-mortem results thus afforded, I thought, might prove useful ...teresting affection, w

A Tabular Return (No. 1) of Sixteen Cases of "Heat-Apoplexy" which occurred in the 1st Battalion H. M.'s 19th Foot, stationed at Barrackpore, between May the 23rd, 1858, and June the 14th, 1858.—(Continued.)

No.	Rank, Name, and Company.	Age.	Habit.	Where attack occurred.	Year, Month and Date.	Time of Seizure.	History.	Symptoms.	Treatment. General.	Treatment. Special.	Duration of Disease.	Mode of Death.	Previous Health.	Post Mortem results. Head.	Post Mortem results. Thorax.	Post Mortem results. Abdomen.	Meteorological Table. Temperature.	Meteorological Table. Other states.	Other Diseases Prevalent.	Supposed Cause.	Remarks.
9	Private Samuel Roberts, No. 4 Co.	34	Temperate.	Barracks.	8th June 1858.	4 P. M.	Walked from his Barracks to Hospital, and, on reaching the building, began to stagger as if intoxicated. A few minutes after he became insensible. Was said to have been drowsy and listless all day. Not exposed to the sun before walking to Hospital. Distance from Barrack to Hospital about 300 yards.	The pupils were contracted, insensible to light; breathing stertorous; frothing at the mouth; belly puffy, tympanitic; skin pungently warm; pulse moderately full and regular. He continued in this state through the night. Towards morning the pupils became sensible to light, he moved about his legs, and seemed improved. On the 9th, swallowed beef tea, and other liquids. The breathing was regular, pulse soft and regular, but he still continued lying unconscious, passed the night in the same state, as also the following day up to 2 P. M., when he had an attack of convulsions under which he sank a few minutes after. Urinated freely a couple of hours before the fit.	Purgative enema. Purgative of cal. and jalap. Antispasmodic liniment of Lin. camphor. co. and Chloroform rubbed over the neck and abdomen; nitro-muriatic acid sponging of the body every 4 hours. Cal. camphor and Ammonia sesquicarb. in pills every 3 hours. On the 9th sago and wine and beef tea as nourishment.	Leeches to temples, cold affusion. Blister to head, neck and chest.	46 hours, died at 2 P. M.	Convulsions.	Good.	Vessels of pia mater dark and congested. The arachnoid covering the posterior halves of the cerebral hemispheres semi-opaque. Substance of the brain firm. Numerous blood-punctæ on section. Choroid plexus turgid; no serous effusion in the ventricles.	Both lungs free from adhesions, and filling up the cavity of the chest; resilient on pressure. General dark venous congestion throughout their substance. Frothy mucus in the ramifications of the bronchi and air-cells. Heart flabby; right side filled with dark fluid blood.	Veins of mesentery dark and congested. Both small and large intestines contracted at frequent intervals throughout their whole length; the diameter of the intestine being very considerably lessened in some places, the intervening portions of the bowel generally distended with flatus. Liver pale; on section of its substance a very free flow of dark blood. Gall-bladder distended with bile.	97·0	Sun intensely bright; very oppressive heat.	Ardent remittent Fevers and Heat-apoplexy.	Heat	Post mortem examination 17 hours after death.
10	Serjeant Henry Jackson, Hospital Serjeant.	33	Temperate.	Hospital.	8th June 1858.	2 P. M.	Had been out in the sun for a few minutes about 10 A. M., not after. Felt listless and drowsy from after breakfast. Had frequent desire to pass urine before attack.	When seen, at 2 P. M., he appeared very drowsy and disinclined to reply to questions. Face swollen and of a purple color. The skin warm, as also the head. The pupils natural, but not acting freely. Pulse slow and laboured. Breathing heavy and embarrassed. Sense of weight over the sternum, and pain along the spine. Belly full and tympanitic. After he was relieved of the more urgent symptoms, the pulse was found intermitting, though soft, and continued so till the next day.	Mustard poultice to spine and chest. Calomel and jalap as a purgative.	Cold affusion to spine, back of head, and also to the forehead and chest.	Discharged cured 10th June 1858.	...	...	Good.	.....	.....	.....	.....	.....	.....	97·0	Sun intensely bright; very oppressive all day.	Ditto.	Ditto.	
11	Private Samuel Paul, No. 10 Co.	32	Temperate.	On guard.	8th June 1858.	3 P. M.	Was on guard. Had just completed his duty as sentry. On returning to the Guard-room became very unwell and faint, and shortly after was brought to Hospital. Had had pain at the vertex of the head and felt heavy all the morning.	When brought to Hospital he was partially conscious but very restless, with very laborious and embarrassed breathing. Heart's action and pulse feeble. Skin of head and body warm. Eyes suffused, pupils contracted, tho' sensible to light. Abdomen puffy and tympanitic. Relieved after 2 hours, had sound sleep throughout the night, and felt quite well, only weak on the following morning. Convalesced rapidly.	Mustard poultice to chest and spine, stimulating draughts of liq. ammon. acet. spirit ammon., aromat. tinct. lavand co. and mist. camphor. Purgative mixture the following day.	Cold affusion to head, spine and chest.	Discharged cured 10th June 1858.	...	...	Very good.	.....	.....	.....	.....	.....	.....	97·0	Sun intensely bright; very oppressive all day.	Ardent remittent Fevers and Heat-apoplexy.	Exposure to sun and heat.	
12	Private John Clark, No. 1 Co.	28	Temperate.	On guard.	8th June 1858.	½ past 4 P. M.	Was on sentry in the verandah, but exposed to the sun's rays. Felt a sudden pain in the forehead, "rising up from the back," when he became giddy, and fell down in a state of insensibility. During the whole of that day felt uneasy about the head and stomach, with shortness of breath, and desire to urinate every 5 minutes.	When brought into Hospital was very restless, and delirious; frothing at the mouth; face flushed; pupils contracted and not sensible to light; skin of head and body pungently warm; convulsive movements of the forearm and fingers; breathing labored and embarrassed. Abdomen puffy and tympanitic. Two hours after became conscious, felt inclined to urinate but could not; a large quantity of urine was drawn off by catheter. Bowels acted freely. Slept well, and woke with only a slight dryness of the mouth. Convalesced rapidly after.	Mustard poultice to chest and spine. Purgative enema cal. and jalap on admission. Tonics with aperients on convalescence.	Cold affusion to head, back and chest. Leeches to temples.	...	...	Robust and good.	.....	.....	.....	.....	.....	.....	97·0	Ditto.	Ditto.	Exposure to the sun and heat.	

A Tabular Return (No. 1) of Sixteen Cases of "Heat-Apoplexy" which occurred in the 1st Battalion H. M.'s 19th Foot, stationed at Barrackpore, between May the 23rd, 1858, and June the 14th, 1858.—(Continued.)

No.	Rank, Name, and Company.	Age.	Habits.	Where attack occurred.	Year, Month and Date.	Time of seizure.	History.	Symptoms.	Treatment. General.	Treatment. Special.	Duration of Disease.	Mode of Death.	Previous health.	Post Mortem results. Head.	Post Mortem results. Thorax.	Post Mortem results. Abdomen.	Meteorological Table. Temperature.	Meteorological Table. Other states.	Other Diseases Prevalent.	Supposed Cause.	Remarks.
13	Private John Donelly, No. 7 Co.	25	Intemperate.	Barracks.	8th June 1858.	½ past 9 P. M.	Was lying listless, and drowsy all day in the barracks. Not exposed to the sun, nor had he been drinking that day. Great desire to urinate, which he did, before the attack, very often.	When brought into Hospital was insensible. Eyes suffused; pupils contracted and not sensible to light, breathing labored; pulse feeble and slow. Skin of head and body moderately warm, abdomen tympanitic. Became sensible after the cold affusion, and after a couple of hours went to sleep. Following morning complained of intense pain over the region of the bladder, which was relieved by the application of leeches. Had urinated freely that morning. Convalesced rapidly after.	Leeches behind the ears, cold affusion to back of head, spine and chest.	Mustard poultices to chest and spine, purgative enema hydrarg. chlorid. and jalap; blister to nape of neck, on the following day leeches to hypogastric region. Tonics on convalescence.	Discharged cured, 16th June 1858.	...	Good.	...	...	...	97·0	Sun intensely bright; very oppressive all day.	Ardent Fevers and Apoplexy.	Heat.	
14	Private William Miller, No. 9 Co.	20	Temperate.	On guard.	9th June 1858.	5 P. M.	Was on sentry when he was suddenly seized with a pain across the forehead and chest, and fell down. Had had slight headache, and general heaviness for several days previously. Frequent desire to micturate before the attack.	When brought into Hospital appeared bewildered; the eyelids widely open, eyeballs suffused, and a copious discharge of tears issuing. Pupils sensible to light. Skin of head and body warm. Pulse rather full, but slow. Abdomen puffy. Became sensible in an hour, and slept well after. The following morning felt well, only weak. Convalesced rapidly.	Cold affusion to back of head, spine and chest.	Mustard poultice to chest and neck.	Discharged cured, 12th June 1858.	...	Robust and good.	...	...	...	86·0	Often cloudy on this day, but sun shone bright, and the weather became sultry, from 1 to 3 P. M.	Ditto.	Exposure to sun and heat.	
15	Private Webster Harris, No. 9 Co.	21	Temperate.	Barracks.	9th June 1858.	7 P. M.	Felt weakness, with dizziness, and faintness, come on after dinner. Was not exposed to the sun all day, but felt uneasy about the head and chest.	Was very weak when brought into Hospital, although conscious. The voice feeble, and the pulse small. Skin of body moderately warm, and perspiring. Head warm, eyes suffused. Pupil sensible to light. Breathing embarrassed, with a sense of tightness across the chest. Revived after three doses of medicine were exhibited, and fell off to sleep. Continued feverish for 2 days after.	Cold application to head.	Mustard poultice to chest. Stimulating draughts of liq. ammon. acet. spir. ammon. aromat. and tinct. lavand. Co. with Mist. Camphor purgatives following day, and subsequently tonics.	Discharged cured, 20th June 1858.	...	Weakly. Was in Hospital a long while from chronic Ophthalmia.	...	...	...	86·0	Often cloudy on this day, but sun shone bright, and became very sultry from 1 to 3 P. M.	Ardent Fevers and Apoplexy.	Heat. Probably also to the effect of breathing impure atmosphere.	
16	Private Henry Gates, No 2 Co.	25	Temperate.	Hospital.	14th June 1858.	3 P. M.	In Hospital under "Febris Remittens" from 8th June 1858. Continued much in the same state since admission. Weakness considerable. Frequent desire to micturate before the attack.	Suddenly attacked on the afternoon, about 3 P. M., of the 14th instant, with giddiness, to which succeeded an intense pain in the head. Convulsive movements of the arms and fingers ensued, followed not long after by tonic rigidity of the whole body. The body warm, pulse moderately full; heart's impulse strong and irregular. Breathing heavy, a sense of tightness across the chest; eyes suffused; pupils sensible and acting freely. Relieved after the application of cold affusion and exhibitions of stimulant draught; but there ensued a slight headache. On the following day a similar attack occurred about the same time; the convulsive action confined to the lower extremities from the pelvis downwards. Not much headache on this occasion. The fit did not last more than 10 minutes, being arrested by the cold affusion. Was improving slowly, when he caught a cold and had an attack of bronchitis, with swelling of the right parotid gland, for which he is under treatment.	Cold affusion to head, back and chest.	Mustard poultices to head and spine. Subsequently blister to back of neck and spine. Stimulating draughts 3 doses. Cal. camphor, ammon. sesquicarb. in pills for 24 hours; without cal. for 3 days after, quinine being substituted. Beef tea, chicken broth, sago and port wine, &c. &c.	Transferred to a Bronchitis Ac. on the 20th June 1858.	...	Good health, rather delicate frame.	...	...	...	86·5	Clear and sultry up to 2 P. M.; cloudy, with a slight shower at 2 P. M.	Ardent Fevers.	Heat.	

Note.—In recording the notes of these cases of insolation, I have very nearly followed the form of the Analytical Digest, in which the late Mr. Hill arranged the cases of the same disease which he collected and published in the Indian Annals of Medical Science. (See No. V. October, 1853). The opportunity of continued comparison of the symptoms and Post-mortem results that afforded, I thought, might prove useful, and, if those who may have the opportunity of practically observing the phases of this yet obscure and interesting affection, would add their observations to those already collected on a somewhat similar plan, the advantage of such a mode of analysis might be further extended.—T. L.

June the 14th, 1858.—*(Continued.)*

orological Table.		Other Diseases Prevalent.	Supposed Cause.	Remarks.
	Other states.			
)	Sun intensely bright; very oppressive all day.	Ardent Fevers and Apoplexy.	Heat.	
)	Often cloudy on this day, but sun shone bright, and the weather became sultry, from 1 to 3 P. M.	Ditto.	Exposure to sun and heat.	
)	Often cloudy on this day, but sun shone bright, and became very sultry from 1 to 3 P. M.	Ardent Fevers and Apoplexy.	Heat. Probably also to the effect of breathing impure atmosphere.	
5	Clear and sultry up to 2 P. M.: cloudy, with a slight shower at 2 P. M.	Ardent Fevers.	Heat.	

Previous Health.		Other Diseases prevalent.	Supposed Causes.	REMARKS.
good. But from June 3rd to August 15th, purating bubos in the left groin, not of venereal	er m o k tl ti l C c o p o	Febrile disorders.	Prolonged atmospheric heat and dryness; perhaps also nervous exhaustion from over-exertion.	Body stout and muscular. P. M. examination 6 hours after death. The highest reading of the Thermometer in the Surveyor General's Office at Calcutta, on September 7th, was 93° F., and the mean temperature for the day 86° F.

Tabular Return of two Cases of "Heat-Apoplexy," which have occurred in the 1st Battalion H. M.'s 19th Foot, stationed at Barrackpore, during the Month of September, 1858.

Rank, Name and Company.	Age.	Habit.	Time of seizure.	History.	Symptoms.	Treatment. Special.	Treatment. General.	Duration of Disease.	Mode of Death.	Previous Health.	Post Mortem results. Head.	Post Mortem results. Thorax.	Post Mortem results. Abdomen.	Station.	Where attack occurred.	Year, Month and Date.	Meteorological Table. Temperature.	Meteorological Table. Other conditions.	Other Diseases prevalent.	Supposed Causes.	Remarks.
Private John Booker, H. M.'s 19th Foot.	23 years.	Temperate.	About ½ past 8 P. M.	Attended Roll-call in Barracks at 5½ P. M., afterwards walked out to Ishapore, distant from Barrackpore about 3 miles, and walked back. As far as known, drank only beer at Ishapore, and, after returning, drank at the canteen 1 gill of rum. No signs of drunkenness when at the canteen. Was found lying between 2 bed-cots in his Barrack room in a state of insensibility, having apparently fallen from his bed.	On admission to Hospital at 9 P. M. was insensible, and unconscious when spoken to; but uttering loud moans. Skin of body very warm. Skin of forehead less warm than elsewhere. Pulse full, hard, and very quick; superficial vessels full; breathing hurried; eyelids partially closed, and the eyeballs suffused. Pupils dilated; abdomen tympanitic. After a quarter of an hour had a free flow of urine, and passed some naturally coloured stools. No improvement took place in general condition, and at 12 P. M. convulsions of the muscles of the arms and legs came on; there was vomiting of dark fluid, mixed with undigested food; the pulse declined; the surface of the body became mottled; and he gradually sank, till he died at ½ past 2 A. M.	Cold affusion.	Mustard poultices to chest and abdomen, and spine. Sol. Antimonii Tart: ℥ss. (gr. ¾ ad aquæ ℥ij.) every half hour. Brandy and water after vomiting.	6 hours.	Convulsions.	General previous health said to be good. But from June 3rd to August 15th, 1858, was under treatment for suppurating bubo in the left groin, out of venereal origin.	Veins of pia mater engorged. Arachnoid membrane semi-opaque, and of a milky hue. Rather more than the usual quantity of serum in the lateral vestricles. Choroid plexus not congested. Substance of brain firm. Blood puncta more numerous than usual.	Lungs filling up the thoracic cavity. Left lung free from adhesions. Right lung generally adherent to the costal pleura, and its three lobes adherent to each other; adhesion firm and of long standing. The whole of the right lung greatly congested with dark blood: in the lower part presenting a very black and almost solid appearance, but on placing a portion in water, it did not sink. Left lung much less congested than right lung. Structure of heart normal; dark blood, almost liquid, in both sides of the heart. Dark patches, as if of ecchymosis, in the lining membrane of the left ventricle.	Stomach containing some dark colored bilious fluid, with undigested portions of potatoe and other food. Yellow fecal matter in small intestines. Large intestines nearly empty. Other viscera healthy.	Barrackpore.	In Barrack-room.	7th September 1858.	89° F.	Atmosphere very oppressive. Scarcely any rain since the first of the month. At noon, sky very close and oppressive the whole day and night of the 7th September. Thermometer in Hospital, on the 7th, 90° F., range of temperature on the 7th 8° F.	Febrile disorders.	Prolonged atmospheric heat and dryness; perhaps also nervous exhaustion from over-exertion.	Body stout and muscular. P. M. examination 6 hours after death. The highest reading of the Thermometer in the Surveyor General's Office at Calcutta, on September 7th, was 93° F., and the mean temperature for the day 86° F.
Private William Goldsmith, H. M.'s 19th Regt.	22 years.	Rather Intemperate.	½ past 3 P. M.	Suddenly fell down in a state of insensibility while on sentry outside one of the Barrack gates, at ½ past 3 P. M. Did not feel well while on sentry from 8 to 10 A. M., but felt better after lying down: had to get up thrice while lying down to make water. Remembers urinating 5 times before going on sentry; again at 2 P. M. Only drank his usual tea. Had been on sentry about 1½ hour, walking up and down, when he suddenly felt giddy and fell: remembers nothing more. Had not had headache while on sentry, but occasionally felt oppression about the chest. Now and then there was a very slight breeze, and, on turning towards it, felt relieved from this oppression. The sentry's beat is shaded by thatch raised on bamboo, and open at the sides.	On admission into hospital was quite insensible. Hands firmly clenched, skin hot. No observation made as to the state of the pupils. Became sensible shortly after the application of the cold affusion, and cold air, from the effects of evaporation and the punkah. Then complained chiefly of Dyspnœa and pain in the chest. Uneasiness about the chest, and tendency to head-ache and dizziness, remained during several days, with general debility.	Cold affusion. Ice to head. Placed under a punkah while the affusion was being applied.	Sol. Antimonii Tart: ℥ss. (gr. ¼ ad aquæ ℥ij.) every half hour. Sinapisms to chest. Calomel purgative at bed-time, followed by Pulv. Jal. Co. in the morning.	9 days under Hospital treatment.	....	He had several mild attacks of fever since arrival in India, on the 19th December 1857; health otherwise good.	.....	.....	.....	Barrackpore.	On Sentry.	14th September 1858.	.....	Atmosphere hot, dry, and oppressive. Strong glare from sun; no wind. Only about 1 hour's rain since the first of the month. Thermometer in Hospital, on the 14th September, 93·5° F., range of temperature in the 24 hours of the day 6° F.	Febrile disorders and bowel complaints.	Prolonged atmospheric heat, and dryness.	Highest reading of Thermometer in the Surveyor General's Office, at Calcutta, on September 14th, 95° F. The mean temperature of the day being 89·1° F.

(Signed) THOS. LONGMORE,

Surgeon, H. M.'s 19th Regt.

REPORT ON THE OUTBREAK OF INSOLATION,

Which occurred in the 3rd European Light Cavalry, Mean Meer, in May, June and July 1859.

By Surgeon J. H. Butler, F. R. C. S.,

PRESENTED BY THE DIRECTOR GENERAL, MEDICAL DEPARTMENT.

In endeavouring to ascertain the type of disease which occurred so suddenly in the Regiment under my medical charge, in the early part of last month, my attention has been directed to several phenomena which, combined, may have induced the outbreak,—an outbreak remarkable for its suddenness of attack, and for its rapidly fatal tendency.

In the words of a distinguished Physiologist, "There was "some distempered condition of circumstances around, which "operated injuriously on the system." The chief influence I assume to have been the weather, which, at the period of the outbreak, was most sultry and oppressive—there was that close dense condition of atmosphere, synchronous with which attacks of Apoplexy, Insolation or Heat-apoplexy (Erythismus tropicus of Taylor), where troops are crowded together, always more or less obtains.

The thermometer ranged, between sun-rise and sun-set, from 94° to 102°.

It has been repeatedly observed that, when the thermometer ranges beyond 98 degrees in crowded Barracks, cases of apoplexy almost invariably occur.

Although many of the men in Hospital showed most threatening symptoms, yet but two fatal cases occurred amongst the Hospital patients. By Hospital patients I allude to those who were in Hospital, under treatment, prior to the outbreak of sickness.

Every exertion was made to keep the temperature of the wards down; this effort and its success tended greatly to relieve the men's minds from anxiety and depression, under which they were labouring, from seeing their comrades so suddenly and fatally attacked.

The greatest number of cases occurred on the evening of Saturday, the 17th June. So sultry and oppressive was the state of the atmosphere that, on the morning of the 11th, I addressed the Officiating Superintending Surgeon on the expediency of his getting the men of the Regiment excused from attending Church Parade on the following morning, Sunday, 12th June, as I was apprehensive of apoplectic seizures amongst them. Unfortunately, my prediction was too true; for on the afternoon of the 11th, that night, and the following day, sixteen cases of apoplexy came into Hospital, one after the other, in rapid succession. One man was brought dead to the Hospital door, others were received in *articulo mortis*, far beyond the art of the Physician. Despiriting and appalling as these cases were, nothing was left undone, so long as the heart continued its beat, which suggested itself to the minds of Assistant Surgeon Dr. Courtney and myself.

Having a horror of an undue use of the lancet, bleeding was only resorted to in those cases which seemed to justify depletory measures, and, in many cases, early depletion was followed by the happiest results. I would point to the cases of Thompson, Fanighan, Galligher, Sumners, McArdle, Tosh, Barnes, and Baker; all amply testify to its judicious and well-timed influence. I am firmly impressed with the belief that these men would have followed in the wake of their lost comrades, had not the lancet been promptly used, and depletion largely resorted to.

The mercury in the thermometer stood as follows, in the Hospital wards, on the following dates:

	Sun-rise.	10 A. M.	4 P. M.	Sun-set.
June 10th	95	97	100	93
„ 11th	93	99	100	93
„ 12th	95	98	102	98
„ 13th	No	register	taken.	
„ 14th	92	96	98	94

The following tabular view gives the names of the patients, dates of admission, discharges or death.

Dates of Admission.	*Names.*	*Date of Discharge.*	*Date of Death.*
May 30th,	Anthony Ryan, ...	... ...	3rd June, 1859.
June 3rd,	Thomas Morey, ...	... ...	3rd „
„ 6th,	James Douglas, ...	... ...	12th „
„ 10th,	Dennis O'Brien, ...	... ...	10th „
„ 11th,	Michael O'Brien,...	17th June,	... ...
„ „	John Harrington,.	13th „	... ...
„ „	Jas. Fanighan, ...	20th „	... ...

Dates of Admission.	*Names.*	*Date of Discharge.*	*Date of Death.*
June 11th,	Samuel Sumners, ..	15th June,	... ...
„ „	Ghom Galligher, ..	21st „	... ...
„ „	James Queen, ...	16th „	... ...
„ „	John Haynes, ...	15th „	... ...
„ „	Hugh McArdle,...	20th „	... ...
„ „	Lawrence Murkey,	13th „	.. ...
„ „	William Hyde, ...	15th „	... ..
„ „	Samuel Thompson,	17th „	... ...
„ „	Arthur Dashwood,	... ...	14th June.
„ „	Patrick Conlan, ...	... ...	11th „
„ „	Edward O'Neil, ...	... ...	„ „
„ „	George Bower, ...	... ...	„ „
„ „	James Galligher, ..	... ...	„ „
„ 12th,	Maurice O'Sullivan,	... ...	12th „
„ „	John Fitzgerald,..	6th July,	... ...
„ „	Alexander Tosh, ..	21st June,	... ...
„ „	James Barnes, ...	17th „	... ...
„ „	Richard Baker, ...	18th „	... ...
„ „	William Hughes, .	30th „	. ...
„ „	Richard Henderson,	16th July,	... ...
„ 20th,	Michael Melone,...	... ...	20th June.
July 5th,	John Hayes, ...	... ...	5th July.
„ 9th,	John Ryan, ...	... ...	9th „

Total of cases admitted 30.

Total of Discharged cured,.....	17
„ ... Deaths,...	13
Total	30

Ratio per Cent of Deaths to seizures, ...	43·3
——— ———Recoveries to seizures, ...	56 6

In Dr. H. Macpherson's invaluable Analysis of later Medical Returns, for the 8 years ending 1853-54, he gives the number of admissions to Hospital and deaths from diseases of the brain and nervous system as follows:

Apoplexia 829 treated, deaths 562.
„ Deaths per 100 of treated 67·79
Ictus solis 38 treated, deaths 7.
„ Deaths per 100 of treated 18·42.

and states, that the proportion of deaths to treated is larger at Home than in India; the numbers being 77½ in England.

Of sun-stroke, the per centage was 18⅔, but he believes that many of the cases were in fact coup de soleil, or heat-stroke.

Symptoms.—The several cases were marked by profound coma, obtuseness of the senses, contraction of the pupils, very laborious stertorous breathing in some cases, attended with foam about the mouth, small and frequent pulse, involuntary defœcation, and, in one case, seminal emission was observed. Great heat in almost all the cases.

The symptoms which marked the less severe form were chiefly extreme restlessness, head-ache, flushed face, quick and full pulse, great oppression about the chest; all premonitory symptoms. In these cases, depletion was the sheet anchor in the treatment. General depletion to the extent of 30 or 40 ounces blood drawn from a large orifice, the patient in the sitting posture, was generally followed by a remission of these premonitory symptoms, while, supplementary to this treatment, was the cold douche, affusion of cold water in the semi-erect posture, and local blood-letting. General immersion in a bath, and mussuks of fresh water poured over the head, revived the men more than any thing else; they generally emerged from the bath with all their symptoms mitigated, and their spirits cheered. When any subsequent fever or reaction took place, these were treated on the principle of relieving internal congestion, and combated with emetics and salines.

The mortuary list is, undoubtedly, high, but I am somewhat comforted to find, that it is not without a parallel. For, in a table given by the late Dr. Hill, we find that H. M.'s 3rd Dragoons, while at Cawnpore in 1838, lost on the 5th June seven deaths from apoplexy, while on the 4th June there were four, on the 3rd two, and in the entire month 23 cases; the whole deaths of that month amounted to 47.

I do not instance these statistics with any other view than to shew, that such attacks are not unprecedented at such severe and trying season.

No sooner had we a change in the weather, then the admissions into Hospital ceased. Exclusive of these apoplectic seizures, there were admitted on the 11th June ten cases of fever of an ardent type, on the 12th fourteen, on the 13th seven, and on the 14th one case.

A storm from the N. W., followed by heavy rain, cooled the atmosphere, and the mercury in the thermometer fell to 84°; for the space of eight days we had no more admissions, when, on the 20th, one sporadic case occurred; thermometer then ranging from 90 to 96°. The patient, of a full plethoric habit, was brought to Hospital in a fit of apoplexy, in *articulo*

Letter from Dr Barclay, 43d Lt Inf'y, to Dr Webb, then Secretary to Inspector General, Dr Linton. Probably bound up in this paper by the binder inadvertently - T. L. - See Dr Barclay's paper, in previous part of this volume

Madras 4th Jan. 1861

My dear Mr

I find I have still one or two copies of the paper on Insolation which I wrote for the last number of the Madras Medical Magazine & I shall be happy to send you one of them. The paper was written rather under difficulties - the latter part of it when I was so weak from a severe attack of fever that my fingers would scarcely hold the pen - and I had to correct the proofs when blind from Ophthalmia, a friend reading them over to me as they arrived. Hence many typographical errors & a system of punctuation for which I must decline all responsibility. With more leisure & better health I should also probably have arranged the matter somewhat differently & expressed myself more clearly on certain points. I look upon Insolation as essentially a disease of the nervous system - the vascular system being only affected secondarily & through the nervous system. I believe that the impression is made on the nervous peripheral on the surface & that the essential symptoms are to be

attributed to reflex action. From what I have seen in Agra I am sure that the disease can exist without being complicated with blood disease & therefore I look upon the blood disease with which all our cases in the field were complicated merely as a complication. I do not think there is the slightest reason to suppose that the disease originates in the medulla oblongata - but I think it is possible that the inspiration of overheated air may produce a similar effect on the nervous periphery on the internal pulmonary surface to that which I believe to be produced on the surface of the body generally, & that consequent reflex action may have to do with the pulmonary disease which so often ensues.

It would be interesting to ascertain by experiment, if it were possible, what is the direct effect of the application of overheated blood to the different nervous centres. In all our cases in the field the blood must have been intensely heated. The heat of the surface was very great - but I had no thermometer

sufficiently small to ascertain its exact amount with. I cannot tell you much as to its persistence after death. Decomposition took place very rapidly quite as much so as in the bodies of men killed by lightning — & all were buried within a few hours after death. In a temperature of 127° of course they did not cool very rapidly. I am inclined to believe that in quarters the heat is not very persistent after death — but that you can very easily ascertain. The quantity of urine is slightly increased I believe but I do not remember to have heard any complaints of pain in passing it. It was passed generally frequently & in small quantities.

If anything new has been discovered by the post mortem examinations made last year I hope you will let me know what it is. In the field we made no examinations. We had no place to make them in but a native tent in which the thermometer used to stand at 127° — & we were far too much done up to be very zealous about anything beyond the care of the sick. My only assistant had to give in altogether & take to his bed — & it was all that I could do to keep on my legs. No one who was not there can appreciate the horrible state of exhaustion to which one were reduced in those times. For all but medical men there was some rest, but for us there was none

The points connected with insolation on which it is most desirable that observations should be made are I think the state of the blood & urine — & the state of the atmosphere as to electricity, ozone & moisture during the prevalence of the disease. — The electrical state of the atmosphere has I am sure an important connection with the tendency to the disease. —

I read Longmore's paper some time ago. He seems to endorse most of the opinions of the late Dr. Hill. He may possibly have seen this paper of mine by this time as Marleson the new Prof. of Medicine at Chatham took home a copy some time ago. Beatson & Taylor have also written upon Insolation but I have not seen either of their papers. —

We are anxiously looking out for information as to the amalgamation scheme. The Madras Govt. has been called on to submit a plan for the amalgamation of the two staffs but whether they have done so or not I do not know. Of course they will try to put us all under the P. I. G. — but that would be illegal if any unless he is put under our D. G. — Kind regards to Dr. Lenton.

mortis, and died within the hour. This was followed by one other, a Sergeant, on the 5th July; thermometer ranging from 93 to 96°. This patient was plethoric, and of robust health: he died within a quarter of an hour of his admission.

Causes.—Exhaustion from fatigue and intemperance, have generally been assigned as the causes chiefly in operation to induce attacks of insolatio, but I cannot learn that, any of those patients who succumbed to this outbreak, were particularly addicted to drink, fatigue they could not have suffered, as they had no duty sufficiently heavy to cause fatigue. There were other causes, however, in operation, which may have tended to develope these attacks, and second only to the great heat and unusual pressure of the atmosphere I would mention, the crowded state of the men's Barracks; for assuredly, those Barracks, most crowded, least ventilated, and worst provided with punkahs and other appliances to moderate the overpowering heat, were the Barracks which furnished the greater number of fatal cases.

Again, the men were laboring under much excitement at the time, regarding the bounty and discharge question; this of itself was sufficient to keep up a constant mental excitement: add to this, when they saw that men were so rapidly, and, in many cases, fatally seized, and their hopes of return thus annihilated, a kind of panic seized many of them, both in Hospital and in Barracks, this was markedly observed in a patient in the venereal ward, by name Morrison. This man became most excited, complained of violent pain in his head, and great oppression about the chest and epigastrium, with flushed face, and full bounding pulse. He was bled, in the sitting posture, to nearly ℥xxx.; great relief of all the symptoms followed, but pain in his head continuing, a blister to the occiput was applied, and Billings' mixture of emetic and salines, was prescribed with marked benefit. He was discharged well on the 10th July.

In all paludal fevers, I have found this mixture of great use in relieving the most ardent types, in modifying oppressed nervous power, in moderating vascular action, and in promoting exhalation and secretion.

I believe, that the proximate cause of this outbreak of sickness, was excessive heat of the atmosphere, acting upon the nervous system of the young and unseasoned soldier, whose system was rendered more susceptible of such influence by moral and physical causes then in operation, such as the bounty and

discharge question, combined with the enervating effect consequent on the men being crowded together in Barracks ill adapted for their accommodation, and the depressing consequences of their witnessing the rapidly fatal tendency of the attack amongst their comrades, one man having followed another in quick succession into Hospital.

Be the influence of what nature it may, it was sufficient to destroy the tone of the capillaries, and to cause hœmorrhagic exudation at the base of the brain, and within the spinal column, which was the chief pathological condition observed post mortem; I would ask,—what more powerful pre-disponent to apoplectic seizures have we than extremes of temperature?

J. H. Butler, F.R.C.S., *Surgeon,*
3rd European Light Cavalry.

Mean Meer, *July 29th*, 1859.

Cases of Apoplexy and Insolatio, admitted into Hospital during the Months of June and July 1859.

Private Anthony Ryan, B. Troop.—Æt. 20. *Admitted* 30*th May* 1859.

31*st May.*—Admitted, complaining of pain at the epigastrium and head-ache. His tongue remarkably clean, pulse natural. He had a dose of castor oil, by which the bowels were well moved.

1*st June.*—Has been feeling much easier, but, this evening, had another severe attack of pain at the epigastrium. Eyes suffused, no marked symptoms of fever. He had fomentations to the belly, and at night a x. gr. dose of hydrarg. chlorid. with pulv. antim. co. gr. iij. and morphia acet. gr. ss.

2*nd June.*—Was much better in the morning, except that he had considerable vomiting, and occasional pain at the epigastrium. Complains of much thirst; had a blister to the epigastrium, and quinæ sulph. gr. x. in the afternoon. When seen at the evening visit, he appeared to be doing well; the vomiting had stopped, he had no pain. The pulse somewhat full, 84, tongue rather coated. He was ordered to repeat the calomel and pulv. antim. co.

About 8 o'clock in the evening (it being excessively hot in the Hospital), he complained of great pain in the head and epigastrium, and soon became senseless. He had a draught of æther and ammonia, and cold affusion to the head, but he rapidly sunk, and died at 2 A. M. on the 3rd instant.

Post Mortem, 6 A. M., *3rd June* 1859.—The natural heat rather higher than during life. Left lung adherent to its costal pleura, substance of both lungs healthy, a little serum in the pericardium. Stomach rather congested, bowels not examined, brain much congested, of high temperature. The vessels of the meninges gorged with blood, puncta vasculosa well marked, no serum in the ventricles or substance of the brain; gall-bladder much distended. Liver and other organs healthy.

Private Thomas Morey, I. Troop.—Æt. 22. *Admitted 3rd June* 1859.

Came into Hospital on the afternoon of the 3rd June, complaining of febrile symptoms, marked by pain in his back and limbs. Was prescribed an emetic, which was followed by a drachm of compound powder of jalap. In the evening visit, stated he felt ill, the previous day having been obliged to fall out of the ranks. Tongue was thickly coated, with a hot and dry skin, quick pulse, but not full or hard; was ordered hydrarg. submur. gr. x., pulv. ipecac. gr. x. h. s. s., to be followed by diaphoretic mixture. At ¼ to 9 P. M., the man sleeping on the next bed to him heard hard breathing, and sent for the Apothecary; who, on arriving, found him insensible; skin very hot; pupils contracted. A turpentine enema was administered, sinapisms to the extremeties, and the cold douche. I saw him at 9½ P. M., found him as above described. Head was shaved, and cold douche continued; a vein opened, blood to 16 ounces was taken, and draught of ammonia given. At 10 he expired, pupils dilated a little before death, and the limbs were convulsed. Body examined at 7 A. M., 4th June. Body was stout and well-formed: on opening the head, there was an escape of dark black blood, of several ounces. Vessels of the brain turgid and congested, membranes more vascular than normal, choroid plexus the same, serum in ventricles, and a large quantity of bloody serum at the base of the brain. Lungs congested, costal and pulmonary pleura of left lung firmly adherent, of recent date; heart fatty, abdominal viscera healthy.

Private Dennis O'Brien, H. Troop.—Æt. 22. *Admitted 10th June* 1859.

10th June.—This was a man of healthy appearance, he had not before been in Hospital. He was brought in about 1 o'clock, having been taken ill while on sentry, was not in the sun.

He was then complaining of head-ache and giddiness, and particularly of a feeling like a hard lump at the pit of the stomach. He was quite sensible. He was given a brisk aperient, by which the bowels were moved freely; about ½ past 3 he became suddenly worse, with stertorous breathing, loss of consciousness, contracted pupils. Leeches were applied to the temples, cold affusion to the shaved scalp, v. s. ad ℥xx., mustard to the legs. He gave no signs of rallying. When seen by me at 4 P. M. he was in *articulo mortis*, and died a few minutes afterwards.

No post mortem, as the body was buried very early on the following morning.

Private Michael O'Brien, A. Troop.—Æt. 21. *Admitted* 11*th June* 1859.

Was admitted on the 11th June, with symptoms of insolatio. Head-ache, sense of oppression about the chest; had the cold douche and a mixture of tartarized antimony and sulphate of magnesia. On the 12th was better, mist. tonic aperient.

15*th*.—From the 12th to 15th continued to improve, when an ecthymatous eruption appeared about his head, the tonic aperient was continued, and he was discharged well on the 17th instant.

Sergeant John Harrington, E. Troop.—Æt. 27. *Admitted* 11*th June* 1859.

Was admitted on the 12th, at midnight, with symptoms of insolatio; had been feeling ill during the day with abdominal pains. Symptoms on admission great restlessness, with oppression about the chest and heart. Had the cold douche and cold bath, with draught of carbonate of ammonia and brandy, followed by mist. salina; was very restless, but derived great relief from the cold affusion. Was discharged on the evening of the 13th instant.

Private James Fanighan, G. Troop.—Æt. 25. *Admitted* 11*th June* 1859.

12*th June*.—Was admitted with great restlessness, sense of oppression about the chest and abdomen, head-ache. V. S. ad deliquium, cold douche, mist. salina.

13*th*.—Had a blister applied to the nucha.

14*th*.—Much better; slept well; free from head-ache and pain of any kind. Cont. mist. salina.

15*th*.—Complained of soreness in his inside; had Ol. Ricini ℥i.

16*th*.—Better.—Mist. salina et mist. quinæ alternately.

Continued to improve, and was discharged well on the 20th instant.

Private Samuel Sumners, G. Troop.—Æt. 23. *Admitted* 11*th June* 1859.

Was admitted at midnight, on the 11th June, evidencing great restlessness, weakness and head-ache, with considerable oppression about the precordial region. Pulse full and hard, was bled to syncope. Surface very hot, had the cold douche and cold affusion, which greatly relieved him, and he soon fell asleep. Mist. salina every hour. On the morning of the 12th the pulse was soft and compressible. Throughout the day of the 13th the cold bath and affusion were, from time to time, repeated, which always comforted him.

14*th*.—No head-ache, and feels quite well.

15*th*.—Able to go out, and was discharged.

Private Ghom Galligher, C. Troop.—Æt. 24. *Admitted* 11*th June* 1859.

12*th June*.—Was admitted last evening with symptoms of insolatio; head-ache, with oppression about the chest, and a dead heavy feeling about the legs; was bled to syncope, and the cold douche. The restlessness and head-ache relieved by the bleeding and cold douche.

13*th*.—Better.

14*th*.—Feels very well; continued to mend, and was discharged well on the 21st instant.

Private James Queen.—Æt. 23. *Admitted* 11*th June* 1859.

Admitted on the 11th at evening, with head-ache, oppression at the chest, and general weakness; a new arrival from the Military Train Band. Cold douche, cold affusion, and mist. salina after bath. He expressed himself a good deal easier, very little pain in head now.

13*th*.—Same remedies; cold bath, mistura salina. Continued to improve and, on the evening of the 16th, was discharged.

Private John Haynes, H. Troop.—Æt. 21. *Admitted* 11*th June* 1859.

11*th June*.—Was taken suddenly ill while in the barrack about sun-set. Is very restless, has a hot skin, much oppression at the epigastrium, great head-ache. The symptoms

in this case were not nearly so strongly marked as in others. He was given an emetic, which appeared to relieve him a good deal. Cataplas. sinapis epigastrio, fotus terebinth., cal. gr. iv., morphia acet. gr. ss. h. s. s. Haust. sennæ cras mane.

12*th*.—He feels quite well again to-day, has no head-ache or pain at the pit of the stomach, the bowels well opened. He was discharged on the following day.

This man was re-admitted a few days afterwards for febris intermitt. and debility, he is still under treatment (July 20th).

Sergeant Hugh McArdle, H. Troop.—Æt. 22. *Admitted* 11*th June* 1859.—*General health good.*

Was suddenly taken ill while in the barrack, complains of much pain at the epigastrium and in the chest, has not much head-ache, skin very hot and dry, pulse full and hard, about 84, has a feeling of great general oppression, but is quite conscious and sensible.

He was bled to ℥xxx., and felt much relieved. After recovering from the syncope consequent on the bleeding, he had the cold affusion for a short time, but no cold bath; he felt pretty well on the following day, and recovered favorably with the assistance of small doses of quinine. He was discharged on the 20th.

Private Lawrence Murkey, H. Troop.—Æt. 21. *Admitted* 11*th June* 1859.

Admitted, complaining of feeling ill with head-ache, hot skin, oppression at the chest; presented no severe symptoms. Had an emetic, which operated freely; fotus terebinth. pectori. He apparently got better, was perfectly sensible, and complained much of the smarting caused by the turpentine. About ½ past 9 he was observed to throw himself about as if in pain, and when spoken to, appeared to understand nothing that was said. Pupil contracted, and insensible: the skin (now) not preternaturally hot. V. S. ad ℥xxxij., mustard to the epigast., cold affusion to the head. After the bleeding, the pulse which had been very hard, became softer, and at last nearly imperceptible; the cold affusion and an ether draught relieved him somewhat, and he gradually improved: the pulse became regular, quick and soft; pupil dilated, and was slightly sensible to light. He remained quite insensible. On the following day, he seemed better, was still unconscious, but kept getting out of bed. The skin was rather hot, pupil much more sensible to light. He had a dose of senna, and the bowels were moved 3 or 4 times. Pulse

soft and weak, ☿00. He had a turpentine injection in the evening, and a blister to the nape of the neck.

On the 12th he was much the same, the pulse weak but regular, pupil hardly acting at all. He never regained consciousness. The turpentine injection was repeated. He could not be got to swallow food or medicine. He became weaker towards the evening, and died early on the morning of the 13th instant.

Post Mortem, 13th June, 6 A. M.—Heart flabby, and empty of blood. Lungs much congested, especially at their bases. Liver pale, somewhat enlarged. Spleen congested. Brain membrane dull, fluid in meshes of the arachnoid. Brain pale and watery, much serum at the base of brain.

The other organs not examined.

Sergeant William Hyde, H. Troop.—Æt. 41. *Admitted 11th June* 1859.

Complained of much weakness, head-ache, pain at epigastrium. Pulse full, tongue clean, face rather flushed. Had an emetic, which acted well; had calomel and senna, but, the bowels not being moved, an injection of turpentine was given; he remained quite sensible, but the sense of oppression and weight at the epigastrium remained during the whole day, the pulse became softer, and he was altogether better in the evening, but still complained of much pain and tightness at the epigastrium. He had mustard poultice and a saline mixture, with vinum antim.

12*th.*—**Feels much better, tongue much coated. Bowels confined. Repeat calomel and senna.**

15*th.*—**He was discharged, feeling perfectly well.**

Private Samuel Thompson, H. Troop.—Æt. 22. *Admitted 11th June* 1859.—*General constitution good.*

11*th June.*—Has been enjoying good health till about sun-set this evening, when, in his barrack, was attacked suddenly with severe head-ache. Came to Hospital directly, did not feel the pain of tightness of the chest observed in other cases admitted on the same evening; skin hot, pulse full and hard. He was quite conscious but very restless, and complaining much of pain in the head. He had the cold water affusion to the head, was bled to ℥xxx., and had a mixture containing magnes. sulph. and antim. potass. tart. He felt great relief after the bleeding, and slept soundly.

12*th.*—On the following day he felt well, the bowels were confined, and he had a dose of calomel, followed by a senna

draught. He felt rather weak for a day or two, but was discharged fit for duty on the 17th instant.

Private Arthur Dashwood, B. Troop.—Æt. 26. *Admitted* 11*th June* 1859.—*Full habit.*

Was admitted with symptoms of fever and slight head-ache on the 11th June. Had the cold douche, followed by leeches, and mistura salina, and felt better. On the following day, towards the evening of the 12th, was seized with apoplexy. Complete loss of consciousness, profound coma, and rigidity of the limbs, was bled to ℥xviij., cold douche assiduously employed. Pulse, which before the bleeding was full and hard, became soft and quick. Pupils contracted, after some time the rigidity somewhat subsided, and he was able to bring his arm from his side to the chest. Tickling the feet and irritating the eyelids induced evidence of sensation. Evacuations passed involuntary. He died on the 14th instant. There was no post mortem in this case.

Private Patrick Conlan, F. Troop.—Æt. 22. *Admitted* 11*th June* 1859.

Was admitted on Saturday, the 11th June, at 2 h. 30 m. P. M., brought in a doolie, insensible, breathing stertorously. Was bled by Mr. Cullen, the Apothecary, before I saw him; the cold douche was applied and head shaved, 20 leeches to the temples, was bled to ℥xxx., senses completely obtunded, slight reflex action induced on tickling the feet, pupils contracted, great heat of surface. There were no precursory symptoms.

The cold douche was persevered with until a little before he died; evacuations passed involuntary, no abatement of the symptoms. Died about 6 P. M.

Private Edward O'Neil, G. Troop.—Æt. 24. *Admitted* 11*th June* 1859.

Was brought dead to Hospital from the Barrack G. Troop, was of good constitution, plethoric habit. No post mortem in this case.

Private George Bower, B. Troop.—Æt. 24. *Admitted* 11*th June* 1859.

11*th June.*—This man was admitted in the afternoon with great head-ache, hot skin, quick pulse, &c., but the symptoms were not then of a severe character. He had an emetic and aperient, with saline and antimonial medicines.

After sun-set he became somewhat suddenly worse, with stertorous breathing, insensibility, throwing about of the limbs, &c. He was immediately bled largely, and the cold affusion and cold bath used, but without relief to the symptoms. He became comatose, and died about 1 o'clock.

Post Mortem, 12th June 1859.—The lungs were much congested, especially at their bases. Heart empty, its walls tightly contracted. The abdominal organs healthy. Brain, the meninges congested, arachnoid rather dull, a small quantity of serous fluid in the ventricles and at the base of the brain.

Private James Galligher, G. Troop.—Æt. 24. *Admitted 11th June* 1859.

This man was brought in with fever in the morning, and, in the course of a few hours, he was seized with apoplexy; became profoundly comatose. The cold douche was assiduously employed, and a sinapism to the chest applied; he vomited two or three times, but there was no amelioration of the symptoms. He died on the evening of the 11th instant.

There was no bleeding in this case.

Troop Sergeant Major Maurice O'Sullivan, C. Troop.—Æt. 24. *Admitted 12th June* 1859.

Came into Hospital on the night of the 12th, complained of oppression about the chest, but no head symptoms. Had mist. salina, with the view of relieving internal congestion. About 2 hours after admission was seized with apoplexy, he was convulsed, and breathing stertorously; there was complete loss of consciousness, the symptoms were suddenly and rapidly developed, was bled to ℥xxx., and the cold douche applied. Coma profound, pupils dilated, eye half open, slight evidence of sensation on tickling the feet. Died at midnight.

No post mortem.

Corporal James Fitzgerald, I. Troop.—Æt. 22. *Admitted 12th June* 1859.

Admitted on the 12th with severe head-ache and restlessness, had a cold douche and saline mixture every two hours. There was great restlessness in this case. On the 16th, an ecthymatous eruption broke out, and he progressed well for some days, when he got an attack of icterus, which yielded to treatment and diet, and he was discharged well on the 6th July 1859.

Private Alexander Tosh, F. Troop.—Æt. 21. *Admitted 12th June* 1859.

Has felt giddy and confused all day ; was taken suddenly worse about sun-set, and brought to Hospital at once. He had an excessively hot skin, flushed face, contracted pupils, intense head-ache, and pain at the epigastrium. Pulse full and bounding, 90 ; he had, on admission, an emetic, which acted well, and a turpentine and castor oil enema.

The symptoms being no way relieved, he was bled to ℥xxxv., and the cold affusion applied vigorously to the head. The whole body was also immersed in the cold bath. He was given a mixture containing magnes. sulph. and antim. potass. tart., under this treatment the symptoms begun to improve, and he fell asleep.

13*th June*.—He seemed pretty well, and complained of no head-ache or other pain.

14*th*.—Had severe head-ache again; no epigastric pain. Hirudines xij. capiti.

15*th*.—Has no head-ache, and says that he feels well. He was afterwards given tonic doses of quinine, and recovered favorably. During convalescence he had a very profuse eruption of ecthyma all over the body. He was discharged 21st June. This man was re-admitted on July 5th, on account of febris remittens; he is now in Hospital, July 19th, quite convalescent.

Private James Barnes, F. Troop.—Æt. 21. *Admitted 12th June* 1859.—*Good constitution.*

Was admitted complaining of great head-ache and pain at the epigastrium, skin very hot, face flushed, eyes suffused. After being in Hospital a short time, he became insensible, had stertorous breathing, dilated pupils, cold skin. He was bled to ℥xxxij., had turpentine fomentations, cold bath used freely, and cold affusion to the head. After the bleeding he begun to improve. The pulse, which, at one time, was almost imperceptible, gradually gained strength. He remained unconscious for several hours.

13*th*.—Seems to be pretty well again, feels no pain or inconvenience, but says he is weak. He recovered favorably, and was discharged on the 17th.

Private Richard Baker, H. Troop.—Æt. 21. *Admitted 12th June* 1859.—*Has had very good health.*

This man suffered in a very marked degree from the symptoms detailed in other cases. Soon after admission, his pulse

became feeble and fluttering, the face pale, skin cold and clammy, he was perfectly insensible while in this state. He was bled to ℥xx., had an injection of turpentine, cold affusion in semi-erect posture. He remained without improvement for 4 or 5 hours. The pulse improved a little after the bleeding, but, afterwards, became nearly imperceptible; he had a draught of æther and ammonia given, but was unable to swallow it. After some hours, he regained consciousness, and, next morning, was walking about, saying he felt quite well. He was discharged on the 18th instant.

Private William Hughes, G. Troop.—Æt. 21. *Admitted 12th June* 1859.

Was admitted with symptoms of fever, with head-ache; has been vomiting bilious matter, is of strong, robust habit; was prescribed saline mixture every hour. The next day was something better. On the evening of 13th, had strong fever, with oppression about the chest, was bled to syncope, and repeatedly had the cold bath and douche, and leeches to his temples.

14*th.*—Feels better, and expresses himself as bravely this morning.

15*th.*—The saline mixture continued three times a day.

16*th.*—Well but weak, the saline with quinine solut. alternately every three hours, continued to improve, but his appetite begun to fail him, and an attack of ecthyma vulg. came out. Some cooling mixture given progressed well, and was discharged on the 30th June 1859.

Private Richard Henderson, G. Troop.—Æt. 23. *Admitted 12th June* 1859.

Came into Hospital on the 12th, with symptoms of ardent fever, attended with head symptoms and great restlessness, is of a stout plethoric habit. Bled to syncope, and had leeches to the temples; had the cold douche and cold affusion.

15*th.*—Speech affected, and reels from side to side in walking. Mistura salina every hour, blister to the occiput.

16*th.*—Feels better, both speech and gait considerably affected. Cont. mist. salina.

17*th.*—Mistura cathart. ℥iij., bowels torpid. Blister to be kept open. Cont. mist. salina.

19*th.*—Speech improved, in walking there is a tendency to fall forward, and is unable to preserve his equilibrium. Pil. hydrarg. gr. ij., ext. hyosciam. gr. iij., bis. die.

20*th*.—Since this time he begun to mend, the pills were continued until his mouth was slightly affected, they were then discontinued, and a tonic prescribed.

7*th July*.—Still some impediment in his speech, which he now says has been always more or less affected; gait all right again. 9th. Was prescribed infusion calumba with ferri, ammon. citras, and a generous diet. On the 16th discharged well.

Private Michael Malone, of the 3rd Regiment Light Cavalry. Admitted 20th June 1859.

Admitted at 3 P. M. in a state of apoplexy, is said to have been passing backwards and forwards repeatedly during the day from the European Barracks to the necessary, on the last occasion he was seized with a fit, and fell down insensible. There was complete loss of consciousness and motor power.

The patient is of full plethoric habit. Mr. Cullen, the Apothecary, opened a vein, and took about 8 ounces of blood, administered an enema, the cold douche, and applied some leeches to the head. I saw him soon after his admission, and found him as described. Pupils contracted, breathing stertorously. I opened a vien, and took about 18 ounces of blood, with no abatement of symptoms. At about four P. M., after being somewhat convulsed, during which the seminal ducts emptied their contents, synchronous with which there was dilatation of pupils, he expired.

AUTOPSY.—There was considerable extravasation of blood on the brain, and engorgement of the cerebral vessels, and much bloody serum effused at the base of the brain, and in the spinal sheath. Lungs not congested, but the pulmonary pleura firmly adherent to the costal. Liver spotted, indurated, and with convex surface adherent to the diaphragm.

Body plethoric and adipose.

Sergeant John Hayes, A. Troop.—Æt. 24. *Admitted 5th July* 1859.—*Robust.*

At 6 P. M. was brought to Hospital in a state of apoplexy, wholly insensible, and breathing stertorously, foaming at the mouth, pulse at wrist scarcely perceptible, pupils contracted and insensible to the stimulus of light, surface hot. I was in the ward when he was brought in, and tried to give him a draught, which he could not swallow. I applied the cupping-glasses, and scarified the nape of his neck, an ounce or two of blood flowed, when he died convulsed, about 20 minutes past 6 P. M. Before he expired, the pupils which were before contracted, now dilated to their extreme limit.

Autopsy.—Body stout and well-made, membranes of brain much congested, cerebral substance presented numerous punctæ vasculosæ, base of the brain deluged in bloody serum, and spinal canal contained an ounce or two of the same kind of fluid. Organs of the chest and abdomen normal.

Private John Ryan, B. Troop.—Æt. 20. *Admitted 9th July* 1859.—*Feeble Habit.*

Was admitted a little before 5 A. M. with apoplexy, was quite insensible, breathing stertorously, pulse small, and scarcely perceptible. Had an enema on admission, and mist. salina was given, had vomited twice before he was brought to Hospital some yellow matter. Pupils were contracted, and no reflex action induced on tickling the tarsæ; the cold douche and immersion of the feet in hot water, leeches applied to the temples, and a vein in the arm opened, were the means resorted to, only a small quantity of blood flowed, with no abatement of symptoms. I saw him soon after his admission; he was then in *articulo mortis*, and expired at 20 minutes to 6, about one hour after admission. This man was of spare habit, and had not been in Hospital since last November.

Autopsy.—Brain,—membrane much congested, and the serous membrane at the anterior lobes of the cerebrum had thrown out adhesive matter, and the two lobes were firmly adherent.

Cerebral substance presented numerous punctæ vasculosæ, much effused bloody serum at the base of the brain, and in the vertebral canal. Pulmonary pleura firmly adherent to the costal of the upper lobes of both sides. Substance of lungs congested, and presented numerous ecchymosed patches. Both lungs at the upper lobes contained several tubercles disintegrating, and there were two cicatrices of former cavities. Liver much enlarged, and several white spots on convex surface; other organs normal in appearance, considerable flow of bloody serum from nose and mouth after death.

J. H. Butler, F. R. C. S., *Surgeon,*
3rd European Light Cavalry.

Mean Meer, *July 29th*, 1859.

NOTICE OF A FORM OF PARALYSIS OF THE LOWER EXTREMITIES,

Extensively prevailing in part of the District of Allahabad, produced by the use of Lathyrus sativus as an article of food.

By James Irving, M. D.,

CIVIL SURGEON OF ALLAHABAD.

In October 1856, Mr. Court, the Collector of Allahabad, when in Pergunnah Barra, on the right bank of the Jumna, was very forcibly struck by the number of lame persons whom he met in all directions. On enquiry he found, in village after village, that there were several cripples in each. He was also informed that the disease which gave rise to this lameness was of recent origin, and that it was attributed by some of the people to their living on bread made from *kessaree dál*, and by others of them to the unwholesome qualities of the wind and water of the Pergunnah; the latter being vague causes of disease ever ready to be brought forward by the natives in order to account for any unusual or unintelligible sickness. Several cases of paralysis of the lower limbs were sent from Barra, to the Government Charitable Dispensary at Allahabad, for medical treatment. Unfortunately, however, they got tired of the means employed for their cure, and left after being in hospital for a month or five weeks. But, through the kindness of Mr. Court, who accompanied me to Barra, I was enabled to make some few enquiries into the nature and history of the malady.

Close to the village of Kheerut Gohanee, on the Sohagee Road, all the lame people from surrounding villages were mustered for my inspection on the morning of the 6th February 1857. About fifty men were present, all more or less lame in both legs; some so much disabled as to be hardly capable of motion, while others were only slightly affected. One after another was questioned, and the following particulars were thus gathered. Without exception they all stated that they

had become paralytic during the rains; in most cases suddenly so; and several stated that it had been during the night. Men who had gone to bed quite well, had awoke in the morning feeling their legs stiff and their loins weak, and, from that day, they had never regained the use of their limbs. At first, the lameness was trifling, and amounted only to unsteadiness of gait, and slight stiffness chiefly of the knees. After a time the muscles of the thighs commenced to ache and feel weak, and also the loins. In no case did those examined admit that they had then, or ever had, severe pain either in their limbs or loins. They all ascribed their disease to their feeding principally on *kessaree dál*, but they seemed to imagine that, in order to produce the malady, there must be another circumstance superadded, *viz.* the deleterious quality of the water during the rains. So far as could be gathered, it was not from drinking the water, that they fancied they took harm, but from getting wet by it. More than one dwelt on the fact of his having been exposed to rain, either while ploughing or tending sheep; and others spoke of having been working in jheels just before they became lame, at various periods embraced between the months of July and October. The people were particularly examined, and questioned as to whether they had had any symptoms of fever, or of any other disease at the time that they lost the use of their limbs, but they all said that they had not, and nothing was discovered to lead to the inference that this was not strictly true. In only one of many cases examined was enlargement of the spleen observed. Many of the men appeared to be strong-looking, and their legs even, in most cases, did not seem to be much wasted, if at all so. It was stated by those affected as well as by several native officials who were interrogated on the subject, that the complaint did not lead to other diseases, nor tend to shorten life, unless indirectly by preventing the individual working, and thus procuring proper means of support. It was farther stated, that the arms were never affected; but that there were some few cases of persons so greatly crippled that they could not walk. It was added, that males were more often afflicted than females; and that ryots were more liable to the disease than the zemindars, although the latter class was not exempt from it.

The following cases, selected at random, are given by way of illustrations of the complaint:

1.—Bawaneedeen, Chumar, aged 35, an inhabitant of Kherath Kullan, has been ill six months. States that he was one

day working in the fields, during rain, in the month of August and, at night, slept inside of his hut. In the following morning he awoke with pain of the loins, which was, at first, slight, but which has gone on gradually getting worse, till his lower limbs have become quite paralysed. He now walks with considerable difficulty and unsteadiness, dragging the feet, and scraping the great toe nail against the ground in bringing one foot before the other. At the same time that he became paralysed, two of his children became so also.

2.—Shewlall, Kole, aged 45, resident of Kherath Kullan, has been paralysed for twelve years, and states that he became so, suddenly during the rains. He has a boy similarly affected. This man walks very lamely; his toes are turned inwards, and his legs are much wasted. Says that in walking he has slight pain of the loins and knees.

3.—Doorga, Buniah, aged 40, has been paralysed for eight or nine years. States that, when first seized, he had been grazing cattle during the rainy month of September, and slept in a shed. One morning, he felt stiffness in his loins and knees, which has gradually increased. He now walks very lamely and with much difficulty, the toes being turned inwards, and the knees bent. The great toe nail scrapes the ground. This I observed to be usual in old cases. The nail gets regularly rubbed down to the quick.

4.—Ramdyal, Chumar, aged 21, an inhabitant of Gureia, has been ill for nearly eight years. States that he had been ploughing one day while it rained in the month of July, and that he went home at night, sleeping inside his mud-house. Next morning on attempting to get up, he found that he had lost the use of his legs. His walk is now unsteady, and he has considerable difficulty in raising his body from the ground by leaning on a stick.

5.—Palee, Cachee, aged 13, belongs to the village of Gureia, has been lame five or six years past. Became so in the month of October. He walks tolerably well, with the knees bent.

6.—Bundoo, Needass, an inhabitant of the village of Tilgunnah, has been paralysed for eight years. He had been employed driving bullocks while it rained during the month of August, and suddenly found himself lame one morning.

Let us now enquire into the extent to which this disability prevails, and in order to do so, let us note the number of in-

habitants of the Pergunnah. The following is an abstract of the last Census in 1853. *

Hindoos.				Mussulmans.				Total.
Cultivators.		Non-Cultivators.		Cultivators.		Non-Cultivators.		
Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	
20,166	18,221	11,787	11,586	368	395	506	461	63,490

Now it appears, from a return with which Mr. Court kindly furnished me, that, in the month of January 1857, there were, in Pergunnah Barra, 2028 persons known to be affected with paralysis, or in the proportion of one in every 31·30 of the population. These figures disclose a terrible amount of removable disease, showing a proportion of 3·19 per cent. of the population rendered useless by a single disease; for only a very few of those paralysed are able to do any work in order to support themselves.

To show farther the extent to which palsy of the lower limbs prevails in Barra, the following facts may be stated. In the beginning of 1857 there were 295 villages, and I had a return showing that there were paralytics in 188 of these, thus leaving only 107 villages, scattered over an area of 1,58,493 acres, in which there were no cripples. But, of the 107 villages in which there were no cripples, there were 58 uninhabited, so that in reality there were only 49 inhabited villages, in the whole pergunnah, which were free from this species of paralysis.

Different villages, however, are affected in very different degrees and proportions. Thus in Kuchra, with a population of 371, there was only one paralytic, while in Soondurpore, with a population of 250, there were 39. In Puchiour, with a popu-

* The population, as here stated, differs from that given in the Report of the Census of the North-West Provinces for 1853. Above I have only given the number of actual inhabitants of the Pergunnah on the night of the 1st January 1853. Travellers and others, not permanent inhabitants, have been excluded.

lation of 375, there was one. In Buschora Uperhar there were 353 inhabitants, of whom 33 were paralysed. In the village of Abheepoor there were, in January 1857, 268 inhabitants, of whom 22 were palsied. In Lohera, out of 557 villagers, 8 were cripples, or one in 69. In Pooreh Gunga Chuk there were 261 inhabitants, of whom 20 were palsied, or one in every 13. In Buradeeh Zuptee, there were 148 inhabitants, 8 of whom were affected, or in the proportion of one in 18. In Room there were 6 paralysed villagers of 198, or one in 33. In Buckla there was a population of 491, and only 4 lame, or one in 121.

The disease, as might be expected, is not confined to Barra, but extends to Khairagurh, in Allahabad District, and to the adjoining District of Banda. Mr. Mayne, the Collector of the latter, supplied the following table and memorandum in reference to this malady:

Pergunnah.	Thannah.	No. of villages in which cripples are known to exist.	No. of cripples.	Population of Pergunnah.	Per centage.
Chiboo	Mow, Burgah, Rajapoor,	33 26 3	64 131 5	80,170	0·249
Total	...	62	200	...	...
Enohan	Kurwee, Munikpoor, Bimree,	10 23 12	14 72 34	8 ,313	0·139
Total	...	45	120	...	...

"The greatest amount of cripples in pergunnah Chiboo, is to be found in Burgah, which is composed entirely of villages in the hills. In Mow, where the country is less hilly, the numbers decrease, and in Rajapoor, where there are no hills, we have none at all. The causes are given as gatheea, baiee, gurhun, beeadh, shukembad, gutteea, adhung. The same remarks apply to pergunnah Enohan. Thannah Munikpoor is entirely in the hill country, and the cripples are there more numerous. Thannah Bimree is less hilly, and has less cripples. Kurwee is in the flat country, and contains hardly any cripple." When Mr. Mayne says that the causes are given as gatheea, &c.

I presume he alludes to the native names by which this particular kind of palsy is known in the Banda District.

Before alluding to the cause of this form of paralysis it may be as well to glance at the physical aspect of Barra, and the circumstances connected with it likely to produce sickness. In passing through this part of the country, it appears a vast swamp. One is struck not only by the great number of jheels, but also by the numerous tanks that are visible in all directions. These tanks, moreover, have generally one side, or part of a side level with the surrounding ground, and, are intended to drain the contiguous fields and render them arable. There are several low ranges of hills covered with large blocks of stone. The village of Barra stands high, and I was told, that looking down from it in the rains, nothing is visible but one vast sheet of water on all sides. This was the case so late as the month of December, in the year 1856. The soil of Barra is a stiff marl. It appears to take up water readily, and to retain it for a long time. In the hot weather it dries and splits into deep and wide fissures. I examined numbers of bricks made in different parts of the pergunnah, and found that none of them had the ring of good brick, when struck. They were easily broken, and a fracture generally showed numerous small calcined masses, chiefly of lime. There is a strong saline impregnation of the soil which shows itself by efflorescence on the surface. Lime made with the water soon crumbles away.

In March 1856, some of the water from a well which was said to be poisonous to any animal that drank of it, was sent to the Chemical Examiner to Government for analysis, in consequence of a law-suit then pending in reference to the closing of the said well, on account of the deleterious qualities of its water. He reported that the water contained "no absolutely poisonous ingredient, but it holds in solution so large a quantity of saline matter that it would prove very deleterious to any animal habitually drinking it." He farther stated that the saline ingredients consisted of Sulphates, Carbonates and Chlorides of Lime, Magnesia and Soda. Water is found very close to the surface. In several wells examined in February, it was only six feet, and in the rains it is said to rise within one foot of the surface of the ground.

The people of Barra appear to be very poor, and signs of their poverty are everywhere visible. The villages look dilapidated, and many of the houses are unoccupied. I saw no horses or camels,—not even a common bullock cart. The

bullocks that one does see, ploughing or carrying loads, are wretched, half-starved looking animals. The area of Barra is 1,58,493 acres, and the population 63,490, which gives an average of 256 to the square mile. But the general population of the North-West Provinces, according to the last Census, is at the rate of 420 to the square mile, and in the district of Allahabad generally, it is 493 to the square mile.

As has been stated, the paralytic symptoms which prevail so extensively in Barra are, by the natives, very generally attributed to their making large use of *kessaree dál*,—the *Lathyrus sativus* of English botanists; and it is perhaps one of the most remarkable circumstances connected with the malady, that the people should be so fully persuaded that in eating this grain they eat poison, and that yet notwithstanding they have continued, and will continue to do so, from generation to generation.* *Kessaree dál* is not unlike gram, and is common enough in most parts of India. It is frequently sown along with wheat or barley and cut green as fodder for cattle. In Barra the *kessaree dál* is ground and made into bread. It is sometimes mixed with other grains, such as barley; but is more generally taken alone, the people, in fact, not being able to afford any thing else. It is the cheapest grain procurable, and forms the chief support of the people from March till October. On the 7th February 1857, in the bazaar of Barra, wheat sold at the rate of fourteen seers to the rupee, while *kessaree dál* was at the rate of twenty-two per rupee. It grows without labour or trouble, and on damp swampy ground that will bear no other crops. The land is merely ploughed slightly once, and the seed thrown in;

* Mr. Court, Collector of Allahabad, in a letter to Government on this subject, writes:—"It will be an object with me to discourage as much as possible the cultivation of Kessaree Dal, and the employment of that vetch as food. But I fear that this will have but little effect on the people. They all ascribe the disease to eating it, and yet they live upon it. The fact is they cannot help themselves. They must either eat it or die of starvation. In the highlands of the pergunnah, wheat will not grow; cotton is grown in the khareef; gram and linseed in the rubbee, but the staple produce of khareef harvest is the kodoo; of the rubbee, kessaree. There are other causes for this besides that of the soil being unsuited for wheat, &c. The pergunnah is particularly liable to disaster. Too much rain is as destructive to the better description of crops as too little, and as in that as in other pergunnahs bordering on the hills, hail-storms are very frequent. The kessaree grows in all seasons. It requires little or no culture; it varies in luxuriousness of growth only according to the season, and affords the only certain provision of life. As the people are at present circumstanced, they have, in real truth, no option."

or the plant sows its own seed, which germinates freely next year without further attention or care. The moist nature of the soil of Barra should be noted in connection with the production of this poisonous *Lathyrus*, for it is stated by Loudon, in speaking of *Lathyrus cicera*, causing paralysis of the lower limbs, in those who live on bread partly made of it, in some Continental states—that the plant grown on a strong moist soil is more injurious than that cultivated on one which is dry and light.*

That the use of *kessaree dál* as an article of food, is apt to lead to paralysis of the lower limbs appears to be very generally known to the inhabitants of many parts of India. Dr. K. W. Kirk, in his Topograply of Upper Sindh says: "My attention was first attracted to it [Paralysis] as follows: a villager brought his wife, a woman of about thirty years of age, to my hospital, with paralysis of her lower extremities; she had been so afflicted for the last four years. I asked whether she had had a fall or a blow to cause the disease. 'Oh,' said the man, 'it is from *kessaree;* we are very poor, and she was obliged to eat it for five months on end!' I had never heard of such effects before from any grain, and asked whether it was good of its kind. Finding it was so, I sent the man into the bazaar to bring me a handful, which I afterwards showed to some respectable natives, and was told that disease from its use is very common all over the country. The villager above alluded to said, that if they had sowed a better kind of grain it would have been plundered by the Belooches from the hills, but they would not take this. I did not enter a village in Sindh where this *kessaree* was not to be found in the bazaar, and daily used by great numbers of poor people, nor where several were not rendered most helpless objects by the use of it. Their general health seemed good, however, their only complaint being that they had no power in their legs, but they moved about by lifting themselves on their arms. All natives know that this *dál* is a poison, and eat it only because it is cheap, thinking that they can in time save themselves from its consequences." (Kirk, op. cit. 59-60.)

Colonel Sleeman states, that in part of the Saugor Territories in 1829, and two succeeding years, the wheat crop failed from various reasons, and during these three years the *kessaree* remained uninjured, and thrived with great luxuriance. In consequence it formed the only food of the

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* Encyclopædia of Plants, p. 620. Taylor on Poisons, p. 536.

people during the three years of famine. "In 1831, they reaped a rich crop of it from the blighted wheat fields, and subsisted upon its grain during that and the following years, giving the stalks and leaves only to their cattle. In 1833 the sad effects of this food began to manifest themselves. The younger part of the population of this and the surrounding villages, from the age of thirty downwards, began to be deprived of the use of their limbs below the waist by paralytic strokes; in all cases sudden, but some more severe than others. About half of this village, of both sexes, became affected during the year 1833-34, and many of them have lost the use of their lower limbs entirely, and are unable to move. Since the year 1834 no new case has occurred, but no person once attacked had been found to recover the use of the limbs affected." He farther adds, that "many of those he saw were fine-looking young men, of good caste and respectable family. They stated that their attack had come on suddenly, often while the person had been asleep, and without any previous warning. Males were said to be more subject to the disease than females. They believed that both horses and bullocks fed on *kessaree* lost the use of their limbs." (Sleeman's Rambles and Recollections of an Indian Official, Vol. i. p. 134.) Dr. Thomas Thomson also, in his book of Travels in the Himalayas, mentions instances of paralysis caused by the use of *Lathyrus sativus* which he had observed in Thibet. I received the following information as to the prevalent ideas of the people of this part of the country in reference to *kessaree dál* from a very intelligent educated native, the late Pursidh Narain Sing, a tehseeldar in the Allahabad district.* The lameness, he writes, that results from the use of *kessaree dál*, is supposed by the natives to be a mixture of palsy and rheumatism. Living on this particular grain is supposed to be the predisposing, and exposure to cold, rain and damp weather, the exciting cause of the disease. He adds, "the bhoosa (or chaff) of this grain may be given to cows and bullocks without harm, but such is not the case with horses, who are affected (in consequence of eating it) with what is called by natives *koorkooree*. I do not know the English term for it." He describes the symptoms

* This man was Tehseeldar of Hundya, and was one of the *very very* few Native officials at this place who, *really* and *in earnest*, stuck to us during the rebellion. He did so from the very first to the very last. For having gone to Cawnpore along with General Neil, he was sent to Bithoor with a party of Mehter Police for the purpose of re-establishing order, and was there attacked by a large band of rebels, and cruelly put to death.

of this complaint in the horse, and both from the name he gives above, and from the description, there is little doubt that he alludes to colic, or gripes, an affection likely enough to result from this or any other indigestible food, and which would result independent of any specific action of this grain on the horse. Colonel Sleeman, as before noted, had been informed that *kessaree dál* caused loss of power of the limbs in both horses and bullocks. Pursidh Narain Sing further informed me, that "the natives consider *kessaree dál* to be void of all nourishment, and they declare it to have a peculiar effect on the lower part of the spine. It is also said that *kessaree* grain makes the system susceptible of catching other diseases, such as scrofula, particularly in Patna District."

In Europe also, paralysis of the lower limbs has been observed to follow the use of *Lathyrus sativus* as an article of food. Thus Don, in the Gardener's Dictionary says, that the flour of this plant, mixed with wheat flour, in half the quantity makes very good bread, but alone produces surprizing rigidity of the limbs in those who use it for a continuance. In the same quarter of the globe similar effects have also been observed to follow the eating of other kinds of grain produced by the same great natural order of plants, the Fabiaceæ—to which the *Lathyrus sativus* belongs; as well as other species of the same genus. Thus Dr. Taylor alludes to *Lathyrus cicera* and *Errum Ervilia* (bitter vetch), as occasionally rendering bread poisonous. In some part of the Continent, a bread is made from the flour of the *Lathyrus*, which is so injurious in its effects, that the use of it has frequently caused its prohibition by law. Loudon states, that when mixed in equal parts with wheaten flour it makes a good-looking bread, which, however, occasionally gives rise to weakness of the knees and spasmodic contractions of the muscles. Cattle and birds, when fed on the seeds, are said to become paralyzed. A more recent example of the poisonous effects of *Lathyrus cicera* flour is furnished by M. Vilmorin; he remarked that "the use of this bread for a few a weeks produced complete paralysis of the lower extremities in a young and healthy man. Six or seven individuals of the same family who had eaten it suffered more or less from similar symptoms, and one had died. A physician who practised in the district remarked, that paralytic affections were very common among the poor, who subsisted on this bread, while they rarely occurred among the better classes. When the *Lathyrus* flour formed one-twelfth part, no inconvenience was observed to

attend its use; in a proportion greater than this it becomes injurious; and when it amounted to one-third part, the effects might be serious." (Ann. d. Hyg. Avril 1847, p. 469—Taylor on Poisons, p. 536). Dr. Lindley also states, that the seeds of *Ervum Ervilia*, mixed with flour and made into bread, produce weakness of the extremities, especially of the lower limbs, and render horses almost paralytic. (Vegetable Kingdom, 2nd Edit. p. 548.)

As to the treatment of cases of paralysis caused by the use of *Lathyrus sativus*, I have little to say from practical experience. About a dozen cases have come under my observation at the Dispensary, but most of them disliked the restraint and the means of cure employed, and left after they had been patients for a month or five weeks. In some strychnine was tried; in others blisters to the loins frequently repeated; in others tonics. To all I gave generous diet. Two seemed to be somewhat benefited, and could walk better; and in one case the improvement was such, that a man who formerly, could only walk with the aid of two sticks, could after a time proceed without any assistance. He was under treatment at the time of the rebellion in June 1857, when the Dispensary was burnt down by the "*poor natives*", for whose use it had been built and maintained by Government. What seemed to me of most use were tonics and generous diet, together with the application of occasional blisters.

The natives of Barra do not appear to have any kind of rational treatment. They rub the lower extremities with various liniments, of which one is composed of oil, garlic juice, and opium. They fancy that eating pigeon's flesh is of use. It was stated to Mr. Court that this affection was of recent origin in Barra; but on asking a Native official who had known the pergunnah for twenty years past, I was informed that the disease had, to his knowledge, always existed; although he thought that of late it had become more common; and villages in which formerly there were no cripples now contained several.

23

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THE NATURE, CAUSES, AND TREATMENT

OF

DIARRHŒA, CHOLERA, DYSENTERY, AND FEVER.

TO THE MEDICAL OFFICERS OF H. M. FORCES IN THE CRIMEA.

GENTLEMEN,

As the author of a treatise on Cholera, Dysentery, and Fever, which was honoured by the Government of India being at the expense of its publication, and sending a copy to every medical officer in India—and as the writer of several articles, which appeared in the pages of the "Lancet" in 1843, on the subject of these diseases—now so fatally prevalent in the Crimea, with a success that obtained for me the honour of the following communication; I am induced, by the desire alone of adding my mite towards the relief of our poor suffering soldiery, to address you on the present occasion. Trusting that in the treatment of these diseases in the Crimea, the same success may attend the practice recommended in the annexed pages, as the fruit of my lengthened experience in India, as the writer of the subjoined letter testifies, after five years' experience of its adoption, to have attended his practice in the prairies of America. And with the testimony subjoined, in favour of the views I am about to submit for your consideration and adoption, I beg leave to subscribe myself,

GENTLEMEN,
Yours, very faithfully,
C. SEARLE.

55, York Terrace, Regent's Park, Jan. 20, 1855.

"UPPER MARLBOROUGH, MARYLAND, U. S. NORTH AMERICA.
Feb. 28, 1848.

"MY DEAR SIR,

"I presume you are the author of the several communications on the subject of "fever, dysentery, cholera, &c., which appeared in the *Lancet*, of London, in 1843. I "have preserved the *Lancets* which contain your 'Medical gems,' for *such* I consider "them, and they are *now before me.*

"I am actuated by no other motive than 'to render unto Cæsar the things which are "Cæsar's.'

"I am convinced from my own observation that your Pathology is *perfectly correct.* I "live in a malarial region of country, and I have seen with my own eyes, the phenomena "of Cholera, Intermittent, Remittent, and Congestive Fevers, and I believe them to be "*all* links of the same chain of diseases, having the same origin and amenable to the "same treatment. I will also add, Dysentery, Scarlatina, Acute Rheumatism and "Erysipelas. And I am satisfied from experience, that the '*sine qua non*' in the treatment, *is,* to use Sulphate of Quinine in *large* and *repeated doses,* regardless of all "inflammation. Your cases of Scarlatina, Rheumatism, and Erysipelas, *first taught me* "*the treatment,* and I take this opportunity to return you my grateful thanks, and send "you this hasty letter, as a spontaneous offering from a humble member of the medical "profession, who at least can appreciate *your practice,* and can rejoice at having "adopted it.

"With sentiments of the highest regard and esteem,
"I am your obedient Servant,
"JOHN H. BOYLE.

"Dr. Searle, of London."

THE NATURE, CAUSES, AND TREATMENT

OF

DIARRHŒA, CHOLERA, DYSENTERY, AND FEVER.

Presented by the Author.

The prevailing diseases among the troops in the Crimea are unquestionably, diarrhœa, cholera, dysentery, and fever; a series of effects arising out of the same chain of causes, namely—malaria; exposure to the inclemencies of the weather—of heat, cold, or wet; impoverished diet, fatigue, and the like reducing agencies on the system. These, severally operating under different circumstances of combination and intensity, and upon different constitutions, are productive in one case of diarrhœa, in a second of cholera, in a third of fever, and so forth, as we shall shortly offer a concise explanation of; as until the pathology or morbid phenomena of a disease is clearly understood, the true indications of treatment can by no possibility be determined. The causes enumerated in their effects, it is obvious, are, one and all of them, reducing agencies on the system; operating, as we shall point out, directly or indirectly, primarily or secondarily, in reducing the quality and healthy condition of the blood; primarily and directly by the introduction of a poison ab externo; and secondarily and indirectly, by the retention of the excrementitious elements of the suppressed secretions.

As life and heat are maintained in the body by the agency of the air we breathe, the vigour of health is necessarily essentially connected with the purity of the atmosphere surrounding us; polluted with malaria, or the noxious exhalation of marsh, jungle, or other source of putrefactive decay, its effects are, to reduce and subvert the healthy functions of the system. Through the lungs, this poison, for such it truly is, is received into the blood by respiration, and thence by its influence upon the heart, the organ of the

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*** In apology for the style of this communication, I beg to be permitted to say—that, with the intention of presenting a few copies to some who were not of the Profession, I was constrained to write it in a style open to their comprehension. And to which I must add, that I profess in this communication to have done little more than enunciate a few general principles, based upon a more correct pathology than that commonly current, for the treatment of these diseases, leaving it for those I address, to carry out the details to a more perfect system.—Author.

blood's circulation, immediately exposed to its operation, may the principal phenomena of the diseases it gives rise to be explained. The blood being thus polluted, the heart's power is reduced, and it is no longer capable of keeping the blood in full or free circulation, and the blood accordingly becomes retarded and more or less stagnant in the veins, the vessels of the circulation the most remote from the heart's influence. Moreover, as the veins of the bowels, stomach, and spleen unite in one vessel, the portal, which is again subdivided into innumerable branches, for the blood's distribution through, and purification by, the liver; here, then, in the vessels of these organs and the liver, must the heart's power be more feeble than in any other part of the system; and here accordingly is the blood found more particularly stagnant. Hence, from the preternatural engorgement of these vessels, or congestion with blood of the veins of the stomach, and bowels, and liver, the sense of fulness or oppression in these organs, which becomes so early a symptom, and, in a greater or less degree, is so generally experienced in all these diseases.

And next, as the veins of the stomach and bowels are, as Majendie proved, the principal absorbing vessels of the alimentary fluids received into these organs, and as experiment proves, that their power of imbibition is exactly in the inverse proportion to their state of distention, it necessarily follows, as they are now preternaturally distended, that the food and fluid contained in the stomach and bowels, would remain unabsorbed and indigested; creating symptoms of still greater oppression in these organs, with the usual attendant upon indigestion, sickness, or vomiting. And, moreover, it follows, eventually, as the heart's power becomes further decreased as fresh complications ensue, that the congestive fulness or distention of these vessels would increase, to the extent, not only of its arresting the process of absorption altogether, but that also of its inducing the opposite condition, or that of exudation, of the serous or more fluid parts of the blood from these vessels, and hence the watery evacuations from the stomach and bowels, in cholera and diarrhœa, which take place. We call it diarrhœa so long as the evacuations are more or less yellow or coloured with bile; but when they are simply serous, or of rice-water-like appearance, we call the case cholera; and in which there is in general vomiting also, as well as purging; the congestion being more considerable and implicating the vessels of the stomach in a greater degree. The difference between the two affections, therefore, it should be ever borne in mind, is not in character, but in degree only. The poisonous cause with depression of the powers of the system at large, and congestion of the vessels, being, in the case of cholera, more considerable, the function of the liver in the secretion of bile is not simply retarded or deranged, as it is under ordinary conditions of congestion of the liver, as an effect of the debility induced by heat, cold, or the like cause, but in this, it is absolutely arrested; and no bile can therefore pass into the bowels to give colour to the evacuations, as none is secreted. And in cholera, from the agency of the same depressing cause influencing the function of the kidneys likewise, the secretion of urine is also arrested, and

no urine is passed. And as, in common with the rest of the venous system, the veins of the spinal marrow and brain become congested, it not unfrequently occasions nervous irritation and spasm, or cramps in the extremities. And it will be noticed that—as congestive accumulation takes place, so in proportion will the blood be withdrawn from the general current of circulation and aeration in its passage through the lungs, and hence the heat of the body will be reduced, and the skin become livid in consequence. And thus are the principal and more important symptoms of cholera, in the order of their progression, to be very simply and satisfactorily accounted for.

It may be now asked, how are fever and dysentery to be explained, as associated diseases, and dependent upon the same cause?

The accession of fever is generally in this wise; the patient is attacked with cold chills or severe shivering, and often of some hours' duration. This is usually preceded by a sense of malaise, pain in the head and back, sense of oppression about the stomach and liver, sickness of stomach, and sometimes with vomiting. The feeling of cold is now succeeded by progressively developed heat of skin, throbbing of the temples, and general excitement of the system; and this, after an uncertain period of from three to six hours, gradually subsides, and is succeeded by perspiration, more or less profuse, to the relief of the patient, and restoration of comfortable feelings of apparent health, till the following day; when the same symptoms of cold and fever recur, and at about the same hour as on the preceding day, or it may be postponed till the day after.

Well, how are these symptoms to be explained? They admit of ready explanation, by simply supposing the malarious or depressing cause to be less virulent in character than in the case of cholera; or otherwise operating upon a system possessing more resisting power to its influence—the blood—that is, being of more stimulant and healthy character, or, in which, the function of the lungs may have been less affected by the agency of the depressing cause, to which these organs are the first to be exposed. And thus the depressing cause being in its operation less in degree, when it has occasioned congestion of the veins, to the extent of its impeding the passage of the blood into them from the arteries—or vessels in connection with them through which the blood first flows from the heart—it produces distention of their capillary or hair-like terminations, and its usual consequence, excitement of the arteries. Which, when limited in extent, and concentrated in degree, constitutes the condition of a part in inflammation; but which, as in the present case, being general throughout the system, implicating, therefore, the heart also and all the functions, is the condition of general excitement constituting fever. The blood in this case possesses the vital qualities necessary to bring about the usual, ordinary, and more healthy result, of the reaction of the fever; which, from greater deterioration it is incapable of accomplishing in cholera. As, in exemplification of these views, we find with cold, its depressing influence on the system in a limited degree, as on the shock of a cold bath, is succeeded by a comfortable glow of warmth; in

a greater degree it produces congestion of the veins with the suppression of the secretions, and the re-action of fever; and in an extreme degree it arrests and palsies the powers, occasioning death.

And next, as perspiration invariably follows heat and excitement of the circulation, when the perspiratory function itself has not been specifically impaired by exposure to cold; so does it here, when the temperature has been reduced to the required degree (as heat and excitement have their limits in this respect) succeed to the attack of fever. The paroxysm of fever thus explained, and thus terminated by the removal of the congestion of the veins, (which necessarily follows the excitement of the heart and arteries) recurs, at intervals of twenty-four, thirty-six, or forty-eight hours, with the congestion of the veins which again progressively takes place, as in the first instance, so long as the blood continues contaminated with the depressing cause. And as by repeated attacks, the powers of the system become further reduced, so do the intervals become shorter, and derangements of an inflammatory character, developed by the excitement of fever in the organs more particularly weakened and congested with blood, as of the stomach, bowels, liver, spleen, or head, take place: and as such affection of the organs is commonly attended with a certain amount of symptomatic fever—this modifies the febrile paroxysm, and filling up the period of intermission, converts the intermittent into that of remittent fever.

And thus, when the vessels of the large bowels are much congested, there becomes not unfrequently increased mucous secretion, with bloody exudation into the bowels, attended with pain across the navel, frequent desire of evacuation, and severe straining; the ordinary symptoms of dysentery. And these symptoms, preceded or not by those of diarrhœa of some days' duration, not unfrequently precede or usher in the attack of fever—in individuals who may have been previously suffering from congested bowels or liver derangement; and in doing so often mask and obscure the real character of the disease, which should be considered as one intrinsically of malarial fever, and if I may so express it, located in the bowels; and which, I must emphatically remark, it is of the utmost importance should be clearly discerned and appreciated by the medical attendant; or if treated as dysentery ordinarily is—as an idiopathic inflammatory affection of the bowels, the patient will be almost sure to fall a victim to the error; an error which with pain I acknowledge, in my early career I have reason to believe I have not unfrequently been guilty of.

And from the same cause, and under similar circumstances, the liver or the stomach may become inflamed, when pain in the side with difficulty of breathing, or extreme irritability of the stomach, with bilious vomiting will take place. And again, with others, from exposure to the sun or other cause, the brain will be the organ more conspicuously affected—when mental excitement and delirium are the consequences. From the same cause the lymphatic glands of the groin I have seen affected, and buboes appear; or the membranes of the eye and opthalmia take place; or the fibrous tissues of the joints may be inflamed, and rheumatism supervene—all of which

must be treated with reference to their malarial cause, as cases of intermittent fever. I have now given a brief explanation of the principal features and more characteristic symptoms of cholera, diarrhœa, intermittent fever or ague—and of remittent fever and dysentery, exhibiting their connection and dependence upon one and the same depressing cause—malaria, with which, as a poison, the blood is polluted; and if this is understood, the principles we are about to advise for their treatment may be clearly apprehended, and appreciated at their proper value.

The treatment we now hold in view, is of these diseases, as they exist in malarious districts, in contradistinction to these diseases as they occur in other more favored localities; as it must be borne in mind, that cholera, diarrhœa, liver affections, and fever, which are of frequent occurrence in other districts, arise from causes of a very different description—though alike in their general effects—that is, depressive of the powers of life and productive of congestion—the parent of these several affections whatever their cause, but developed in the way I have already pointed out. Thus heat of season alone, as a debilitating agent, will occasion congestion of the liver and bowels, and its consequence—inflammation of the liver, or dysentery. And so will exposure to cold produce fever; or if united with the influence of heat, as in the former case, a more intense or aggravated affection—perhaps of diarrhœa, bilious fever, or cholera morbus; or if conjoined with other causes of depression, as of habits of inebriety or the like —the still more aggravated affection of cholera, with arrest of the secretions, as we have before explained. But the symptoms of fever in these cases are those of simple excitement without intermission, having one continuous course. The blood in these cases is deteriorated by the arrest, or obstruction of the secretions of the system—as of that of perspiration, bile, or urine; but it is not absolutely polluted by a poison extrinsically derived, as it is in the other, and this makes all the difference in the treatment. As to remove the cause the effect will in general cease, so it becomes here the chief point of practice, to remove this malarial impregnation of the blood, or its influence for evil to annul; and this, without being able to define its operation, whether it is by combining with it in the blood and neutralising it, or its effects be that of an antagonistic character we know not, but this we know, and universal experience testifies, that the administration of the sulphate of quinine, and absorption into the blood of a certain quantity of it, arrests the disease. And to impregnate the blood with it, therefore, a harmless substance, in supercession of the malarial cause, becomes the chief indication of treatment to fulfil in all these cases. But not so in the case of cholera, in which we have superadded to the depressing agency of the poison of malaria in the blood—that also appertaining to the arrest of all the secretions by its agency; and we have accordingly a much more aggravated affection to deal with, and one which, experience proves, the suppression of the secretions, is, in our treatment to take precedence of the cause which has given rise to it. And with this view, *calomel* is our chief, if not only remedy; as its operation is to excite the liver and all the secre-

tions, and as a stimulant, which it really is, or it could not thus operate, of the most active and general kind, *it excites the heart and all the functions ;* and thus antagonistic in character to the malarial depression, it fulfils all the indications of a rational treatment, and is therefore of all remedies the most valuable.

Having now explained the principal indications to be fulfilled in the treatment of cholera and fever, and the operation of our principal remedies, I shall now, for the benefit of those who may be beyond the sphere of professional assistance, enter more into detail for their guidance.

Detailed treatment of Cholera.—If attacked with the symptoms of cholera, which are now pretty generally known to consist, in the frequent evacuation of a fluid more or less colourless in character, preceded by a sense of fulness and oppression about the stomach and bowels, a feeling of malaise and more or less of coldness and depression ; the relief of the bowels, after an uncertain duration of a couple of hours or as many days, being followed, not unfrequently, by vomiting of the same nearly colourless fluid, and with cramps in the extremities ; the best plan to be pursued in such a case is, to go to bed, and with as little delay as possible. take an emetic of two grains of emetic tartar ; or if this is not immediately available, a tumblerful of warm water, in which a tea-spoonful of common salt is dissolved, or a dessert-spoonful of table mustard, repeating the dose every five minutes till the stomach is effectually relieved. Soon after this has been accomplished, let twenty grains of calomel be placed on the tongue, and this be washed into the stomach by the patient's gargling his mouth with a spoonful or two of cold water ; repeating the same dose of calomel, or half, or one-third of it, according to the urgency of the symptoms, every hour or two, or at longer intervals, as the patient improves, till the evacuations become bilious, and urine is abundantly secreted ; with an occasional wine-glassful of cold water in relief of thirst. After bile and urine have been evacuated, some nourishment, as light chicken broth or the like, may be administered, but if given at an earlier period, it will only oppress the stomach, and occasion the rejection of the calomel by vomiting. The calomel must be continued after this two or three times a-day, till yellow bilious evacuations are obtained ; when the cure may be completed by the patient's taking two grains of the sulphate of quinine in half a glassful of wine three times a-day. It is necessary, however, to add, that if the patient is of full habit, or the attack attended with pain in the stomach or liver, heaviness of head, or oppression of breathing, evincing a great amount of congestive fulness of these organs, a copious bleeding from the arm cannot well be omitted, or if this is not practicable, twenty leeches may be applied to the part affected, and repeated if necessary. If vomiting is a troublesome symptom, a large mustard plaister may be applied over the stomach, and repeated every half-hour ; in addition to which, the bowels should be excited in relief of the stomach, by the administration of a clyster occasionally, consisting of half a pint of warm gruel, in which a tea-spoonful of salt is dissolved, and to which two table-spoonsful of brandy, if there be much depression, may be added.

On the subject of cholera there remains for me now but to add, that as the symptoms of this affection are very generally preceded by those of oppression and diarrhœa—the same disease, in an earlier stage of its invasion—it cannot be too earnestly urged upon all, the necessity of acting upon this knowledge, and at once having recourse to the appropriate treatment before the secretions have become wholly suppressed, and the stomach, by the congestive fulness of its blood-vessels, has lost its capacity for absorption; to which circumstance principally, it is my belief, that the disease has proved so destructive; the remedy, whether calomel or other, being thus prevented admission into the blood, where alone it could answer any useful purpose. And for the same reason—this highly congestive condition of the vessels of the stomach and bowels diminishing their power of absorption—it is, that large doses of calomel, seeing how little there can be absorbed, are indispensable to fulfil the ordinary purposes of small ones, under circumstances the most favourable in this disease: and that, irrespective of its useful operation in other respects, an emetic, by securing an empty stomach, and thereby the application of our remedy to its surface for absorption, is, in my estimation, a most valuable auxiliary.

Diarrhœa, or loose bowels, as the treatment of every disease should have relation to its cause—if the symptoms border on the choleric character, let the patient immediately go to bed, take an emetic, and as soon after this as the stomach will retain it, take in soft pill, six grains of calomel with one of opium, and follow it up with two grains of calomel every two or three hours after, or oftener, as a stimulant if there be much depression, till the evacuations become of a healthy yellow appearance, with a little warm wine whey occasionally, or ginger-tea, or other fluid that may be more agreeable to the patient. After this the quinine may with advantage be had recourse to, in doses of two grains three times a-day till health is restored.

But, if the relaxation of the bowels be of a less urgent nature, the effect of cold, fatigue, improper diet, or the like, with attention to the patient's being kept in a comfortable warm temperature, an indispensable requirement, let him take a pill, consisting of one grain of calomel in combination with three grains of Dover's powder every two hours, for two or three doses, and then, as amendment takes place, at longer intervals, till the evacuations become healthy; or in some cases a pill two or three times a day will be all that is necessary. But, should the affection of the bowels be accompanied with febrile symptoms, the pills should be taken in conjunction with the liquor ammoniæ acetatis or other saline mixture, or the quinine, if the fever be of the remittent type is indispensable.

The treatment here recommended is directed immediately to the restoration of the suppressed secretions of the skin and liver, of which diarrhœa is, in my opinion, vicarious, and not therefore to be arrested with impunity, by chalk-mixture, sugar of lead, or other astringents. The fruit of my experience is—that when the evacuations have been thus restrained, low-fever, with sub-acute inflammation of the bowels, has almost invariably succeeded. And from the great number of fatal cases recorded in the Crimean disease, I

cannot but fear that this has been the too common practice pursued in the treatment of this disease. In addition to the means named, leeches and bleeding, in relief of pain in the bowels, and other inflammatory symptoms are one or the other often indispensable requirements.

Dysentery.—And now, with respect to this, the characteristic symptoms of which are, the frequent desire and evacuation of small, bloody, muculent stools, attended with straining and pain about the navel, and of the anus. These symptoms, as they usually occur on the coast of India, from the combined effect of heat, of season, and exposure to cold, or other exciting cause of attack, developing congestion of the bowels and liver with inflammation of the large intestines, is best treated by a copious bleeding from the arm, followed up by the application of a dozen leeches over the painful part of the bowels every eight hours, so long as the straining continues severe; and taking at the same time a pill of three grains of calomel with as much Dover's powder every three hours, till gentle salivation is induced. Salivation has the power of subduing inflammation when conjoined with blood-letting, and of relieving the patient in these cases from all his sufferings, as if, on its occurrence, it were by a charm. So great and certain is the relief afforded by salivation, that in severe cases it is sometimes necessary to increase the dose of calomel to twenty grains, to hasten this effect in arrest of inflammation—or ulceration of the bowels, if not mortification, will ensue.

But dysentery, as it more commonly occurs in malarial districts, is in general preceded by intermittent fever, or is accompanied with fever of the remittent type, when the dysenteric symptoms, which are of the sub-acute character, must be held quite subordinate in character to the febrile, and the quinine in arrest of the fever be looked upon as the chief remedy; conjoining therewith, after a moderate bleeding from the arm, the application of leeches from time to time in relief of the local affection, and an occasional dose of calomel and opium. And after the fever has been arrested by the quinine, should the dysenteric symptoms continue, continuing the calomel in conjunction with opium, till salivation is induced; and after this, the quinine may be again given to the restoration of health.

Of intermittent fever or ague.—This, while the attack is on, is best treated by an emetic, followed up by a dose of six grains of calomel, and two hours afterwards the quinine; taking the latter without intermission in doses of three grains, diffused in a wine-glassful of water, every two hours, till the next paroxysm of fever recurs, or otherwise, until four or five doses have been taken; when it may be continued every four hours, and a tea-cupful of sago with wine in it may be allowed between each dose, till the period has passed for another attack; and after this, two or three times a-day, with a nourishing diet, till health is re-established. As the time between the first paroxysm and the period for its recurrence is not in general long enough to admit of the quinine being received into the blood in sufficient quantity to prevent the return of a second paroxysm, the patient should be confined to bed in anticipation of its recurrence. And as the perspiration which follows the attack of fever, I hold in the light of a

curative effort of the system—in purification of the blood from its malarial impregnation—I would further advise its being encouraged and supported as long as possible, by the patient's drinking freely of warm wine-whey, between each dose of the quinine, or other fluid that may be preferred by the patient. On the earliest symptom of a second attack, manifested in general by yawning and chill, let the patient take three grains of calomel, with a grain of opium, and when perspiration has set in, let him again take the quinine and continue it as in the former instance.

Furthermore, should there be pain in the region of the stomach, or liver, or in the head, or oppression of breathing, or relaxed bowels with straining, or dysenteric symptoms,—characterising an inflammatory or highly congestive state of those organs—bleeding should be at once had recourse to, and in as ample a quantity as the state of the pulse under the operation will justify. As thus early adopted it averts much mischief—it arrests the progress, or tendency, to inflammation, which each succeeding paroxysm of fever will otherwise materially increase; and which, when allowed to go thus unrestrained, converts the intermittent into remittent fever—in which there is no perfect intermission—the symptomatic fever attending the sub-acute inflammation of these organs, filling up the period, and otherwise deranging the ordinary progression of the paroxysm, which accordingly is now of less marked character, but of more frequent occurrence. The recurrence being ushered in by the feeling, now perhaps only of depression and chill, or with vomiting, followed by an exacerbation or increase of fever, with delirium, and recurring probably every twelve hours. This compound affection of low fever with inflammation—which might have been averted by the early use of the lancet, and the timely application of leeches to any part in which pain was experienced—involves now great tact and judgment in its treatment, which consists in the application of leeches over the part effected, followed by a blister, with a dose of calomel and opium given at the period of depression in relief of the local affection—conjoined with the use of cooling saline remedies in combination with the quinine; concurrently with light broth or animal jelly in support of the system.

I have now another *very important observation to add*—which is, that in the treatment of wounds, contusions, &c., it is incumbent upon the surgeon to be always alive to the fact, that the debilitating influence of the shock upon the system attending the infliction of the injury, in malarial localities, or the necessary confinement attending any serious local affection, or the absorption of the putrescent matter of a wound, or foul air of an hospital, very frequently developes or modifies the attendant fever, and imparts to it the malarial and remittent character; and thus will the inflammation attendant upon the local injury assume the erysipelatous kind, and sphacelation may follow. Or the change at an earlier period may manifest itself, by the pain in the injured part becoming intermittent and periodical. The treatment is obviously the administration of ample doses of quinine, with a pill daily of calomel and opium to soothe the system and maintain the secretions, conjoined with an allowance of wine and a generous diet.

In the former part of this Essay, I have done my best to make it appear that cholera, dysentery, and fever, as they occur in malarial districts, result as a consequence of a poisoned or deteriorated state of the blood, which operates depressingly, with greater or less virulence, upon the heart and vessels of the circulation, and thus, in the way that we have explained, gives rise to the principal symptoms of these diseases. In illustration of the influence of depressing agents upon the system, I have pointed out the ordinary effects of exposure to cold in variable degrees; and I have further noticed, how the debilitating and depressing influence of heat of climate or season produces congestion of the liver and bowels, and how this developes inflammation in these organs, and thus hepatitis and dysentery, which are so prevalent in India. Or how, from the combined effects of heat and exposure to cold, bilious fever is developed; or cholera morbus; or, when aggravated in degree by the debilitating influence of intemperate habits, or of debauchery, or of exposure to malarial agency, or to an extremely humid atmosphere, one or other or any combination of them, the severer affection of cholera, with arrest of the secretions of bile and urine—the epidemic form of the disease may take place.

I have now to notice, that the depressing agency of heat, cold, or extreme humidity of atmosphere, the first operates, by the attenuation of the atmosphere it gives rise to, occasioning a defective oxygenation of the blood; the second by the arrest of the secretions of the skin in particular, and not uncommonly with that of the liver or kidneys also to a limited extent; and the last by the arrest of evaporation from the surfaces of the skin and lungs, intercepting the exhalation from these organs of impurities both fluid and gaseous, and not least among them of carbonic acid. These, then, one and all operate, by the retention of impure and excrementitious matters in the blood, to pollute or deteriorate it—and thus, as in the case of malaria, produce effects or symptoms analagous to, or of the like description, with those arising from that cause. And thus from these causes arise diarrhœa, cholera morbus, or bilious purging, bilious fever, hepatitis and dysentery; in which the evacuations where they exist are, as I have already pointed out when treating of diarrhœa, vicarious, if not of curative tendency, and not therefore to be restrained with impunity by astringents, but treated with reference to these causes by calomel, bleeding, diaphoretics, and the like agents. Upon the general principles of restoring the healthy condition of the blood (which is deteriorated in all these cases) by the excitement of the secretive organs, and removing at the same time congestion or inflammation, as one or other may have become developed in progress of the disease.

In conclusion of this subject I must, however, add, that as no disease can be treated successfully but in relation to its cause, and as in these diseases this is not unfrequently of a two-fold character—congestive and continued primarily from heat of climate or season, as is the case of the diseases we have lately been speaking of; and interrupted and remitting, from the co-operative influence of malarial agency upon the system. It becomes the medical attendant always to be on his guard and alive to the fact, that the

inflammatory affection whether of the liver or bowels in dysentery, or wherever it may exist, may have intermittent fever for its cause, and if so, a remitting type of affection for its consequence; and which, masked by the inflammatory affection, is often only to be discerned by a very close and careful attention of the symptoms; the case manifesting itself by periods of exacerbation of the pain in the side, or bowels in dysentery, or remission in the febrile symptoms of pretty regular recurrence.

If, therefore, in the ordinary treatment of hepatitis, dysentery, or fever, the amendment does not appear to be proportionate to the means pursued, it is incumbent upon the practitioner to pause awhile, and determine by a patient and more careful investigation of the case, how far it may not be proper to alter his plan, and, instead of bleeding and calomel, have recourse to the opposite class of agents—quinine and improved diet, as I have recommended in the treatment of dysentery in the early part of this Essay.

And trusting that these observations, acquired as the fruit of lengthened experience and devoted attention to the subject, may be accepted by the profession, whose responsibilities are great, in the spirit in which they are tendered—of friendly suggestion, from a conviction alone of their great importance at the present conjuncture, allow me, Gentlemen, to subscribe myself, with every good wish, your devoted *confrère*,

C. SEARLE, M.D., M.R.C.S.E.

Late of the East India Company's Madras Establishment. And during the epidemic prevalence of Cholera in 1830, *Physician in Chief to the principal Cholera Hospital of Warsaw. Author of the "Philosophy of Life, Health and Disease;" of "An Essay on the Diseases of Europeans in Tropical Climates;" of "Cholera, Dysentery, and Fever, pathologically and practically considered;" and of "The Liver, its functions and disorders."*

LONDON:

G. J. PALMER, SAVOY STREET, STRAND.

This little Pamphlet will be found to contain most powerful reasons why Her Majesty's Soldiers when attacked with Cholera should not have the heavy afflictions of Quarantine superadded.

25

NOTES

WORTH NOTICING, RELATIVE TO THE

CHOLERA.

by Dr. Gillkrest

Illustrative regarding the question on Quarantine as discussed in the House of Lords on Friday the 19th November 1852.

Longmore Esq.
19th Regt.
With Dr. Gillkrest's compliments.

NOTES

WORTH NOTICING, RELATIVE TO THE

CHOLERA,

WHICH HAS, FOR SOME YEARS PAST, OCCUPIED THE PUBLIC ATTENTION,

BY

DR. GILLKREST,

INSPECTOR-GENERAL OF ARMY HOSPITALS, H. P.

AND CORRESPONDING MEMBER OF THE PARIS NATIONAL ACADEMY OF MEDICINE;

Which may be considered as a Second Edition of his Pamphlet entitled "CHOLERA GLEANINGS," printed at the Garrison Library, Gibraltar, in the Autumn of 1848, and distributed on a limited scale.

Is this a disease in which
"The living shall fly from the sick they should cherish?"

London:
W. J. GOLBOURN, 6, PRINCES STREET, LEICESTER SQUARE.

1852.

IS CHOLERA

A TRANSMISSIBLE (OR CONTAGIOUS) DISEASE?

More than twenty-one years have passed since I made public a series of official documents, from some of the highest authorities on the continent, relating to a subject deeply interesting to humanity.

At the time I speak of (1831–2), the Cholera had made its sad visits to most of the Kingdoms and States; and several Governments, whose people had suffered most severely from it, loudly proclaimed the result of their observations for the benefit of mankind and as a warning against erroneous views. I was then in London, on the half-pay of a different rank from my present, and employed myself very assiduously in endeavouring to learn everything that could be learned throughout the city and neighbourhood, respecting this wonderful disease, as it made its appearance in various places, and collecting from every source all the information possible, from other quarters, in order that, should I be afterwards employed on service, I should be better prepared for Cholera, should it make its appearance under me. I had for some time occupied the house of a medical relative, in which I found an excellent library, containing, among other things, the

three volumes of the East India Reports on Cholera (extremely rare), which I studied very carefully, and made full notes upon, and which have ever since been of great advantage to me in forming opinions. It appears to me that the important continental documents to which I have alluded, if ever very generally known, have become forgotten, or nearly so, and I therefore, should not, at such a moment as the present, feel justified in withholding from the public all that has come to my knowledge regarding their existence.

With regard, then, to AUSTRIA.—According to the *Journal des Débats* of the 24th October, 1831, the Emperor of Austria, in a letter to his High Chancellor, dated Schoënbrun, October 10th, 1831, and published in the *Austrian Observer* of the 12th, makes the following most magnanimous declaration to his people :—

"THAT HE HAD COMMITTED AN ERROR IN ADOPTING THE VEXATIOUS AND WORSE THAN USELESS QUARANTINE REGULATIONS AGAINST CHOLERA."

"THAT HE DID SO BEFORE THE NATURE OF THE DISEASE WAS SO FULLY UNDERSTOOD."

"THAT THOSE REGULATIONS HAD BEEN FOUND, AFTER FULL EXPERIENCE, TO HAVE PRODUCED CONSEQUENCES MORE CALAMITOUS THAN THOSE ARISING FROM THE DISEASE ITSELF." ("PLUS FUNESTES ENCORE QUE LES MAUX QUI PROVENAIENT DE LA MALADIE ELLE MÊME.") He did not think it beneath his dignity to account for continuing a modified quarantine system on certain points, in consequence, as he stated, of the opinions still existing in the dominions of some of his neighbours; for, otherwise, *his commercial relations would be broken off: to secure his maritime interests, he must do as they do**." In 1831,

* And thus, not having to speak in favour of Quarantines, in regard to preserving *health*, he speaks of them merely as a means of preserving trade, a circumstance I have, in the course of my life, been often obliged to witness.

I prayed loudly that the British Government might profit by this great lesson furnished by AUSTRIA. I prayed in vain; for, the *vérité-vraie*,—no, not even sacred truth itself, though from the mouth of an emperor, and in moving language to his suffering people, could awaken the sensibilities of our watchful guardians of the Quarantine, whose efforts in keeping out Cholera from the land proved, however, of as little use as those of the good woman are said to have proved, in keeping out the tide from her cottage with her broom.

With regard to RUSSIA.—The emperor having appointed an extraordinary Committee (*composed of the most eminent public officers*) to inquire into tbe Moscow Epidemic of 1830, they came to the following conclusions:—"The opinion of those who do not admit the possibility of contagion by means of material objects, has for its support both the majority of voices, and the scrupulous observance of facts. The members of the medical council have been convinced by their own experience, as also by the Reports of the physicians of the hospitals, that, *after having been in frequent and even habitual communication with the sick*, their own clothes have never communicated the disease to any one, even without employing means of purification. Convalescents have continued to wear clothes which they wore during the disease—even furs—without having them purified: and they have had no relapse.

With regard to PRUSSIA.—The king declared that the appearance of the disease in his provinces "*had thrown new light on the question; he specified certain restrictions as to intercourse, which were forthwith to be removed, and declared his intention to modify the whole.*" In short, it is quite plain that, as Dr. James Johnson had it in one of the latest numbers of his Journal, "Those regulations will, *in more countries than Russia, be useless to all but those employed in executing them.*"

Having had possession for many years of a Report from

one of the physicians at the time in charge of a Moscow Cholera Hospital (Yakimanka), I know nothing so likely to prevent a panic, at sight of a Cholera patient on any occasion, as a perusal of some of his observations. He tells us, at page 10, that in his hospital he saw, "to his great astonishment*, that all the attendants, and all the soldiers, handled the sick, supported their heads while they vomited, placed them in the bath, and buried the dead; always without precaution, and always without being attacked by Cholera." He saw that even the breath of Cholera patients was inhaled by others with impunity; he saw that throughout the district of which he had charge the disease did not spread through the crowded buildings, or in families where some had been attacked, and that exposure to exciting causes *determined* the attack in many instances. He saw all this, gives the public the benefit of the copious notes which he made details of, as to persons, places, &c., and then ridiculed the idea of contagion in Cholera. Grant to the advocates of contagion in Cholera but all the data they require, and they will afterwards prove every disease which can be mentioned to be contagious.

Hundreds of people, we will say, for instance, come daily from a sickly district to a healthy one, and yet no disease for some time appears; but at last an "inexplicable condition of the air," and "not appreciable by any of our senses" (admitted by Dr. —— and others as liable to occur, but *only in aid* of contagion), takes place; cases begin to appear about a particular day, and nothing is now more easy than to make out details of arrivals, there being a wide field for selection; and even how individuals had spoken to persons subsequently attacked,—had stopped at their doors,—had passed their houses, &c. Causation is at once connected with antecedents, at least for a time, by the

* Considering the facilities given previously to the publication of the mistaken doctrine of contagion.

people at large, who see their government putting on cordons and Quarantines; and the most vague public rumour becomes an assumed fact.—We even find that contagionists are not unfrequently driven to the (*somehow or other*) mode of the introduction of Cholera by individuals; so that it may be deplored, with respect to this disease, in the words of Bacon, that "Men of learning are too frequently led, from ignorance or credulity (or sometimes, it is to be regretted, from self-interest, too), to avail themselves of mere rumours or whispers of experience as confirmation, and sometimes, as the very ground-work of their philosophy, *ascribing to them* the same authority as if they rested upon legitimate testimony: like to a government which should regulate its measures, not by official information of its accredited ambassadors, but by the gossipings of newsmongers in the streets; such, in truth, is the manner in which the interests of philosophy, as far as experience is concerned, have hitherto been administered. "Nothing is to be found which has been duly investigated; nothing which has been verified by a careful examination of proofs."

But I must return to further lamentations and wailings, on the part of one other government, for the adoption, when the Cholera reached their territories, of the system of Quarantines and cordons.

In speaking of Spain, it must be considered, that though the government of that country could not have been unaware of the inefficacy of Quarantines and cordons in keeping the Cholera out of other countries, and of the vexations brought on by those measures, they nevertheless did not deem it prudent to remove at once all restrictions, the feelings of the people in favour of such restrictions, from their earliest days, being perhaps only equalled by those of the inhabitants of Italy; and, accordingly, it was not till they had experienced, on their own soil, much of

the distressing consequences of the cruel and useless system referred to, that the Queen Regent issued the following Decree, with and by the advice of the ministry.

Indeed, the issuing of this Decree must be considered as having been a singular triumph for the cause of truth, when it is recollected that, notwithstanding the repeated efforts of some of their most experienced and enlightened medical men, the entirely false doctrine of contagion in Yellow Fever, as well as even in Consumption, maintains its sway*.

DECREE.

"From the moment when the disease, known under the name of the Asiatic Cholera Morbus, after having overrun the greater part of Europe, invaded Spain, and appeared, in the month of August, 1833, at the entrance of the Guadiana, the Government omitted nothing with a view to confine the disease to that spot; and for this purpose established Sanitary Cordons, and put into execution other measures deemed, on former occasions, proper for the preservation of the kingdom from the introduction of *contagious* diseases from other countries. The Government, while dictating such measures, was not impressed with much confidence as to their efficacy; but, aware of

* In the case of death from Consumption among our kind neighbours in Spain, great are the scrubbings, the fumigations, filings, the unplastering of the walls, the lustrations, and even the burnings (all under sanction of the Authorities too).—Indeed it was lately stated to me by a Spanish gentleman, that he knew of a carriage having been broken up some time before:—all to destroy latent contagion. About eight years ago, admission into a lodging in St. Roque, a town about five miles from Gibraltar, was refused to a respectable young woman from this Garrison labouring under Pthysis!

the moral-effect of a popular bias, considered them serviceable in tranquillising the public mind*, and thus mitigating the effects of the calamity which menaced us. In the meantime, passing over the barriers which had been established to prevent its propagation, the disease quickly extended to Seville, Estremadura, and even to Malaga, Cordova and Granada: and, if it remained stationary for some time in the last place, it exploded suddenly afterwards throughout the whole of Andalusia, and presented itself simultaneously beyond the cordons in New Castile.

"The progress of the Cholera has been duly observed by the Government and the people:—different Authorities and Corporations have raised their voices in affliction to the Throne, praying, with patriotic fervour, for a modification of those laws which cut off intercourse between communities, and which, failing to prevent the progress of the disease, caused evident and excessive mischief, in an economical as well as an administrative view:—for, paralyzing traffic, and rendering impossible an abundance of supplies, they condemn populations, on the speculation of avoiding a doubtful evil, to suffer the certain evils arising from scarcity and misery, by which the number of victims to the disease is increased; the evil consequences are extended even to places where the disease does not appear; and, finally, public ruin is liable to ensue.

"The justness of these reflections being confirmed by the system adopted and followed by two enlightened Nations at the head of European civilization, and even

* Produced, as the Minister Martinez de la Rosa lately said in his Speech in the Cortes, "a sort of comforting illusion" among the people.—In the Speech in question it could have been observed how, by having recourse to often-refuted statements, that Minister tried to justify the sanction given by Government to the extensive system of cordoning in Spain.—The Minister of the Interior, speaking on the same subject, said, that, but for the feelings of the people, cordons would have been sooner suppressed;—how like to parents who, having encouraged in their children a belief in ghosts and goblins, find it afterwards no easy matter to undeceive them!

by others who, in the first instance, having adopted Cordons, subsequently abandoned them, declaring their inefficacy *,—Her Majesty the Queen Governess has been pleased to direct, that the Supreme Board of Health of the kingdom shall introduce the necessary changes in the sanitary regulations; and it has accordingly been resolved,—

"*Art.* 1.—All Cordons, established with a view to stopping the progress of the Cholera, are to be removed; and all internal communications to be as free as before their adoption.

"*Art.* 2.—All Civil Governors, Municipalities and local Authorities, to maintain the free communication between places; they will protect travellers from the vexatious measures adopted under the plea of sanitary measures; and inform those in authority under them of the bad effects of the system of isolation, and cutting off communication with others.

"*Art.* 3.—The aforesaid authorities are directed to be zealous in seeing the laws and the police regulations, connected with public health, carried into effect: they are to attend to the abundant supply of wholesome food in the different towns; and they will do all in their power to convince the inhabitants, that the best preservatives against cholera and all other diseases, are cleanliness and proper diet.

"*Art.* 4.—When the epidemic appears in a town, the authorities are to adopt all the steps calculated to maintain cheerfulness and tranquillity of mind among the people, and to discourage whatever may tend to melancholy. The customary aids of our holy religion are therefore to be administered to the sick with precaution, so as not to impress the healthy with melancholy and injurious feelings; and, when persons die, the ceremonies

* The Governments of Russia, Prussia and Austria, are here referred to.

calculated to produce sadness in the minds of the people should be avoided, and the tolling of bells is therefore to be discontinued on such occasions during epidemics.

"*Art.* 5.—The following are recommended particularly to the attention of the authorities in those towns where the cholera appears:—the establishment of hospitals in well ventilated situations; the distribution of soup to the indigent; the employment of labourers on public works; and the taking up and placing under special management all beggars:—employing for these different purposes the funds arising from subscriptions to be set on foot at the commencement, together with those referred to in the Royal Order forwarded on the 11th of July last, from the department under my charge.

(Signed)

"Jose Maria Moscoso de Altamira.

"*Madrid, 24th August*, 1834."

The following from the 11th No. of the Madrid *Boletin de Medicina*, and published in the Newspaper *Revista*, would seem to have been the harbinger of the above decree:—

"When we think, that we have demonstrated the cholera to be an epidemic, depending, in its development, progress, and disappearance, on certain atmospheric and individual states, which, though little understood, are not the less certain, and also that it is not communicable by contact;—when we see, with pride, that not only do all the Medical men who have seen the disease in this City agree with us upon this point, but also the Government, the Supreme Sanitary Board of the Kingdom, the Municipality of this city, the functionaries, and the whole of the people of Madrid whom we have seen anxiously going to the houses of the sick to aid them, and afford them every comfort, instead of shunning them:—when, from such facts, we saw, that there was a conviction in the public

mind as to the Cholera not being contagious, and that, consequently, measures of restraint were not only useless but prejudicial, we were astonished at the order of the Commandant of the Royal Palace of San Ildefonso, consisting of eleven regulations, as severe and vexatious as they are impossible to execute; and which, in ages less advanced in knowledge, were not adopted against diseases admitted unanimously to have been highly contagious. Our surprise was the greater, when we ascertained, beyond all doubt, that, in drawing up those regulations, the Supreme Sanitary Board of the Kingdom had not been consulted, nor those medical men who had seen the Cholera; nor any person or body of persons who should have been consulted. So that we are warranted in concluding, that, in the formation of the regulations to which we refer, those only concurred who were strangers to science, and who were as ignorant upon the subject as they were full of a ridiculous panic;—or, again, perhaps a few Medical men, incompetent to judge, from not having observed for themselves, as we have, that epidemic against which such cruel measures ere directed.

"Our duty, as persons experienced on the subject, as well as public writers and persons interested in the honour of the medical profession in Spain, impels us to raise our feeble voice towards our august Queen, supplicating her, with all the zeal inspired by the public good, that, before she permits places, of which she is the mother, to be afflicted with measures much more fatal (*mortiferas*) than the epidemic itself, she would deign to consult the Supreme Sanitary Board, or the scientific bodies, or else particular Medical men likely to be fit persons; so that well-informed measures might be the more prudently adopted, and those tormenting fears driven from her Royal mind, which no doubt have been inspired by the ignorant and pusillanimous persons who drew up the regulations in question; and it should not be forgotten, that if, as is likely to be

the case, they should, from a spirit of imitation, be adopted throughout the kingdom, incalculable injuries of every kind, and the inevitable ruin of the nation, are likely to follow.

"Since writing the above article we have ascertained, that, interrogated by Government on the subject, the Medical body belonging to the General Hospital of this city, composed of 17 individuals, declared the Cholera *not to be contagious.*

"The opinion of so many eminent and experienced Medical men is worthy of respect, and of great weight in support of our opinions; as is also the opinion of the Royal Medico-Chirurgical Academy of this City, which body gave a similar answer. And will persons continue still obstinately to suppose, that Cholera, like an enemy's army, may be restrained by bayonets?—Will they continue, in spite of every thing, to increase public calamity by their useless vexatious measures?"

What remains to be sketched on the subject of the transmissible nature, or otherwise, of the Cholera in 1832, in FRANCE, will only take up a little space. As in other countries, some acts of violence were at first committed by the lower orders, especially against medical men; but on the point I am particularly considering, I think that in the minds of professional men, every where, adding one word in support of the statements of the eminent physicians whose names are affixed to the following documents, would be rather likely to take from the weight of their declarations. Medical men, admitting that they do not know them by repute, indeed "argue themselves unknown." Without any disparagement to those worthy and most zealous professional gentleme called upon to attend patients in Cholera seasons in England and elsewhere, the distinguished physicians of Paris have, I think, been always unequalled for laying

aside, in epidemic times, all considerations of a personal nature; as shown in the Typhus epidemic, which prevailed in their army on its return from Moscow, and as also shown in the Cholera season in Paris in 1832, when they altogether disregarded the loss which they might have sustained, and did sustain, by neglecting the aristocratic patients on their lists for other diseases. My readers cannot fail to observe the extreme simplicity of the wording of these declarations: here is no compromise with the question, no "*juggleries*," as such things have been termed in France; in short, "they order these things better in France," it would appear.

The following are the declarations of the physicians above alluded to, which were published by me at Gibraltar several years ago:—

And first, with regard to the large hospital called the "Hotel Dieu."

"The undersigned physicians and surgeons of the Hotel Dieu, think it their duty to declare, in the interest of truth, that, although up to the present time this hospital has received the greatest number of persons affected with the Cholera, they have not observed any circumstances which authorise them to suspect that the disorder is contagious.

"Petit, Husson, Magendie, Honou, Sanson,
"Gendrin, Recamier, Dupuytren, Breschet,
"Gueneau de Massy, Cailliard, Bailliou.

"*Done at the Hotel Dieu, Paris, 31st March*, 1832."

"The undersigned physicians and surgeons of St. Louis's Hospital have waited until their observations had been made upon a sufficient number of Cholera patients, before they gave an opinion on the contagion or non-contagion of the epidemic.

"Now they declare that they fully adhere to the

declaration of their honourable colleagues of the Hotel Dieu on the non-contagious nature of the cholera.

"ALIBERT, LUGOL, BIETT, MANRY,
"EMERY, GERDY, JOBERT.

"*St. Louis's Hospital, Friday, April 6th,* 1832."

"Happening to be absent yesterday, when my colleagues thought it their duty to draw up a public declaration on the non-contagious nature of the *Cholera Morbus*, I think myself bound to declare that I fully adhere to their opinion on that subject.

"RICHERAND,
"*Chief Surgeon of St. Louis's Hospital.*

"*Saturday, April 7.*"

"*Hospital of Notre-Dame de Pitié.*

"The physicians and surgeons of this Hospital have abstained, to this day, from expressing their opinion on the contagion or non-contagion of the Cholera Morbus, waiting, before they did so, until facts had enlightened them on a question of such vast importance, and so highly interesting to public tranquillity.

"Now that the epidemic is declining, and that thousands of facts, collected by them in and out of the Hospital, have impressed upon their minds the conviction that the Cholera Morbus is not contagious, they deem it their duty to give the utmost publicity to this fact.

"SERRES, LOUIS, CLÉMENT, ANDRAL,
"PARENT DU CHATELET, BOUILLAUD,
"LISFRANC, AND VELPEAU.

"*Paris, April 30th,* 1832." "*Moniteur.*"

In laying before the public the foregoing lists of professors of medicine and surgery, whose high reputation is more than European, I consider that the force of evidence

against the contagion of Cholera can go no further, and I count upon those documents being so received by the public.

Events regarding the prevalence of Cholera in the Army of the Marquis of Hastings in India, in November 1817.

It was not till I had studied all the circumstances connected with this celebrated epidemic, that I became a thorough disbeliever in all that had been previously said in regard to the contagious (transmissible) nature of this disease. "The mortality, it appears, became excessive, when the commander-in-chief adopted (not cordons or Quarantines) but the wise resolution of moving his grand army, consisting of 11,500 fighting men, in *search of a healthier soil and of purer air*, which they found when they crossed the clear stream of the Bitwah, and upon its high and dry banks at Erich soon got rid of the pestilence, and met with returning health." Now, just fancy epidemic Cholera, a disease transmissible by susceptible articles, and what an inexhaustible stock must this large army, with its thousands of followers, have long carried about with them; but instead of this, they were soon in a condition to take the field. Against the above historical fact, men of ingenuity may advance what they please. There is no doubt, that in the above instance some cases of Cholera occurred during the move, the poison taken into the system on the inauspicious spot not having produced its effect at once; it is needless to point out what occurs in this respect in remittent and intermittent fevers.

The Indian Reports furnish further evidence of mere removal producing health, where Cholera had previously existed.

Mr. Bell, a gentleman who had served in the medical department in India, and who wrote upon the disease, informs us (p. 84), "that removing a camp a few miles, has frequently put an entire and immediate stop to the occurrence of new cases; and when the disease prevailed destructively in a village, the natives often got rid of it by deserting their houses for a time, though in doing so they necessarily exposed themselves to many discomforts, which, *cæteris paribus*, we should be inclined to consider exciting causes of a contagious or transmissible epidemic." We even find that troops have, as it may be said, *out-marched* the disease, or rather the cause of the disease; that is, moved with rapidity over an extensive surface where the atmosphere was impure, and thereby escaped—on the principle that travellers are in the habit of passing as quickly as they can across the Pontine marshes. Mr. Bell says, "In July, 1819, I marched from Madras in medical charge of a large party of young officers, who had just arrived in India, and who were on their way to join regiments in the interior of the country. There was also a detatchment of Sepoys, and the usual number of attendants and camp-followers of such a party in India. The Cholera prevailed at Madras when we left it. Until the fifth day's march (fifty miles from Madras) no cases of the disease occurred. On that day several of the party were attacked on the line of march; and during the next three stages we continued to have additional cases. Cholera prevailed in the countries through which we were passing. In consultation with the commanding officer of the detachment, it was determined that we should *leave the disease behind us;* and as we were informed that the country beyond the Ghauts was free from it, we marched, without a halt, until we reached the high table-land of Mysore. The consequence was, that we left the disease at Vellore, eighty-seven

miles from Madras, and we had none of it until we had marched seventy miles further (seven stages), when we again found it at one of our appointed places of encampment; but our camp was, in consequence, pushed on a few miles, and only one case, a fatal one, occurred in the detatchment: the man was attacked on the line of march. We again left the disease, and were free from it during the next 115 miles of travelling; we then had it during three stages, and found many villages deserted. We once more left it, and reached our journey's end, 260 miles further, without again meeting it. Thus, in a journey of 560 miles, this detatchment was exposed to, and left the disease behind it, four different times; and on none of those occasions did a single case occur beyond the tainted spots." What a lesson for Dr.———! But *for whom* could Dr. ——— have written his '*curious*' book? Hear Mr. Bell in respect to the common error of the disease following high roads and navigable rivers only:—"I have known the disease to prevail for several weeks at a village in the Southern Mahratta country, within a few miles of the principal station of the district, and then leave that division of the country entirely; or, perhaps, cases would occur at some distant point. In travelling on circuit with the Judge of that district, I have found the disease prevailing destructively in a small and secluded village, while no cases were reported from any other part of the district."

What a pity that, before the mischievous anti-social doctrine of contagion in Cholera was acted on by the ruling authorities in England, statements such as the following, from the same gentlemen, had not been taken into consideration by those deputed to give their opinion:—"It has been remarked by many practitioners, that, although they had brought Cholera patients into crowded

wards of hospitals, no case of the disease occurred among the sick previously in hospital, or among the hospital attendants. My own experience enables me fully to confirm this. The Military Hospital at Dharwar, an oblong apartment of about 90 feet by 20, was within the fort, and the lines of the garrison were about a mile distant outside the walls of the fort. On two different occasions (in 1820 and 1821), when the disease prevailed epidemically among the troops of that station, while I was in medical charge of the garrison, but while no cases had occurred in the fort within which the hospital was situated, the patients were brought at once from their quarters to the hospital, which on each occasion was crowded with sick, labouring under other disorders. No attempt was made to separate the Cholera patients. On one of these occasions, no case of Cholera occurred within the hospital; on the other, *one* of the sick was attacked, but he was a convalescent sepoy, who had not been prevented from leaving the fort during the day. *The disease, on each of those occasions, was confined to a particular subdivision of the lines, and none of those within the fort were attacked.*" (*Bell* on Cholera, p. 92)—One might continue for pages quotations, more or less of this nature, in proof of the London College Board or Committee having been precipitate in their decision as to contagion in Cholera, which turned out, on entering on evidence, to be a mere phantom; but what has been already said will, I dare say, be considered as sufficient in the minds of most of my readers, as far as relates to India:—though I may be pardoned for referring to one more very remarkable published document by Surgeon Geo. Dartnell, formerly of the 41st Regt., and now a well-known, and very intelligent Staff Surgeon, serving at the Asylum for the Insane at Yarmouth. The sum of this gentleman's statement, *recorded by me in* 1832, was, that on a certain

occasion, his corps was ordered, in India, to move from one point to another in two divisions, and by separate routes: that the division on one line was attacked with Cholera (throughout the march of several days), while that marching on the other line remained unaffected:—and that, *when all intermixed, on their arrival at the appointed* (healthy) *station, any cases of Cholera which appeared were confined to the men belonging to the division* IN WHICH IT PREVAILED DURING THE MARCH; —these, clearly enough, carrying, each in his own system (and not from their carrying seeds of contagion in packs or pouches), the effects of the deteriorated atmosphere which they had but a short time before moved through and inhaled;—exactly as may, in many countries, be said of Ague whenever that disease is spoken of.

From its importance in more than one respect, I feel that I should not omit the following details, given, in 1831, in a pamphlet by the DUKE DE MORTEMAR, Ambassador in that year from the French Court to that of St. Petersburg:—

"An important truth seems to be proved by what we shall here relate, which is, that woods seem to diminish the influence of Cholera, and that cantons, in the middle of thick woods, and placed in the centre of infected countries, have altogether escaped the devastating calamity! The island of Kristofsky, placed in the centre of the populous islands of St. Petersburg, communicating with each other by two magnificent bridges, and with the city by thousands of boats, which carried, every day, and particularly on Sundays, a great number of people to this charming spot—the island of Kristofsky *was preserved completely from attacks of the Cholera;* there was not a *single* person ill of the disease in three villages upon it. To what is this salubrity of Kristofsky,

inhabited by the same sort of people as St. Petersburg, to be attributed—fed in the same manner, following a similar *regime*, and communicating with each other daily, if it be not to the influence of the superb forest which shelters it? The firs, which are magnificent as well as abundant, surround the houses." He notices that the town is low and humid, and that "it is made filthy every Sunday by the great numbers who resort to it."

"The conviction, now established (1831), that intercourse with the sick produces no increase of danger, should henceforth diminish the dread of this calamity. It differs from the plague in this, that it does not, by its sole appearance, take away all hope of help, and destroy all the ties of family and affection. Henceforth those attacked will not be abandoned without aid and consolation; and separation or removal to hospital, the source of despair, will no longer increase the danger. The sick may in future be attended without fears for one's self, or for those with whom we live."

The importance of the following from Dr. Gaymard, one of the French Commission to St Petersburg, in 1831, will readily appear: he made statements to the following effect before the Academy of Medicine at Paris on his return;—1*st*, that "the Cholera did not exist in the Russian Corps which fought at *Iganie*" (the place where the first battle with the Poles took place). 2*nd*, that "the two thousand Russian prisoners taken on that occasion, and observed at Praga for ten days under the most perfect separation ('*dans un isolement complet*'), did not give a single case of Cholera." 3*rd*, that "the corps (of the Polish army) which was not at *Iganie*, had more cases of Cholera than those which were there." Dr. Londe, among other proofs that the disease was not transmissible, or, as some prefer calling it, not communicable, mentioned "the immunity of wounded

and others mixed with the Cholera patients in the hospitals; the immunity of medical men, of attendants, of inspectors, and of the families of the different *employés* attached to the service of Cholera patients; the example of a porter, who died of the disease, without his wife or children, who slept in the same bed with him, having been attacked; the example of three women attacked (two of whom died, and one recovered), and the children at their breasts, one of six months, and the other two of twelve, not contracting the disease."

At a subsequent meeting of the Academy of Paris, a letter from Dr. Gaymard was read, in which it was stated, while referring to the comparative mortality at different points there, that "The cause of this enormous difference was, that the authorities wished to ISOLATE the sick—(observe this well, reader)—and even send them out of the city; now the hospital is on a steep mountain, and to get to it, the carriages were obliged to take a long circuit through a sandy road, which occupied an hour at least; and if we add to the fatigue of this removal, and the time which elapsed after the invasion of the disease, the deplorable state of the patient on his arrival, then the great mortality may be accounted for."

"The progress of the disease was the same as in other places; it was at the moment when it arrived at its height, and when, consequently, the greatest intercourse (observe, reader!) took place with the sick, that the number of attacks wonderfully diminished all at once ('*tout à coup*'), and without any appreciable cause. The points of the city most distant from each other were invaded. Numbers of families, crowded (*entassees*), who had given aid to Cholera patients, remained free from the disease, while persons, isolated in high and healthy situations (*usually* healthy meant of course) were attacked. It especially attacked the poorer classes, and those given to spirituous

liquors. Scarcely twenty persons in easy circumstances were attacked, and even the greater part of these had deviated from a regular system."

The inferences drawn, according to a French medical journal, from the whole of Dr. Gaymard's communication, are—

"1. That the system of sanitary measures, cordons, &c. adopted in Russia, did not any where stop the disease.

"2. That, without entering on the question as to the advantages to be derived from a moral influence arising out of sanitary cordons placed round a vast state like France, these measures are to be regarded as useless in the interior, in towns, and round houses.

"3. That nothing has been able to obstruct the progressive advance of the disease in a direction from India westward.

"4. That the formation of temporary hospitals, and DOMICILIARY SUCCOUR, are the only measures which can alleviate this great scourge."

A letter from Dr. Gaymard to Dr. Keraudren was read at the meeting of the Academy, in which it was stated, that in a hospital at Moscow, in which Dr. Delauny was employed from the month of December 1830, to the end of December 1831, 587 Cholera patients, and 860 cases of other diseases were treated—"*Not one of the latter was attacked with Cholera, although the hospital consists of one building, the corridors communicating with each other, and the same linen serving indiscriminately for all.* The attendants did not prove to be more liable to attacks. The relatives were suffered to visit their friends in hospital, and this step produced the best impression on the populace, who remained calm. They can establish at Moscow, that there was not the smallest analogy between the Cholera, and the plague which ravaged that city in the reign of Catharine.

Dr. Gaymard declares, that having gone to Russia without preconceived ideas on the subject, "he is convinced that interior quarantines, and the isolation of houses and of sick in towns, have been accompanied BY DISASTROUS CONSEQUENCES." Is there yet enough of evidence to show that this disease is positively *not to be made* communicable from the sick?

With respect to POLAND, we have the following information, published in 1831, by Mr. Searle, an English surgeon of high character, who had served in India, and had been attached to the Polish Army. He says:—"I have only to add, that after all I have heard, either in India or in Poland, after all I have read, seen, or thought upon the subject, I arrive at this conclusion, that the disease is not contagious."

He tells us in another place:—

"I have only to add my most entire conviction, that the disease is not contagious, or, in other words, communicable from one person to another in the ordinary sense of the words—a conviction which is founded not only upon the nature of the disease, but also upon observations made with reference to the subject, during a period of no less than fourteen years. Facts, however, being deservedly of more weight than mere opinions, I beg leave to adduce the following, in the hope of relieving the minds of the timid from that groundless alarm which might otherwise not only interfere with or prevent the proper attendance upon the sick, but become itself a pre-disposing or exciting cause of the disease; all parties agreeing, that of all the debilitating agencies operating upon the human system, there is no one which tends to render it so peculiarly susceptible of disease, and of Cholera in particular, as fear.

"The facts referred to are these:—during two months

of the period that I was physician to the principal hospital at Warsaw, devoted to the reception and treatment of this disease, out of about thirty persons attached to the hospital, the greater number of them were in constant attendance upon the sick, which latter were, to the number of from thirty to sixty, constantly under treatment; there were, therefore, patients in every stage of the disease. Several of these attendants slept every night in the same apartments with the sick, on the beds which happened to be unoccupied, with all the windows and doors frequently closed. These men, too, were further employed in assisting at the dissection and sewing up of the bodies of such as were examined, which were very numerous; also cleansing the dissecting-room, and burying the dead. And yet, notwithstanding all this, only one during the period of two months, was attacked by the disease, and this an habitual drunkard, under circumstances which entirely negative contagion (supposing it to exist), as he had nothing whatever to do with the persons of the sick, though he occasionally assisted at the interment of the dead. He was merely a subordinate assistant to the apothecary, who occupied a detached building with some of the families of the attendants; all of whom likewise escaped the disease. This man, I repeat, was the only one attacked, and then under the following circumstances."

Here Mr. S. relates how this man, having been intoxicated for several days, was, as a punishment, locked up almost naked in a damp room for two nights, having previously been severely beaten.

If we now refer to the occurrences at RIGA during the epidemic of 1831, we find the following Certificate from the British Consul at that place to his Government:—

"The fact of non-contagion seems determined, as far as a question can be so, which must rest solely upon negative

evidence. The strongest possible proof is, the circumstance, that not one of the persons employed in removing the dead bodies (which is done without any precaution) has been taken ill. *The statement of fifteen labourers being attacked, while opening a pack of hemp, is a notorious falsehood.* Some physicians incline to the opinion that the disease may sometimes be caught by infection, where the habit of body of the individual is predisposed to receive it; the majority of the faculty, however, maintain a contrary doctrine, and the result of the hospital practice is in their favour. There are 78 persons employed in the principal hospital here; of these, only two have been attacked, one of whom was an '*Inspecteur de Salle*,' and not in immediate attendance upon the sick. I am assured that the other hospitals offer the same results; but as I cannot obtain equally authentic information respecting them, I confine myself to this statement, on which you may rely. On the other hand, in private families, several instances have occurred where the illness of one individual has been followed by that of others, but, generally, only where the first case has proved fatal, and the survivors have given way to grief and alarm. Mercenary attendants have seldom been attacked, and as mental agitation is proved to be one of the principal agents in propagating or generating the disease, these isolated cases are attributed to that cause rather than infection.

"It is impossible to trace the origin of the disease to the barques; indeed, it had not manifested itself at the place whence they come, till after it had broken out here. The nearest point infected was Schowlen, at a distance of 200 versts (about 150 miles), and it appeared simultaneously in three different places at Riga, without touching the interjacent country. The first cases were two stone-masons working in the Petersburg suburbs, a person in the citadel, and a lady resident in the town. None of these persons

had had the slightest communication with the crews of barques, or other strangers; and the quarter inhabited by people of that description was later attacked, though it has ultimately suffered most.

"None of the medical men entertain the slightest doubt of the action of atmospheric influence—so many undeniable instances of the spontaneous generation of the disease having occurred. Half the town has been visited by diarrhœa, and the slightest deviation from the regimen now prescribed (consisting principally in abstinence from acids, fruits, beer, &c.) invariably produces an attack of that nature, and generally cholera: fright and intoxication produce the same effect.

"Numerous instances could be produced of persons in perfect health, some of whom had not left their rooms since the breaking out of the disease, having been attacked by Cholera, almost instantaneously after having imprudently indulged in sour milk, cucumber, &c. It is a curious circumstance bearing on this question, that several individuals coming from Riga have died at Wenden, and other parts of Livonia, without a single inhabitant catching the disease; on the other hand, it spreads in Courland, and on the Prussian frontier, notwithstanding every effort to check its progress. The intemperance of the Russians during the holidays has swelled the number of fresh cases, the progressive diminution of which had previously led us to look forward to a speedy termination of the calamity."

We find that the British Consul at Riga, as well as the British Commissioner, Dr. Hamett, of our R. N., both furnished our government with strong Reports against the contagion of Cholera, which I made full notes of at the time.

It is but justice to state, that in my investigations regarding the Cholera epidemic of 1831-2, I was most ably aided by Dr. Mateo Seoane, a learned Spanish physician,

the Editor of the last and best edition of Newman and Baretti's Spanish Dictionary, and deputed by the Spanish government to draw up a relation of the facts connected with the progress of the malignant Cholera in England, from its first appearance in Sunderland, which is very ably done in a pamphlet, edited by James Holmes, Took's Court, Chancery Lane, in 1832; and I have no doubt, that it is owing to this gentleman's exertions that we are indebted for the Decree of the Queen of Spain before given, abrogating all laws in favour of quarantines and cordons, and that his ever appearing at any time to lend himself to their use, was in compliance with the special desire of the Spanish Minister then in London. From my long intimacy with Dr. Seoane, in London and Gibraltar, I feel that I can answer for his accuracy in all his statements respecting the progress of Cholera.

THINGS WORTHY OF BEING REMEMBERED REGARDING THE LONDON CHOLERA EPIDEMIC OF 1831-2, BY DR. GILLKREST, INSPECTOR GENERAL OF ARMY HOSPITALS, H. P.

Being about to speak of the above Epidemic, of which I had opportunities of seeing a great deal, it is not my intention to attempt to give a history of the *first cases in England*, with regard to which all was as vague and uncertain as it seemed to be in other countries. While some persons fixed on Sunderland as the place where the first cases appeared, others fixed on distant points for the appearance of isolated cases for some time previous; while a third party, to which a portion of the press had allied itself, maintained, in the hope of preventing injury to commerce, the non-existence of malignant Cholera in London, for a

considerable time after undoubted cases had presented themselves throughout the City.

My personal knowledge of the Spanish Physician, Dr. Seoane, and especially of his great industry and tact in drawing up statistical documents, induce me to place every reliance on his Account of the progress of the epidemic in England, in 1831–2; and I am therefore led to take from him the following summary, premising that he was one of the first foreign physicians who visited the North of England on the appearance of the Cholera there.

"Taking Sunderland as the central point, the disease was observed, for the first month, not to extend itself beyond that town; in the second, it appeared 100 miles off to the North, at Haddington, in Scotland; to the South, at four miles distant only, and to the North-East at from fifteen to twenty. In the third month, that is, from 23rd December to 23rd January, it extended seventeen miles further North, that is, to Edinburgh; while it did not extend at all to the South. In a Westerly direction it extended a few miles; and, to the North-East, in the neighbourhood of Glasgow, 180 miles from Sunderland. In the fourth month (ending 23rd February) it manifested itself in London, 260 miles from the then nearest place where it prevailed; and, in all this month, it did not extend to the North or South, and only about nineteen miles to the North-East in the direction of Glasgow. In the fifth month, from the 23rd of February to the 23rd of March, it remained confined to London; and, in Scotland, extended thirty to forty miles more to the North, and some nineteen miles to the West. In this month it also appeared at Ely, in the centre of England, sixty-seven miles to the North-East of London, and more than 200 miles North of the nearest infected place.

Dr. Seoane tells us, that, though he uses the words *extended itself* in his book, he is not to be understood as meaning *progressive extension*, or that it attacked one

place after another till it reached the place of its termination within the specified month, for it can be stated that it rather leaps ('*salta*') than, properly, *extends*. When it manifested itself in Haddington, on the 17th December, four-fifths of the places between it and Sunderland did not suffer from it. Indeed, the greater part of them had never been attacked at all up to the time of his writing. The same occurred in regard to Glasgow:—when it showed itself in the neighbourhood of that city, at about eighty miles from Sunderland, the greater number of the towns and villages situated between the one and the other did not suffer; and very few had suffered at all up to the time of his writing. In England the Cholera very rarely followed a progressive continuous course; and its propagation was irregular in its mode, and in the rapidity with which it traversed distances, if it is proper so to speak.

This leaping of the disease (manifestly a wrong mode of expression, as, if there is any *leaping* in the case, it must be *of the cause* of the disease) was, as Dr. Seoane observes, noticed in the Cholera with which Germany was visited in 1831. This, the Doctor thinks, was the cause of the inefficacy of all sanitary (as he is pleased to call them) cordons; for, while the authorities were surrounding one place with a cordon,—lo! *presto!* it made its appearance at eight, ten, or fifteen miles behind the cordon. Remarkable facts of a similar kind are shown by Dr. Seoane to have occurred throughout England, in the epidemic of 1831–2.

The same physician makes some very remarkable observations on the progress of the Cholera at Haddington, and in the neighbouring towns: he states, with respect to the former place, where the disease, when it first broke out, *was limited to about* 200 *yards square*, notwithstanding the freest intercourse with other places, and great commerce, —that all the Cholera cases occurred among the inhabitants of the limited space just mentioned, and, though most of

them belonged to the depressed classes, some wealthy individuals were also attacked. In a second eruption, there were but very few cases in the locality where it had previously appeared; but it also selected, on this second visitation, a particular locality, equally limited, in the centre of the town. "It being worthy of notice," says the Doctor, that "in this second appearance of the malady, a great proportion of those attacked belonged to families in independent circumstances, and very rarely indeed was there more than one individual attacked in such families; and, almost without exception, the individual attacked had some natural or acquired predisposition to gastric complaints." Throughout, Dr. Seoane seems to acknowledge his inability to trace the disease from the sick to the healthy.

With the most ample evidence of the correctness of the very important facts just related by Dr. Seoane, which occurred while he was in the North of England, at the first appearance of the Cholera there (the end of 1831), we can imagine the repugnance experienced by that gentleman to act the part of a *politico-medical* agent, by seeming occasionally to lean to contagion, in compliance, it is fair to presume, with the recommendation of Zea Bermudez, the Spanish Ambassador in London, as noticed above.

Before closing the subject of the Cholera in Scotland, I would beg to be allowed to make the following short quotations from a letter of Staff-Surgeon Marshall, who had served in India, which appeared in the *Glasgow Herald* of 5th August, 1832:—"In no one instance did the Cholera seem to prevail among people residing in the same house or barracks, so as to excite a supicion that the contact of the sick with the healthy contributed to its propagation." "That the disease is ever propagated by means of personal contact, or by the clothes of the

sick, has not, as far as I know, been satisfactorily proved: the quality of contagion was never attributed to the disease in Ceylon, and I believe nowhere did it occur with greater severity."

Having had interviews in London with the celebrated Dr. Magendie of Paris, on his return from Sunderland, where he had been sent by the Academy of Médicine (as one of its most experienced members in investigating Epidemics) to ascertain the nature of the Cholera then prevalent there, I learned that this gentleman reported officially, to the French Minister, Count d'Argout, that the disease possessed no contagious property whatever; and I afterwards found that he had the temerity (*temerity*, considering the amount of interests at stake) to state, that if governments wished to get rid of contagion, they must not employ quarantine people.

On the appearance of the first cases of Cholera in London, I resolved to make myself acquainted, as far as possible, with all the phenomena of the disease, by personal visits to those spots where it prevailed; and well aware, from occurrences during the yellow fever epidemic of 1828 at Gibraltar, of the importance of tracing first cases, in order to ascertain how far contagion might have been an agent in the extension of the disease, I made every possible effort to obtain such information on the point as could be relied on; but the great size of London seemed opposed to obtaining any incontrovertible evidence on the occasion. It had been frequently noticed by inquirers into the nature of Cholera in other countries, that places situated on the banks of rivers (whether navigable or not) were less liable to exemption from the disease than others; and on the whole, this was certainly the case with regard to the Thames, though it constantly occurred, towards the close of 1831, that when an early

case was announced at such or such a point, the announcement on the very next morning would appear of a well-authenticated one some days before, at such or such another, so many miles off. For my part, greatly as I had endeavoured, by frequent visits to different parts of London, to ascertain this point, I could never take it upon me to affix the first case to a particular individual:—while, for instance, a ship-scraper or a coal-barge-man was spoken of at one time, it occurred, about the same time, that two miserable women who gained their wretched living by picking out of the mud, for sale, the rotten oranges and other articles left daily by the tide, had had attacks which proved fatal. Accompanied by Dr. Costello and a few other gentlemen, I saw the corpses of these persons at the Shadwell Cholera Hospital; and the result of all inquiries, left no doubt at all of their having died of the true malignant Cholera.

It seems desirable that I should give here a sketch of the places in London and the neighbourhood, which I visited in the course of four or five months of the Cholera epidemic in 1831–2, for the purpose of obtaining information regarding that disease. Some of these places had been *frequently* visited by me, while time, as may be supposed, only admitted of an occasional visit to others;—Lambeth Cholera Hospital; St. George's in the Fields Cholera Hospital (one of the earliest established in London); Union Street Surrey Dispensary; Guy's Hospital; St. Thomas' Hospital, Borough; Bermondsey, St. Olive's poor-house; and St. John's poor-house. On the left of the river, Chelsea Cholera Hospital; at Kensington, isolated cases; Vauxhall Road, Guards' Cholera Hospital; Regent Street, Vauxhall Road, 2nd Cholera Hospital of the Guards; Marylebone Cholera Hospital; St. Giles's Cholera Hospital; Cholera Free Hospital, Greville Street, Holborn (this Hospital very frequently visited); Tower Cholera

Guards Hospital, and Artillery Hospital; Cholera Hospital, Aldgate, City; Bethnal-Green Cholera Hospital; Cholera Wards attached to the "Red-house" Lunatic Asylum, Bethnal-Green; Cholera Wards attached to "White-house" Lunatic Assylum, Bethnal-Green.

Not officially employed at any of the foregoing places, for reasons which may be surmised from what I have stated respecting the *particular object* (the establishment of contagion by the Old Board "of *Health*" of London), my daily occupation was, to a greater or less extent, as far as my physical powers would admit, to give at some places the results of the experience acquired in others;—noting as far as was possible any circumstances particularly worthy of observation, and communicating them to newspapers and medical journals, for the public benefit. To the many medical gentlemen by whom I may still be remembered, and who received me so courteously and kindly in those days, not only at hospitals and poor-houses, but in the dwellings of their poor private patients, I never have ceased to feel most grateful.

Keeping to the principal object of my present undertaking in writing these pages, namely, to support the incontrovertible doctrine of the non-contagion of the Cholera; the most striking circumstances in the course of my daily visits in London, were, 1*st*, the infrequency of more than one in a family suffering under an attack of the prevalent disease, throughout the epidemic season; and, *2ndly*, the so often observed simultaneousness of attacks in the great city and neighbourhood, at points widely distant from each other, and altogether precluding the possibility of their arising from intercourse or communication.

On the 9th November, 1831, I commenced offering to the public, through the then existing *Courier* Newspaper, my remarks on what came under my observation; and as a paper more generally read, subsequently transferred

them to the *Times*, whose Editor liberally admitted them. Having in my possession at this moment some of the columns on these subjects, cut from the Nos. of those days, I am induced to lay them before the public, as the events, though they occurred twenty-one years ago, must equally enable people to form an opinion for themselves on the question of contagion, as if they had occurred but last week :—

(Inserted in the *Times* of February 22, 1832.)

Tothill-fields (Rochester-row Barracks).—John Webb, of the Grenadier Guards, attacked on the 15th of January, 1832, and whose case, if duly inquired into, will be found to have been a most perfect one of the true malignant Cholera, such as afterwards prevailed in other parts of London, and gave rise to so much alarm: there has been, since, no spreading of the disease, though direct and indirect communication with numbers had taken place during his illness.

Sir James M'Grigor, the then vigilant Chief of the Army Medical Department in England, saw this man at the Hospital of the Guards, in Rochester-row, on the morning after his entrance for treatment. Having been in London (in 1847), I requested some further details from my friend, Surgeon Brown, Grenadier Guards, respecting this man's case, and received a note from him, extracted from his hospital book, showing that it had been put quite out of Webb's power to expose himself to communicate with others labouring under the disease. It is added, in Dr. Brown's note, that "the next case of Cholera in the regiment was in the 3rd battalion, then stationed at St. George's Barracks, I believe more than two miles from the barracks of John Webb, and happened *on the 30th June*, in a man who had been in hospital under treatment for Diarrhœa since the 23rd of the same month.

SOUTHWARK—(Mint Street).

Florence O'Sullivan, aged 53, a brewer's vat-maker, who worked daily at Mr. Young's, St. George's parish, attacked at midnight on Tuesday, the 7th instant, symptoms detailed officially by Surgeon Evans, and not admitting of doubt: died at 7 p. m. on the following day. On Sunday, the 12th, I sat for about an hour in the small, but not uncomfortable room in which this man had been attacked, and found, to my great astonishment, THAT THE CORPSE HAD NOT BEEN INTERRED, but was respectably "*laid out*" at one extremity of the room, the lid of the coffin being loosely laid on, so that all visitors might behold that due honours had been paid, as white gloves, &c., to his remains. When I visited this place again on the Tuesday following, the corpse was still in the room, so THAT A WHOLE WEEK HAD ELAPSED FROM THE TIME OF HIS DEATH. During eight days, therefore, this man's wife, three children, and daughter-in-law, were exposed to the so-termed terrific contagious effluvia from the body of a person labouring under and dying of Cholera, without, up to that hour, any other person in the house having suffered. Had some of the family suffered, it would indeed be no proof whatever of contagion; but the escape of the whole, for so many days together, with its having been ascertained that the disease did not extend itself among the sixty to eighty persons, countrymen, medical men, &c., who entered the room from time to time during his illness, and after his death, cannot fail to have its weight on the public mind. The widow O'Sullivan, who is a very intelligent woman, gave me, along with an account of all her late husband's virtues, a very good description of his symptoms, not omitting the *blueness* considered so characteristic of Cholera. I mention this, as an attempt had been made, very unfairly, to throw discredit on the statements of Mr. Evans, the surgeon, as to the above having been a case of Cholera. The funeral expenses, and I believe new clothes for two of poor O'Sullivan's children, were defrayed by a subscription got up by his fellow-labourers. This, though irrelevant, I may be allowed to mention, as a hint to the rich, whether clergy or laity, in the hope that, as they seem scared, by a very silly panic, from following the noble example of the Russians and Poles, whose upper classes visited the dwellings of the afflicted, without prejudice to themselves,—they may, at least, find means of sending their charitable contributions to such places.

The London Board of Health of that time doubted so much (and it must be confessed pardonably enough, considering the circumstances of the case) the accuracy of the details I had published, that it sent one of the medical gentlemen officially employed for the service of the poor,

to ascertain how far they had been given correctly; and, having met him entering the house as I was going out, I returned with him to Mrs. O'Sullivan, who showed him the corpse, and confirmed all my details.

SOUTHWARK (Vine-street).

Vine-street, a miserable filthy court, consisting of small thickly-inhabited dwellings, near St. Thomas's Hospital. A woman, Catherine Harris, mop-seller, attacked at 5 p. m., Feb. 11, died on the next day, at 11 o'clock p. m. The corpse lay (a sheet merely being placed over it) on a bed, in the same room in which the family lived, up to the 14th, on which day I saw it, accompanied by the then Colonel Hare, now General Clarges, and the body was interred at 1 p. m. on the 15th. Of the people who lived in the same room, or in the other parts of the house, none have, up to my last visit there*, been attacked; neither have any of the several visitors or medical men.

SOUTHWARK (Bear-gardens, near Southwark-bridge).

A woman, attacked, on the morning of the 12th February, with symptoms admitted by all medical men who had seen her, as being perfectly characteristic of the worst form of the prevalent disease, died on the next morning. Her husband, child, and other inhabitants of the same dwelling, which was badly situated, as well as the medical men, continued free from attacks.

SOUTHWARK (18, Winchester-street, near Lady's Chapel).

Francis Byrne, aged 13, attacked with the most violent form of the disease, as admitted by all, on the 13th instant. This poor boy, whose state was most wretched, being without a bed, on a second floor, was, soon after his attack, brought down to the first floor, and put into the bed of the good man of the house in which he lodged. The father, mother, three other children, three inhabitants of the lower part of the house, together with the many medical men who visited the house, remained free from attacks of the disease.

SOUTHWARK (13, Silver-street, a similar court to the last, and adjoining it).

Margaret Donoughoe, aged 40, a fruitseller, occupying a miserable room on a second floor, in a badly ventilated wooden house, was attacked with unequivocal symptoms on the morning of the

* After the lapse of several days.

(Silver-street)—*continued.*

13th February, and died at 8 p. m. on Wednesday. The corpse was "*laid out*" on a bed for one day. During her illness, and up to the time of interment, five children had slept in the same room, and, up to the following Sunday night, when I visited the place, none of those children were attacked. None of them have been reported as being attacked. On Thursday, her eldest daughter having been questioned, stated, in the presence of Colonel Hare, that, of perhaps one hundred of her Irish friends and neighbours, who had been in the room during the illness, and after the death of her mother, she did not hear of one having been attacked. Had the whole of these wretched children (who, by the way, are the greatest objects of charity) been attacked, it would surely not be necessary to look for the agency of contagion as the cause, all being equally exposed to local causes; the special susceptibility in the mother having arisen, very probably, from her often being obliged to

"Check her own appetite, and give them all."

CHELSEA (No. 8, Royal Hospital-row).

No spreading had taken place from the body of Jane Halliday, laundress, attacked at 5 a. m., on Friday, the 17th of February, who died at half-past 7 on the 18th—two persons in constant attendance during her illness. About twenty persons, including medical men, occasionally entered the room during the illness, and after the death of this woman, whose case, according to the minute details furnished by the surgeon who attended her, was unquestionably one of malignant Cholera, such as was afterwards more prevalent in London. The body, placed in a coffin, lay in the next room to that in which the family lived on the 19th, the lid being occasionally removed by the relatives. In this house, which appeared very comfortable, there was another family of three persons. No other person attacked.

(INSERTED IN THE *Times* OF FEBRUARY 24, 1832).

SOUTHWARK (11, Duke-street).

Jane Bailey, aged 40, a pauper with three children, inhabiting a small room in the above narrow and filthy street, attacked on the morning of the 15th, died on the evening of the 16th. Five other families lived in the same house during her illness, none of the members of which had, up to the evening when I visited the house, been attacked, though several had assisted in nursing her, rubbing her limbs, &c. Her clothes had been washed by individuals in the house, and in the room in which she died, I that day saw a fresh

(Duke-street)—*continued.*

set of lodgers, and in the next room there were also fresh lodgers, making in the whole seven families exposed in that house to contagion, had such a thing existed. The poor mother having fallen down through debility on the morning of her attack, one of her children screamed out violently, and, according to the account of persons in the house, sunk rapidly from that moment; so that, when I went with the medical gentlemen at 2 o'clock on the 16th, to see the mother, the child lay dead by her side, not having been seen by them while alive. If this, however, be declared a case of the disease too, the body was placed, while I was in the house, in the next neighbour's room, without any spreading. Two other children belonging to this woman, remained well up to that evening.

SOUTHWARK (Silver-street, No. 2).

John Sullivan, aged 50, a labourer, chiefly employed in loading carts with potatoes at the shore, attacked at 4 a. m. on the day after being so employed. Lived with two other men, in a small room. The corpse, placed in a coffin, the lid of which was not nailed down, lay for the inspection of his friends till the 16th. Persons exposed to contagion, had any such thing existed,—two lodgers in the same room, six persons in constant attendance during his illness, three children in the next room. It was stated to me by the owners of the house, in the presence of Col. Hare, that, up to the 16th, from sixty to seventy persons had been in the room after his death. Several medical men visited that man. According to all the inquiries I had been able to make on the spot that evening, no person in the house or neighbourhood had been attacked.

I am requested not to give the name in the following instance, as the person, being of a particular trade, may be injured by his customers abandoning him; indeed, he assured me that this, to a certain extent, was already the case,—one of the many natural consequences of the very erroneous doctrines which had gone forth as to the then prevalent disease being a "*taking*" one.

SOUTHWARK (——— Street).

Mr. ——, a respectable tradesman, living in a most comfortable, well-ventilated, well-furnished house, attacked on Tuesday, the 14th, had been quite well for some days, though, as I saw when his surgeon did me the favour to accompany me in my visit to him, the symptoms were very characteristic. The different persons in direct or indirect contact with him, up to the time I last called (the evening of the day before), remained in the house without being attacked.

In my last letter, I pointed out how absurd it would be to insist upon the agency of contagion, from the mere circumstances of one or more members of the same family being attacked during the

prevalence of the present or any other epidemic;—for, a good old lady, newly arrived in an agueish country, may as well fancy that, because two or three of her daughters were, in succession, attacked with ague, therefore the first attacked must have given it to the others

SOUTHWARK (Vine-street, No. 10).

Three women and one child attacked between the 10th and 14th, in one of the most miserable rooms that can be conceived—the boards filthy, and so rotten as to have holes in them. There was scarcely a trace of a bed between the whole: it was a perfect *tableau* of disease and misery, in one of the most miserable alleys or courts on the face of the earth. But, even under these circumstances, the persons exposed to direct and indirect contact, and remaining unattacked up to that hour, were one child, two nurses, two owners of the house, and twenty-three children, who continued during two days after the appearance of the disease to go to the school kept by the old woman of the house.

I have notes of several other cases, but, lest I should trespass on your space, will defer giving them till another occasion. I may remark that, respecting the families, inhabitants of the houses, and others exposed to contact in the cases of the boy Byrne, the woman Donoughoe, &c., as given in my last, all have remained well. I have ascertained this, in most of the instances, by a visit to the different places.

Let it be remarked, that in the locality of the miserable alleys in the Borough, called Vine-street and Silver-street*, where such a great proportion of cases occurred at first, there had been no fresh cases at all, although those places were greatly crowded, and there had been no purification by the chloride of lime, or any thing of the sort. Several cartloads of filth were removed from the locality in the first days of the epidemic.

Let me be pardoned for stating again, that the misery of the poor in those quarters is beyond all conception. A writer had said that the usual miseries in the dwellings of the sick poor of other nations could not exist in "the first city in the world." I thought so too; but in the last town of a country deemed uncivilized, which I visited, misery like that I now speak of, did not exist. As to looking to parishes for full relief to the numerous poor which they contained, it seemed out of the question. As I am not myself in charge of sick, I may be allowed to say that all honour is due to those who are; and it is to be wished that some of their revilers would, like them, not only give their zealous aid, but their money too.

Feb. 23rd, 1832.

* Now fortunately no longer existing, any more than several others of the same description near Tooley-street, Southwark.

A report seemed prevalent at one time in London, that mental derangement gave exemption from Cholera; but the facts in 1832, at the lunatic establishments, Bethnal-green, "Red House" and "White House," completely disprove this; and I beg to quote the following circumstances, furnished by me to a medical journal on the 1st September of that year:—

"At the Bethnal-green lunatic establishments, called the Red House and White House, upwards of one hundred cases of Cholera have occurred since the 10th of June last. The history of the progress of Cholera in these establishments is highly illustrative of the facts so important to society, and so often stated by others as well as by myself, viz., the spontaneous origin of Cholera, and its not possessing the property of being communicated directly or indirectly from the sick to those who attend them, or are near them. The two establishments mentioned, although adjoining, are completely separate, as to officers, attendants, &c. There is a doorway, for communication on particular occasions only, in the high wall dividing both houses. In each house there are males and females of different classes. The first case was that of a woman in the Red House, who from her unfortunate state of mind, had been long confined within the walls, and in whose case there was no possibility of tracing the source of the disease to her communication with any other person labouring under it. When it was ascertained that the disease appeared in the Red House, Mr. Beverley, the medical gentleman in charge of the White House, felt himself bound to adopt the "precaution," as it is termed, of completely cutting off all communication with the building in which the first cases occurred. Not only was the occasional communication of officers and attendants, through the door mentioned, interdicted, but this gentleman had even the windows blocked up which overlooked the yard of the Red House; notwithstanding

which, Cholera appeared among the *women* under his charge; in a little time after among the men of the Red House; and lastly among the men of the White House. While this was going on to the extent mentioned, *not a single medical man who had been in contact with the Cholera patients—not a single nurse or attendant of any kind in the hospital about the sick—no burier of the dead, &c., has been attacked with the disease up to the present time*, when only a patient or two are under treatment.* Here I must notice the curious physiological fact observed at this hospital, of the *great improvement*, if not restoration, of the mental faculties of the patients while under Cholera symptoms. The liberality and urbanity of the zealous medical men in charge of the Bethnal-green establishments for insane persons, are calculated to advance the interests of science and of humanity.

"Of one thing the public may rest perfectly assured, that as to attendants on Cholera patients, a similar result to that which has been just stated respecting Bethnal-green, took place in the Grenadier Guards in *the Tower*;—for, among the medical men in constant attendance on, or who paid occasional visits to, the thirty Cholera patients, whose treatment has been lately referred to in a medical journal by Mr. Harrison, surgeon of that Regiment, not one has been attacked with the disease;—of the military officers who paid the hospital visits of duty, or of kindness towards their men, not one was attacked;—*of the several (indeed, we may say many) men in constant attendance day and night,—rubbing the patients, &c., or on occasional duty only, and whose names may be obtained, not one has had the Cholera.* The same immunity of medical men, nurses, &c., in attendance on Cholera patients, has been observed in another Battalion of the Grenadier Guards, in which

* September 1, 1832.

cases have occurred occasionally since the 15th of January last, the day on which John Webb, of that regiment, was (as has been admitted by the gentlemen who treated him) attacked with *the true* Cholera; although, not being able to couple this guardsman's attack with a *Sunderland* ship, the case, like those of several others, was not given to the public.

"I could go on enumerating, at the Aldgate Hospital, and on many other points, the instances of attendants on Cholera patients having remained free from the disease. I could, in private families, quote the many instances of its not going beyond an individual case, besides those which took place in the houses of Lady A. W., in Arlington-street; of the Archbishop of Canterbury; of the Honourable Mrs. S., of Belgrave Square; of the Honourable Mr. S.; of Sir James Macdonald; of Lord Holland, &c., &c. I could show the perfect untruth of the tale about a person having taken Cholera in consequence of having worn some of Lady Blane's clothes, who died of that disease. Nobody can be weak enough to suppose that attendants on Cholera patients should remain exempt from the disease, if they happen, in all respects, to be under similar circumstances with those whom we see attacked, without any communication with those labouring under the malady. If we have either dissipated persons, or outcasts of society, performing the office of nurses, or if we have debilitated persons attempting to perform a duty which, in such a disease as Cholera, would tire out four healthy persons, what, in any of these cases, can be more probable than that such attendants will be attacked during the epidemic influence? If these things be considered fairly for one moment, and if, along with these things, it be considered that, according to any conceivable doctrine of chances or probabilities, we must, among many thousand events of a particular kind, expect a certain number of coincidences,

which it would be utterly illogical to admit to be the *consequences* of certain assigned causes, it would be bad logic, in the *few* instances which can be adduced of healthy, robust, and temperate persons being attacked with Cholera, though not over-worked, while in attendance on patients, to cite that attack as *produced* by such attendance, when we see so many thousands attacked who *are not near* patients, and, on the other hand, the whole mass of attendants only attacked in their due proportion to the rest of society."

The following general view of the weekly increase and decline of the London Cholera of 1832, cannot fail to be interesting. On the presumption, that the Returns from the general "Board of Health" comprised only important cases, the numbers were believed to be pretty correct.

Week.	Sick.	Deaths.	
1st ..	28 ..	12	Appeared on five different points near both banks of the river, and in the vessels anchored in it.
2nd ..	17 ..	16	It continued to prevail at the places near the river, and also appeared in the Parish of Marylebone, three miles distant from the point nearest affected —the case of a boy, regarding whom no assumed source of contagion could be discovered.
3rd ..	106 ..	68	It extended along the banks of the river, and also appeared in the centre of the population of St. Giles's, where there are filthy streets, narrow and badly ventilated. In the Parish of St. Pancras, which is near St. Giles's and Marylebone, there were two cases in the same house.
4th ..	247 ..	110	Continued along the banks of the river, and in the other places already specified. Isolated cases appeared now and then at other places, though rarely.
5th ..	361 ..	186	It extended up the river, although not continuously, and it went on making ravages in the streets nearest the river, as well as in St. Giles's Parish.
6th ..	391 ..	219	It shewed itself in Woolwich, which is eight miles below London, close to the river, leaving free from the disease more than four miles of thickly populated districts between that place and the infected points.

7th ..	315 ..	270	It appeared in Deptford, half way between Woolwich and London, prevailing at the same time with much violence in the districts first attacked on the banks of the river and at St. Giles's; in the other parishes isolated cases only, and in small numbers, were noted.
8th ..	462 ..	250	It now began to decline simultaneously in all the infected districts.
9th ..	236 ..	120	It continued declining, in the same manner, in all the parishes.
10th ..	114 ..	50	The same.

Remarkable atmospheric vicissitudes very seldom appeared to interrupt this common increment and decrement of Cholera epidemics. At Haddington, however, an exception to this rule appeared to have taken place.

The London Cholera is not to be considered as having caused a great mortality in proportion to its enormous population of 1,800,000 souls—the census for ten miles round St. Paul's. During more than two months' prevalence, up to 23rd April, my late friend Dr. Seoane, a Spanish physician, has given 1318 deaths, being one death, within the specified period, in every 1365 souls; but the difference in the numbers attacked in different quarters of the town and neighbourhood was very striking. In the first place, there were four parishes, situated in the most densely populated part of London, with a population of 83,186, *in which no Cholera prevailed;* and in three of them, from which Dr. Seoane obtained Returns, deaths from *other diseases were, during the epidemic season, even fewer than in an equal space of time in the previous year!* In St. James's parish, containing a population of 37,053 souls, there were only three attacks, and three deaths.

The following Table will show, at one view, the proportion of attacks and deaths to the population of nine of the districts attacked; it is useless to give more districts, as they furnish the same results.

Districts near the river, full of poor people, occupying miserable houses, in badly-ventilated narrow lanes and courts.

District.	Sick.	Deaths.	Population.	No. of Sick with reference to the population.	No. of Deaths with reference to the population.
Southwark	846	410	77,796	1 for 92 souls.	1 for 189 souls.
Bermondsey ...	199	89	29,741	1 „ 149 „	1 „ 334 „
Lambeth	158	116	87,856	1 „ 556 „	1 „ 757 „

Districts that are not close to the river, and where a part of the population consists of poor people, in narrow and badly-ventilated streets.

St. Giles's.....	94	51	36,432	1 for 387 souls	1 for 714 souls.
Whitechapel ..	88	53	30,733	1 „ 349 „	1 „ 579 „
Newington	127	66	44,526	1 „ 351 „	1 „ 674 „

Districts situated in the best-ventilated parts of the town, the streets being very clean, and occupied by rich people.

Parish of Marylebone ..	93	33	122,206	1 for 1314 souls.	1 for 3703 souls.
St. Pancras	19	15	103,548	1 „ 5449 „	1 „ 6903 „
St. George, Hanover Sq.	16	10	58,209	1 „ 3638 „	1 „ 5820 „

Unhesitatingly will I answer for the good faith and the accuracy of my Spanish friend in drawing up his details of all that came within his observation as a physician during the London Cholera; and, had he been unshackled, I am of opinion that nothing more would have been necessary than his statements on the above occasion to have done away with the contagion doctrine years ago. In some of the foregoing pages we have seen (for truth is great, and like murder, *will out)* that the most zealous advocates of non-contagion could not adduce stronger

proofs in favour of their system than he does, while appearing to conform to the prejudices of his countrymen. "In the *propositions*" with which he winds up his book, we become familiar with such expressions as, "In admitting the Cholera to be *sometimes* contagious, it is proper to confess that this property possesses very little activity:"—"*that it is the least active of any disease we know of.*" In quoting, from me, in 1832, the case of Lady A. W., of Arlington-street, none of whose family or household were attacked, he very properly asks how she could have received a contagious germen, not having been out of her apartments for "three years" previous. "Even in places (in London) where the disease reigned, the most scrupulous investigations could not establish the operation of a contagious principle. In a certain district we have seen thirteen families infected; but, as in every one of them the first case occurred without its having been possible to trace it to any source of contagion, the other cases prove nothing, as they may have arisen from the same unknown cause which produced the first. This inference is as clear as the construction of a simple syllogism." Dr. Seoane observes that, "among thirty-nine women who washed the clothes of more than sixty Cholera patients, only one was taken ill;" and he might, I think, well have added that, considering what he saw pass before him daily, she might have been attacked though washing other clothes, or no clothes at all.

From these facts he naturally concludes that the Cholera does not require for its development transmission from one person to another.

Having proposed to myself to furnish the public with information on the London epidemic, of which I saw much in 1832, I could do no less, I think, than refer, in the manner I have here done, to the labours of my highly talented and active friend, the Spanish physician, whose

peculiar position in London at the time, as well as his great merit in collecting facts during the epidemic season in England, was only known to few. By most people, the line he followed (pursuant to the suggestion of the Spanish Ambassador) in endeavouring to gain the confidence of his countrymen, while labouring to establish a great truth of such vital importance to them, will probably be held as quite justifiable.

Before dismissing the subject of the non-contagion of the Cholera in London, it would be wrong to omit noticing an important document, issued on the breaking up of the hospitals exclusively appropriated to the reception of patients labouring under that disease, by the then Board of Health, of which the chief of the quarantine department was, of course, a member. Though, at the eleventh hour (when those establishments were closed on the 6th of November), it seems to have become sensible that duty towards mankind imperiously required that it should address to the governors of ordinary hospitals a circular, of which the following are extracts:—

"That it has been proved that Cholera was not found to spread amongst other patients in the public hospitals in which some cases of that disease were treated during the epidemic (!)

"That, under these circumstances, it becomes matter of consideration, important to the public health, whether sporadic cases of Cholera (any solitary cases which may occur) might not be admitted into the public hospitals, in the same manner as cases of any other disease (!!)

"The central Board of Health, therefore, under the full conviction that the cleanliness and general good arrangements established in the public hospitals of the metropolis are found sufficient to prevent the spread of typhus fever, recommend the adoption of the above suggestion, with reference to sporadic cases of Cholera: a measure in favour

of which humanity would plead irresistibly, in the event of any cases of that disease occurring and being carried to the door of the hospital, as the only place of refuge, after the breaking up of the local Boards of Health and their parish hospitals." *O, si sic omnia!* Would that it had been always so! What a world of misery it might have prevented in fair England! How much greater would have been the patients' chance of recovery than by removal, as was often the case, and to a distance, too, even at night, or in bad weather (as we saw by the accounts of the time in the public papers, not to speak of the great saving of expense to government and to parishes!) In the foregoing document we have a striking instance of truth bursting forth under extraordinary pressure; bursting forth in spite of the most unusual and often most unjustifiable efforts to keep it down;—in spite of a *Cholera Gazette*, whether published altogether at the public expense, or not, I cannot say; and though, in a "*Medical Gazette*," the editor had invoked on the unhappy heads of some of us unbelievers in the mischievous doctrine of Chiefs of Quarantine, the fate (the flame and the ashes) of Pompeii!

A strange circumstance, connected with the above memorable document, is its having been known to so few up to this hour: indeed, I am not aware of its ever having been published for general information. The copy, shown me immediately on its being issued, was one of those intended to be sent to the governors of ordinary hospitals, and in a quiet way, it would appear.

CHOLERA IN IRELAND IN 1832.

I do not possess data to enable me to say much under this head, an official report to the Lord Lieutenant (dated 7th January), 1832, recommending measures, &c., from

the "General Board of Health" of that day, and transmitted before the appearance of the disease in the country, being the only important document in my possession. We know this much, however, that the rules applicable to contagious diseases were those recommended.

Like Bilston, in England, Sligo, in Ireland, was a town where the disease raged with extraordinary virulence, and to an unusual extent.

In Ireland, as well as in England, it was at one time considered by commanding officers of regiments, that the confinement of their men to barracks afforded great security from attacks;—and in reality, so generally, under this system, did the exemption of regiments take place, up to a certain time, that the adoption of this precaution *seemed* not only quite justifiable, but a measure to be always had recourse to. In Ireland, however, this measure was not always found to be so invariably followed by success, as seemed to have been the case in England; for the late lamented and very zealous Col. Cross, Commanding Officer of the 68th Regiment, seeing that his corps continued to suffer greatly from Cholera while confined to Clare Castle, resolved to place his men under canvas in the neighbourhood, where, as in the case of the army of the Marquis of Hastings, as stated above, his men became restored to health.

The central Board of Health of Ireland, seeing reason for differing from the Board of 1832, tells us this year, (under date of the 1st September last, 1848), that "the friends and relatives of persons attacked with Cholera may be under no apprehension of catching the disease, and need not be deterred from affording to the sick, in their own dwellings, every needful assistance and attention;" agreeing, in this respect, with the London Board of 1848, who, on the 5th October last, admitted the errors committed by the Commissions and Boards of 1831–32.

The publication of the foregoing recommendation of the

London Board of Health in the widest manner possible, was surely desirable, especially considering that, from the same quarter, at various times previously, the public had been so strongly urged to take steps against the transmission of Cholera from the sick to the healthy. We had, for instance, a document issued by the "Central Board of Health" on the 13th December, 1831, recommending the usual precautions applicable to diseases deemed highly contagious:—the "purifications by lime-washings;—fumigations by heated Sulphuric Acid with Nitre and common salt, with Black Oxyde of Manganese, or the same acid with Nitre, or," &c. "The bed, bedding and clothes, should be immersed in water, washed with soap, and afterwards fumigated as above." Chloride of Lime was not forgotten.

Lest all this should not suffice, we have, "(Art. 7):—Those who die of this disease should be buried as soon as possible, *wrapped in cotton or linen cloth, saturated with pitch or coal tar*, and be carried to the grave by the fewest possible number of persons*,"—in fact, *buried like some accursed thing!!*

The antidote (recommendation of the Board, issued *in* 1832) not having obtained the same free and formal circulation *as the bane* contained in the document of the preceding year, the public have sustained a loss, in so far as they have not been made aware that persons in authority had, in seeing reason for a change of opinion, furnished families with statements of a consolatory nature.

Heaven grant that the ministry of a beneficent government may have time to devote to the full consideration of questions of epidemics, quarantines, and (apart from the latter) the measures really entitled to the appellation of *Sanitary!* Heaven grant this soon, for be it remembered

* In order to convince themselves of the necessity of this *sage* recommendation, the reader may perhaps be tempted to turn to the case of Florence O'Sullivan, at p. 34.

that, along with a *Report*, printed by order of the House of Commons, on the question of the *Eclair* and Boa Vista malady, and bearing date July 10, 1846, the chief of quarantine also emitted a long letter, dated 23rd April, 1847, (but not from *Council Office*, as his letters to Mr. Greville had usually been for some time previous), in which letter, instead of expressing deep contrition for the most wrongful act of shutting men up in the foul atmosphere of a ship, he, strange to say, had the hardihood to stand forth in defence of his fatal measures, as being most proper, and urgently called for.

A perusal, by experienced naval or army medical officers, of the often refuted but plausible statements brought together in strange medley, for particular purposes, must excite nothing less than indignation in their breasts;—so great the sins of assertion,—so horrid the mischiefs liable to arise from young inexperienced medical officers of the navy or army being misled, and adopting the fell doctrines therein defended. This, however, is not the time, nor is this the place, to exhibit the perfect absurdity (after so many years' experience) of a person in a highly responsible station asserting, among other strange things, that the yellow fever is the most contagious of all diseases, and that it has sometimes been imported into our West India Islands. Shade of Dr. Wm. Fergusson, whose long and faithful career in those Islands are well known and appreciated (of experience in the disease I am speaking of, twenty times greater than that of our quarantine chief) and who has told us* that, at Barbadoes, cases of yellow fever *were received into hospital* "WITH OPEN ARMS!" Indeed, I think that some statements of the chief of quarantines, contained in the document above referred to, could only have been risked in the hope of their warranting the unfortunate proceedings against the crew of one of our ships of war.

* See Essay on Yellow Fever in Cyclopædia of Practical Medicine.

As a very general rule, which may be collected from all that I have laid before my readers in the preceding pages, and from which, perhaps, the greatest number of exceptions have taken place at Paris and Vienna,—the upper classes are in a manner exempt from attacks; and, surely, the bare consideration of this ought to impel them, in times when countries are threatened with such calamities, to have recourse to more than ordinary exertions in providing for the improvement of the dwellings, the diet and the comforts of the poor in every way, with a view to *prevention*. My Spanish friend wrote, while in London, "Never, never, could charity be productive of more decided personal advantage to the giver. Those who bestow it in clothing and nourishing the poor, thereby diminish the number of susceptible individuals;—those who clothe the naked, and feed the hungry with wholesome food, may have reasonable hopes, by such acts, to diminish the probability of their being attacked with Cholera." It is on record that, in Russia and Prussia, the upper classes set the noble example of aiding the sick when the non-contagious character of the disease became known; and the Spanish paper *Revista*, already quoted, assures us that "the functionaries and the whole of the people of Madrid fearlessly went to the houses of the sick, to afford them every assistance and comfort in their power, instead of shunning them."

Great Britain has, no doubt, places of refuge and subscriptions for almost every kind of calamity which can befall human beings; and, no doubt, also, in such a country, countless were the private efforts of families and individuals* to alleviate the daily woes thus heard of in the Cholera epidemic of 1831-2; but from what I observed

* A remarkable instance of kind feeling in an individual occurred within my knowledge in 1832. While writing in the *Times* on the misery of the poor attacked with Cholera, a letter reached me, directed to "*Dr. Gillkrest, London,*" with several remarks on it of *try here and try there*, my address having been known only to a few, unwilling as I was to have it supposed that I was writing for a private purpose. The letter

in that year, if a wide-spreading epidemic were again to take place, I do not know how far patients would receive the kind of assistance just spoken of. I take for granted that every thing connected with this most mysterious disease would be considered more calmly than formerly, when the panic, arising from false doctrines, caused such extensive mischief.

Let me not be understood as laying down the rule, that the disease I am speaking of is always confined to the weakly, the poor and the wretched:—it has, on the contrary, often had for its victims (more especially in armies) individuals of robust constitutions, well fed and lodged, not seldom terminating, in such subjects, as fatally and rapidly as in the feeble and the indigent. This has been particularly the case in our forces in India, as sadly proved at Kurrachee, some years ago, as well as on divers other occasions, when so many of our robust, well fed, well lodged soldiers, succumbed. During a Cholera influence, however, when the essential, the *sine qua non* cause of the disease is abroad, all agree that the greatest probability of remaining free from attacks (and this cannot be too often inculcated) is afforded by leading a sober, well-regulated life. It has been stated by Mr. Ripault, of the *Hotel Dieu* of Paris, *that no case recovered where the invasion was determined* by a drinking bout.

Fortunately all communities now have, from various quarters, means of judging for themselves of the nullity of contagion as an agent in the propagation of Cholera, and as to whether it be a disease, as was at one time strenuously contended, in which—

"The living shall fly from the sick they should cherish."

contained, to my astonishment, a Bank of England £5 note, with an intimation that, "not knowing of the misery prevailing in London till he had read my letters in the *Times*, the writer enclosed that sum for distribution among some of the most urgent cases." To this hour all that I know of the humane donor is, that he signed "An Old Officer," and that the post-mark was *Basingstoke*.

SOME OBSERVATIONS ON THE ANTIQUITY OF CHOLERA, AND ON CAUSES TO WHICH ITS APPEARANCE EPIDEMICALLY HAVE BEEN ATTRIBUTED.

With reference to Cholera, as it appeared in India in 1817, some industrious gentleman of the medical department of that army (Mr. Girdleson particularly, I think) brought forward proofs that it was not the "new disease" which it was said to be. Before it was known in Europe as an epidemic, several sporadic cases had been under my observation within the British dominions, all of them more or less characteristic, some as decidedly so as many of those I subsequently saw in London or Gibraltar, and of which one proved fatal, with the most complete and unmistakeable group of symptoms.

Having mentioned this last circumstance to a medical friend in London, some time after the cessation of the epidemic there in 1832, we agreed to consult, as far as we could, the works of old authors, in some of which were found, not only descriptions of the disease, precisely such as are given by the medical men of the present day, but also descriptions of the *remedies* employed in remote times, and which have been more or less in use for some years past.

I had intended to furnish, for the benefit of the juniors in the profession, a full copy of what I had extracted, with the aid of my friend, from those authors on the subject;

but the space assigned by me for this undertaking will only admit of my giving a sketch, merely sufficient to enable others to give the subject all necessary consideration.

Far be it from me to pretend to be deep in medical lore; but the youngest tyro, if the observations on malignant Cholera by the following old writers are pointed out to him, cannot fail to recognise graphic descriptions of that disease such as described by the most experienced writers of these times. Those descriptions I should give, as being extremely interesting, were it not that they might be considered as grounds of objection to the admission of these pages among families.—Though, no doubt, most of the old writers whose names are subjoined, have been spoken of within the last thirty-five years in treatises on Cholera, I am not aware that they have as yet been brought together, in order to facilitate a reference to them:

In *Aretæus* (who flourished in the first century), we find the closest and most minute details.

In the description of the symptoms by *Celsus* (first century) we have a wonderful identity with the symptoms as recognised in the present day.

Oribasius (fourth century) gives a characteristic group of symptoms also.

Cœlius Aurelianus (supposed fifth century) gives unmistakeable symptoms.

Then we have *Ætius* (sixth century).—*Trallianus* (sixth century).—*Paul Æginetæ* (seventh century).—*Mercurialis* (sixteenth century).—*Riverius* (sixteenth century).—*Bonetus* (seventeenth century) and others of a later period.

As to the CAUSE, the essential, the indispensable cause of the symptoms now so universally known to the members of the medical profession, if still involved in obscurity, it is not that investigations, closer perhaps than have ever before been made with respect to any other disease, have

not been resorted to. Indeed, it may well be said of Cholera, that *one short season of experience affords materials for an age of reflection.* In London and Paris men devoted to the higher branches of the physical sciences have applied their powerful talents to the consideration of the mysterious causes of a disease which has spread consternation throughout the world. Electricity had been mentioned in India in 1817, and at subsequent periods in other countries. Latterly, electro-magnetism has been spoken of. Meteorological observations are now made with the utmost accuracy, and new appliances in every way have been had recourse to; but, hitherto, the cause of epidemic Cholera would seem to rest where the philosophic poet, Dr. Armstrong, had placed other awful epidemics more than a century ago:—

———————"And though the putrid south
"Be shut; though no convulsive agony
"Shake, from the deep foundations of the world,
"Th' imprisoned plagues; a secret venom oft
"Corrupts the air, the water, and the land."

Experiments in the physical sciences have, however, brought to light such marvellous things within the last few years, that it may be still permitted to hope that a discovery useful to mankind may be made on the subject in question ere a great lapse of time. Dr. Magendie, so well known for his great discoveries in the nervous system, gave it as his opinion, some years ago, if I remember right, that the united efforts of a body of scientific men might accomplish the object.

When I look back, I feel that the only task I had proposed to myself—that of contributing to dispel, by laying before the reader a mass of facts, all apprehensions for personal safety from approaching Cholera patients—should have closed at the preceding page.

So many professional men of experience, who have closely

applied themselves to the study of Cholera, being now to be found everywhere, my entering on a description of the symptoms, and on the treatment generally adopted, could only be looked upon as an intrusion, especially after the valuable documents lately issued by Boards of Health; and I shall therefore limit myself to the few following observations:—

From all I have seen and read of the disease, I can by no means quite admit the premonitory symptoms to be of such invariable occurrence as has been repeatedly mentioned; if they were, armies in India could not have moved, as they are known to have done sometimes, during the prevalence of Cholera influence.

I have no means of knowing how far it has of late years been noticed in England, that (somewhat as in ague) the cold stage in Cholera, unyielding to all appliances, seems to give way only after a certain round of time, generally twenty-four, thirty, or even more hours.

In 1832, it was recommended in England that "cold water should be given when the disease is fully formed, in quantities not exceeding two or three table spoonfulls at a time:"—a recommendation not justifiable, even at an early period of the epidemic, when so little was known of the disease in England. But it should have been known that, in certain parts of London, the practice of allowing patients to drink extraordinary quantities of cold water was often attended with the best success. At the Greville-street "Free Hospital" (establishment since removed to Gray's-Inn-road), where Cholera patients were, throughout the epidemic, received without any admission ticket, the courtesy of the zealous and intelligent surgeon, Mr. Marsden, enabled me to be a frequent visitor to his wards; and it was there I had the first and most extensive opportunity of observing the benefits arising from his allowing his patients to take large draughts of the

coldest water that could be procured, for the purpose of assuaging the insupportable thirst so remarkable in this disease, at periods when all else *would seem* to demand the unremitting exhibition of stimulants in every form. In one of the wards of Mr. Marsden, an order to the servants had been posted up, directing them to mark the number of pints of water taken by each patient daily while labouring under a state of collapse; and, were it not that I have before me a slip from the *Times*, of the 1st September, 1832, containing a letter of mine to the editor, in which I called the attention of the profession to the facts just mentioned, I could hardly take upon myself to give, at such a distant period of time, the number of pints marked, in some cases, as having amounted to twenty, thirty, or even more, in the course of twenty-four hours. In the words used in that letter, I beg to say that "I feel strongly impelled by a sense of duty towards the public to state, that under the above treatment I have been most agreeably surprised by the recovery of patients whose state gave but little hope of a favourable issue, under the employment of any other remedies."

In the letter above mentioned, I also referred to Dr. Pinckard, the active and zealous gentleman in charge of the St. Giles's Cholera Hospital, as having, if I mistake not, adopted the use of cold water in the treatment of the disease.

About the same time, a letter in the *Lancet*, of 1st September, 1832 (the very day on which my letter on the subject appeared in the *Times*), announced that Dr. Hardwick Shute, of Gloucester, had for some weeks before employed the same method. He stated that he had gone so far as to have given "some gallons of water in a few hours" with success; that he excluded from his treatment stimulant emetics, and stimulants of all kinds, internal and external, *as well as frictions and heat, by whatever means*

produced. He permitted light covering only, as a single blanket or rug; and he said "the windows of the Cholera Hospital at Gloucester are large, in proportion to the size of the room, and the door, which opens immediately into the garden, is seldom shut (speaking of July or August, no doubt). The windows are open day and night, so that the patients may be considered as living in the open air; and the fire is kept so low as not to influence the temperature of the room." A practice, more or less similar to this, I had certainly witnessed with benefit to the patients in the course of my frequent visits to the Greville-street Hospital, London. Dr. Shute adds, that under the above system convalescence took place sooner than under any other, and "in all cases" without consecutive fever, which, however, I did not observe to be always the case in other hospitals.

It was no part of the treatment adopted by those gentlemen to endeavour to stop the vomiting, which was, as usual, of frequent occurrence. A portion only of the great quantities of water taken into the stomach may be supposed to have been retained; and, wherever this practice was followed, the benefit was generally admitted to have arisen from the watery part of the blood usually lost in the disease, being made up by the quantity of fluid thus swallowed*. I have noticed at page 56, that under any treatment, reaction, in severe cases, did not seem to set in, generally, before a certain round of time.

Thus far have I thought it right to speak respecting this practice; but, as no doubt the attention of the profession has been recently directed to the use of large draughts of cold water, further evidence has appeared in

* Practitioners are enjoined by Dr. Shute not to be too impatient in administering other remedies at this period, as a favourable change is not to be expected immediately, the warmth of the body and restoration of the functions not beginning to show themselves till after the lapse of twenty-four, thirty-six, or perhaps forty-eight hours.

journals in England. It may be remarked that cold drinks had, among other things, been used by some of the oldest authors.

In Gibraltar the disease showed itself about the middle of June, 1834, notwithstanding the adoption of cordons and quarantine measures throughout. After its cessation, Sir Henry Bouverie, then Governor of Malta, very properly requested to know from our then governor what were the principal measures adopted here during the prevalence of the disease; and Sir Alexander Woodford having called upon me, then Inspector General of Hospitals in medical charge (and *ex officio* 'Health Officer') of the garrison, I thought it best to send in a copy of what I had forwarded to the chief of my department in London, on the cessation of the epidemic here.

Every body who goes up the Mediterranean can vouch for the rigour with which quarantine regulations are enforced at Malta; but, notwithstanding this, the Cholera made its appearance there in 1837; and it was no small satisfaction to me to find that my document, forwarded to the Governor of that island in 1834, and published in the *Malta Gazette* of the 27th August in that year, formed the ground-work of the course pursued during the disease, in the large population of that island. Great indeed was my happiness, on finding that, instead of ruinous restrictions and a fatal system of segregations, as in olden time acted upon in most epidemics, every thing, as I have been assured by persons in authority, passed off lightly as at Gibraltar; so that I felt remunerated for all the attention which, as stated at the commencement of these pages, I had paid to the study of Cholera, and for the excessive labour (not to speak of sacrifices of various kinds) which I had bestowed in endeavouring to gain, as will shortly be seen, whatever

knowledge could be then obtained upon the subject, by my personal visits to the hospitals, poor houses, and domiciles of the sick, from Kensington and Chelsea to Bethnal Green on one side the Thames, and from Lambeth to Rotherhithe on the other.

Suppressing some compliments from the editor, my giving the extracts from the *Malta Gazette* will, I think, convey a sufficient idea of the measures adopted in that island, as well as at Gibraltar.

(From the *Malta Gazette*, August 27, 1834.)

CHOLERA MORBUS.

"The high degree of interest attached to the practical observations of experienced men upon the nature of Cholera, induced our Lieut.-Governor to solicit every information upon the subject from the authorities at Gibraltar, where the disease had been lately successfully and promptly treated. We have, in consequence, been favoured with a copy of a very important and candid Report, drawn up by the principal medical officer of that garrison, Dr. Gillkrest, which, while it agrees with all that has been before said upon the inexplicable character of the disease, contains some most interesting and useful matter, calculated to remove false notions respecting the nature of the Cholera, and overcomes the apprehension of contagion,—an apprehension which, it is too much to be feared, is sometimes a proximate cause, or at any rate a great encourager of the malady.

"Dr. Gillkrest had seen a vast number of cases of Cholera in England some years ago, previous to his appointment to the staff of Gibraltar. His experience, therefore, added to the weight of his professional character, throws upon us

imperatively the duty of publishing, for the benefit of all, some portion of his remarks. They are written, too, in a style so unassuming, that one feels convinced he is not upholding any particular theory or system, but that he is engaged in the cause of humanity and truth; and, in the same cause, he will doubtless permit us to avail ourselves of them.

"We confine our extracts to those passages which are of general import, leaving out what is local, or particular to Gibraltar. If an experiment had been purposely made, to ascertain whether the Cholera be contagious or only epidemic, we are assnred by a very competent judge in such matters, that no results could be more conclusive than those witnessed in three different situations, namely, in Gibraltar, Portugal, and Andalusia, as described by Dr. Gillkrest; they appear to demonstrate that the cause of the disease existed in the atmosphere, and was independent of contagion or infection.

"'The subject of Cholera (says Dr. Gillkrest) is too familiar to me to admit of my troubling you with *conjectures* as to the probable causes of its appearance here, or of its cessation. The same mystery hangs over every point regarding it, which had been admitted every where else.

"'The epidemic had passed off at Gibraltar,—first, without the recommendation of vexatious measures calculated to prove galling or injurious; secondly, without any very material expense having been incurred; and thirdly, in a shorter time than at any point in Andalusia where it has reigned, and which it would be presumption to attribute to the agency of human power.

"'From the occurrences in Spain regarding Cholera, more perhaps than any other country, has the world received a lesson which it is to be hoped may not be profitless, as to the utter inutility of, or, to speak with more precision, the absolute mischief arising from, the system of isolation and

cordoning. In Spain, this system has been endless;—in every town and village have guards been placed over the houses in which the first cases appeared; around every town and village have military or civil posts been placed, to cut off all communication with 'suspected' places; at every town and village have '*purifications*,' even of letters, taken place. In Spain have all these things occurred, and in no country more than in Spain has the course of the Cholera proceeded with less interruption, or the disease itself reigned more pertinaciously: while, in a neighbouring country (Portugal) where war placed it out of the question to carry on the same system, had the authorities been so disposed, the disease only showed itself in a few places, and could hardly be said to have reigned in more than one as an epidemic. Even at places in Spain within our view, a panic was inspired by the accounts of certain interested persons in other countries, as to the character of the disease.

" 'With us, indeed, accustomed, as a portion of the population had been, to see more or less of the same system enacted here formerly in the case of *Yellow fever*, very little would have served to inspire the same panic as that which I have referred to as existing among our neighbours. But the authorities having, within the town and territory, confined themselves to those measures which have the best claim to be deemed *sanitary*, the moral effect on the population was manifest:—all the business possible under our circumstances was transacted freely; and the people took their exercise and recreations in the open air, pretty much as when no epidemic reigned.

" 'Here, as almost everywhere else, the upper classes have escaped, with very few exceptions. Mrs. ———, who fell a victim, had only arrived at Gibraltar a few months ago:—she was extremely nervous on the subject of the Cholera, endeavouring constantly to obtain information, through servants, &c., as to the progress of the

disease. Among the officers, Lieutenant and Adjutant Aldrich, of the 5th Regiment, was the only individual attacked with characteristic symptoms, which proved fatal in a few hours.

"'Among medical men, amounting, civil and military, in this garrison, to thirty, the majority of whom, in the zealous discharge of duties the most laborious, were almost exhausted, none fell victims, though in a few certain symptoms, indicative of an epidemic influence, took place, as might, under the circumstances, have been expected. The number taken ill, however, with symptoms in any degree resembling the epidemic, has been short of the number of medical men taken ill in our epidemic catarrh, in the early part of this year.

"'No clergyman, of any persuasion, has been attacked, although the whole have performed their duties in the most exemplary manner.

"'Here, in the case of Cholera, as in the case of our epidemic catarrh last year, the complaint passed, sometimes through families, sometimes not; and when attendants on the sick have been exhausted, they too, in some instances, have been attacked.

"'All the medical gentlemen were left pretty much to follow their own views, founded on experience or otherwise; and though much confidence was felt by those who were resolved to spare no exertions for the benefit of their patients, yet all have been forced to acknowledge the impotency of human efforts, in the majority of cases, of this disease in a formidable form.

"'With respect to Cholera in its mild form, and of which by far the greater number of cases on our lists consists, little need be said,—putting the patient to bed, and observing a strict regimen, being perhaps of more consequence than the exhibition of medicines. The merit of regimental management lay with those who prevented

mischief (arising from panic, or false views imbibed), by inducing their men to submit to early treatment, in the only place proper for such treatment,—the hospital.

"'The manner in which other complaints not unfrequently passed, during our epidemic, into forms of Cholera, of more or less intensity, exhibited the peculiar influence of the period;—even persons in a delicate state, or under management for surgical diseases, seemed more liable to attacks.

"'I should not be justified in drawing any inference from the state of the thermometer, barometer, or winds. Our average heat, during the month of July, has been 82° —the maximum having been (one day only, 17th) 85½°.'"

I will now add explicitly that, on the above occasion, there was no more reason for considering the disease as being propagated from person to person by contagion, than on any of the occasions furnished by other persons in the various places already specified in India and the continent of Europe.

The people of Malta, like those of Spain and other countries, having attained greater knowledge of the Cholera by experience, no apprehension need be entertained, if the disease should re-appear in that kingdom, of the re-adoption of those rigorous quarantine measures which were excusable while its non-contagious nature was not so generally admitted.

Corfu is one of the few places which has, up to the present time, been so fortunate as to have remained free from the scourge which has afflicted so many other countries.

I must beg for a moment to be allowed to return to the Malaga epidemic Cholera, for the purpose of noticing a memoir on the epidemic of 1834 in that city, by Dr. José Mendoza, which I did not see till long after it appeared. It is a book of very great merit, indeed. The author notices

what I have not met with in other works on Cholera, *viz.* the extension of the noxious atmospheric influence to the lower animals, though it had been vaguely talked of in other places, and though it had been well authenticated in epidemics of other kinds. This gentleman says, page 49, that "it was also observed from the commencement that many *cats* laboured under the symptoms of Cholera and died in a few hours. The singularity of the mortality having been confined to cats, I cannot attribute to any other cause than to their feeding exclusively on fish; and, in fact, it was remarked that numbers of them (*infinitos*) became giddy and were attacked with characteristic symptoms immediately on feeding on sardinas, and died shortly after*."

In criticising very severely some mischievous laws which had been enforced, or attempted to be enforced, at one time during the epidemic at Malaga, Dr. Mendoza remarks on the 6th article, interdicting the exit of the people from the city:—"The mere consideration of the 6th Article is enough to fill one with horror. To oblige a medical board—a corporation formed for the preservation of the public health, and which ought to possess influence, at the same time that it is bound to benefit the population

* Immediately after our severe yellow fever epidemic at Gibraltar, in 1828, which, as mentioned higher up, lasted five months, I drew up a very full, and, I think, clear account of all the occurrences of any importance connected with it, as well among the military as the civilians;—every page of that account was, while in rough, submitted to my excellent colleagues, as drawn up in the surgery of the hospital, in order to secure it every chance of being as free as possible from error. The same copy has since remained in my possession, forming, with comments on similar epidemics in other parts of the world, 336 pages of closely written foolscap-sized paper, for reference on all future occasions. In that manuscript I find some details of deaths to a remarkable extent among the lower animals at Gibraltar during the epidemic season; the most remarkable having been that of nine dogs, as related to me by the late Mr. Duguid, on the then extensive mercantile premises of that gentleman; two of which, with yellow skins, I saw at the time. An unusual mortality was stated also to have prevailed among the goats of a certain proprietor;—a monkey had died too, with yellow skin, besides a parrot and other birds, of all which I retain notes.

which it represents—to declare publicly, and at an early period, the existence of a contagious disease in the city, and at the same time rigorously to prohibit the emigration of the people, and require the commanding officers of troops to proceed immediately to cut off all communication without reserve or hesitation,—is the greatest tyranny, and nothing short of making a person swallow by sips the cup of bitter poison which must deprive him of existence, as a remedy for his sufferings. One cannot conceive how, in the 19th century, a step of this kind could have been proposed. To a similar measure were owing the horrors at Barcelona during the (yellow fever) epidemic season there in 1821*."

As to PORTUGAL, nothing more can be said respecting the Cholera in that country in 1834, than that, while it prevailed to a great extent in other countries in that year, the civil war prevented the adoption of cordons and of measures of restriction between the different provinces, and that the disease only prevailed to a comparatively very limited extent in that country.

It cannot be too often repeated that early application for relief affords, under Providence, to the persons attacked, I shall not say the only, but certainly the best chance of recovery.

* And here, what are we to say of those by whose overstrained quarantine measures the devoted crew of the steam-ship '*Eclair*' were, while in our waters in England, in September 1845, obliged to remain for days INHALING THE FOUL AIR GENERATED ON BOARD THAT SHIP, FORCED, AS IT WERE, TO TAKE CUPS OF THE VERY SAME KIND OF POISON, AS IS HERE REFERRED TO BY DR. MENDOZA IN THE EPIDEMIC OF 1821 AT BARCELONA? Call you this a '*sanitary*' measure? What are we to say? The press and the world at large have passed their opinion long since, and it would be no easy matter to find additional expressions of deep and loud censure. In the official correspondence on the subject of the above unfortunate vessel, published in 1846, it will be seen by the letters of Lord Aberdeen, and of our Ambassador at Naples, how embarrassing it proved to our government to find that the doctrine so pertinaciously and cruelly enforced by the British chief of quarantine had recoiled on England and Malta, steps having been adopted against the whole of the former by the Neapolitan government.

Finally, I would beg to offer my convictions that, among large communities, no plan for the benefit of the sick poor, in times of epidemic Cholera, can be thoroughly effective, unless based upon the measures adopted in Russia so long ago as 1848, and which secured great freedom of intercourse with the sick, unless objections should arise on the score of locality.

To whatever else, then, the epidemic malignant Cholera may be owing, its contagious property has been in no manner proved in any country, but quite the contrary, as an investigation by the British Parliament will now, if entered upon, readily show, and which, ere long, it is to be hoped, will take place; so that, in the country where we have a law which stays the hand of the master from the excessive punishment of the dumb animal, we may also have a law which will throw open to the afflicted with Cholera, under all circumstances, every possible measure of attention, protection, and kindness.

THE END.

Printed by W. J. Golbourn, 6, Princes Street, Leicester Square.

It seems admitted, on all hands, that the Yellow Fever cannot be communicated *during a winter* in this country:—my acquaintance with that disease began and ended in *warm climates*, (West Indies and Gibraltar,) and in the formal account I have given in the Second Report of the present "General Board of Health" to Her Majesty on Quarantine (now, it may be said almost within the reach of everybody) the public have ample means of judging of the great error, to say no more, of its being considered by quarantine people as contagious or communicable in a warm more than in a cold country.

QUARANTINE LAWS.

TRANSLATION of a REPORT, by MM. MAGENDIE, LOUIS, and LONDE (Reporter), to the FRENCH NATIONAL ACADEMY of MEDICINE, on a WORK by JAMES GILLKREST, M.D., INSPECTOR-GENERAL of ARMY HOSPITALS, entitled,—"*Is Yellow Fever Contagious or Not.*"

DR. LONDE'S ADDRESS TO THE NATIONAL ACADEMY.

"You have charged MM. MAGENDIE, LOUIS, and myself, to render an account of a work by DR. JAMES GILLKREST, Inspector-General of Army Hospitals, in the service of Great Britain; which is entitled, '*Is Yellow Fever Contagious or Not?*'

"The history of Yellow Fever is treated by M. Gillkrest with an erudition which it would be difficult to find equally complete elsewhere. After mentioning observers and monographers, describers of Yellow Fever, beginning with Hippocrates, who speaks of a fever characterized by yellowness of skin, and black vomit, M. Gillkrest arrives at these conclusions:

1st. That the Yellow Fever of America, and that observed in the south-west of Europe, especially in Spain, are identical; an identity acknowledged by all authors, with the exception perhaps of our colleague M. Rochoux.

2ndly. That this disease existed in the Antilles before 1793, and in the Spanish Peninsula before 1764.

M. Gillkrest next relates a great number of facts, establishing:—

1st. That Yellow Fever, or at least its pathognomonic symptoms, have shown themselves at very remote points of the globe, and that they appear to be then developed uniformly under accidental or local conditions, so strongly marked as to exclude all idea of importation in the true meaning of that word.

2ndly. That sporadic cases of Yellow Fever present themselves, in ordinary years, in the localities where this disease has prevailed in an epidemic form. M. Gillkrest considers that this second inference is established by a certificate by the Medical Officers, who, on the 13th of April, 1829, at Gibralter, declared, —after having read with the greatest care 39 cases extracted from the records of the Civil Hospital,—that the symptoms detailed in these cases were perfectly identical with those observed in the epidemic which prevailed in that garrison in the latter part of the year 1828.

"Having established these fundamental points, M. Gillkrest arrives at the grand question, contagion.

"The Author establishes, by numerous well-selected and incontrovertible proofs, that Yellow Fever is not contagious under any circumstances, not even in the case of crowding, in this disease, whether of the dead or of the living; that the removal of individuals from the influence of the local causes which produce this affection is the fittest means of preventing its extension; and, lastly, that the cordons, called sanitary, and quarantine measures, far from arresting Yellow Fever, on the contrary, favour its extension by confining the population within the influence of the local causes which give it birth.

"Such, Gentlemen, is the work on which we have to report. M. Gillkrest, in crowning services which do him honour, and which on more than one occasion have been extended to our fellow-countrymen, brings to bear upon the question of contagion in Yellow Fever, (a question so intimately connected with the most important interests of mankind,) the fruits of a long experience, as was done formerly by our intrepid and ever to be regretted Chervin.

"This communication of M. Gillkrest, which has already received the full approval of the General Board of Health in London, has reached us most opportunely at the moment when

a Congress is assembled to suggest, no doubt, important modifications in our sanitary laws; consequently, Gentlemen, your Committee has the honour to propose:—

"1stly. To thank the honourable M. Gillkrest for his interesting communication.

"2ndly. To transmit his work to M. The Minister of Commerce, in order that in conjunction with the numerous documents on this subject, already in possession of the Administration, this work may aid in placing beyond a doubt the inutility of Quarantine, as applied to arrivals from countries where Yellow Fever prevails.

"These Resolutions were put to the vote, and adopted by the Academy."

Bulletin of the National Academy of Medicine,
Vol. 17, No. 2. 31 Oct., 1851. III. p. 39.

The above copy supplied on the authority of the Acting Committee of the Metropolitan Sanitary Association.

Here then, we have, in the above proceedings of the National Academy of Medicine of Paris,—(a Body not to be excelled in wisdom by any other in the world, and always close examiners of such subjects, absolute proofs to be everywhere relied upon,)—1st, that the Yellow Fever is not of a contagious nature; that is, that it is uot communicable from the sick labouring under it, to the healthy, either directly, or indirectly through the medium of clothes, bedding, &c.—That, secondly, all quarantines or segregations of the sick are absolutely a great deal worse than useless; and that, thirdly, superadding all the afflictions of quarantine, to the deplorable symptoms peculiar to the Yellow Fever, being unjustifiable, should not be permitted by Legislators.

Lavers, Printer, St. Martins-street, Leicester-square.

Lane's Hotel
St. Alban's place
Regent St.

Review Written by Dr. Tyffe 26
Royston, 5th Dragoon Guards
April 1862

A Practical Treatise on Military Surgery. By FRANK HASTINGS HAMILTON, late Surgeon, Thirty-third Regiment, Fourth Brigade, New York State Artillery; Professor of Military Surgery, and of Diseases and Accidents incident to Bones, in Bellevue Medical Hospital, &c., &c. New York: Baillière Brothers. 1861. pp. 232.

THE term "military surgery" has in these days a larger and more extended signification than it had some fifty years ago; it now embraces topics which then did not occupy much of the attention either of military authorities or of the medical officers of the service themselves. During the long peace which succeeded Waterloo, this branch of medical science made no progress, that is to say, while the purely surgical element, differing in little or nothing from the practice of civil life, increased and improved equally with it, the various other subjects embraced in military surgery,—the important questions of equipment of field ambulances, of transport of sick by sea and land, and the many subjects of vital moment involved in military hygiene and sanitary science in general,—remained neglected and unattended to. Although there had been mistakes enough in the Peninsular war, although men's lives were sacrificed in large numbers there, for the want of proper administration on these important matters, yet when that war was ended, and peace established, no effort was made to prevent the recurrence of such misfortunes, no steps were taken to establish a better system. After a forty years' peace we found ourselves suddenly plunged again into war; we took the field; British pluck and endurance were still the same; but from want of forethought, from want of taking timely advice and listening to the voices of men of experience and wisdom, every department upon which the efficiency and health of the army depended broke down, and failed utterly. How full of mean-

ing and warning are those words of Guthrie, in the introductory lecture of his Commentaries! He says, in speaking of the war in Spain:—"I have always intended, at some distant day, to notice the errors committed in the arrangement of the medical department during that war, by which so many lives were lost. Seven-and-thirty years have passed away, and the fitting time has not yet arrived. My old friends, whether civil, military, or medical, will not depart in peace; and lest I should give offence to the humblest in pretensions, I shall continue to defer my remarks until perhaps we may all go together, when it will be too late. Whenever another Continental war shall take place, similar errors will in all probability be again committed, with the same disastrous results, as far as regards the health, the happiness, and the lives of many who might be spared their miseries, if the great authorities of this country would only be pleased to allow themselves to be taught from the experience of those who have have been obliged to learn."

What a series of telling commentaries Bulgaria, with its fever, cholera, and scanty medical comforts; the Alma, without its ambulances; the transport service, without an hospital ship; and Scutari, with all its filthy horrors, furnish to those words.

If, then, we did not profit by the mistakes of the Peninsular campaign, has the war with Russia in recent years passed over, and left us still without any of the benefits of bitter experience? Have we profited by our lessons? Is the medical department of the British army more efficient than it was? Have our military surgeons more means at their disposal for the care and treatment of the sick and wounded. If we had to fight another Alma six months hence, should we require to borrow the ambulances of our allies to carry our wounded from the field; or should it happen, as we once knew to be the case, that a regimental surgeon, when visiting his sick, some sixty in number, suffering from fever and dysentery on the heights above Sebastopol, was obliged to say to them, with tears in his eyes, "My men, I can do nothing for you; I have neither comfort nor medicine to give you," verifying the statement of Guthrie, that a surgeon without his apparatus and equipment is little better than a battery of artillery without ammunition? Has anything been done to prevent on future occasions the medical officers of the British army from being charged with inefficiency not their own, or being made responsible in any way for the mistakes of a system which they cannot control?

We rejoice to know that steps are being taken to gather the fruits of past experience. The education of the rising generation of military surgeons is receiving much attention, and they are now taught the special duties of their position with care and ability. The army medical school at Chatham is an important step in the right direction. The young medical officer coming from it will join his regiment not entirely ignorant of the duties he has to perform—not the medical man *merely* (though we would never wish him for one moment to forget the importance of his purely professional duties), but the officer in whose hands are vested the obligations, not so much of skilfully curing disease as of preventing it, and of keeping those under his charge in an efficient state.

One of the best results, however, of the dearly bought experience of late years has been to call out, not only from our own countrymen, but from men of science and ability in other lands, the expression of their views on the questions embraced in military medical science. Baudens has given us the result of his experience in the French army. We have now before us, from America, a work of a practical man on the same subject. We have perused it with much satisfaction, though not without disappointment. The chapters, though pithy and to the point, are very short. There is not much new matter upon the subjects purely medical or surgical, but we have gathered together in its 213 pages all the questions of special interest to the military surgeon. To be a good and efficient military medical officer, it is requisite to combine the acquirements of a practitioner with those of a hygieist; and, when the higher grades of the profession are reached, those also of an administrator, on whose shoulders lies a grave responsibility. We, therefore, receive with pleasure this work, small though it be, which places before the student of military medical science a statement of his varied duties, and instructs him upon subjects which he will find it too late to learn when the enemy is in his front, and emergencies are arising constantly, which he must be able to meet. It is true, there may be many things in the American service different from our own, yet from these pages much that is useful and practical may be derived. There is here and there, indeed, a little touch of "Yankeeism," which sounds strange to our ears. Very many things have been omitted that should be found in such a treatise, but we nevertheless commend it to our military readers as worthy of their perusal.

The book commences with an introductory lecture on military surgery, delivered by the author at Bellevue College, in 1861. Various subjects are touched upon in this lecture. The object and end of military surgery in softening the frightful aspects of war, and mitigating its horrors, are pointed out; the importance of the army as a valuable school of surgical practice is dwelt upon,—a hint, by the way, which our own military surgeons, and those who have charge of the medical and surgical reports of the army, might do well to take advantage of. There is no doubt that the records of military medical science are very valuable, but they have seldom been given to the public. There are tomes, ponderous ones, comfortably bound and brightly lettered, standing in imposing rows on the book-shelves in Whitehall-place, from which much that is valuable and interesting might be culled. The varied experiences of well-educated and scientific men, who have recorded their views on subjects of interest to science at large, have been lying for years dusty and moth-eaten. What can be more disheartening to a medical officer, who, when on foreign service, at much labour and trouble, prepares a valuable topographical report, elaborately and carefully written, involving questions which many scientific men at home would be glad to read, than to feel that his pages are "acknowledged with thanks," pasted into the aforesaid ponderous tomes, but never read, or at best merely scanned over, and then consigned to oblivion? We do not blame the Director-General, or the officers under him at Whitehall—they cannot help it; they have had no time hitherto to do justice to the literary attainments of the officers of the department; but we know that this feeling has prevented many an able surgeon from using his pen; his efforts, he knew, could never see the light, nor add a jot to his reputation, or a farthing to his pay.

At last, however, an effort has been made to remedy this state of things; and the first yearly report of a series has been published by the War Office, containing reports on questions of sanitary, statistical, and medical science, carefully selected by the officers presiding over these branches from papers drawn up at various periods by military medical officers. This pamphlet, although it is in the form of a "blue book," a term generally sufficient to frighten away any reader, is now open to the medical officers of the army, and we do hope they will take advantage of it, and write more than they have hitherto done.

The character of Mr. Hamilton's introductory lecture is practical. He first points out the contrast between military

and civil surgery, showing that the principles are the same, that it is only in matters of detail there is any difference, the exigencies of war demanding frequent departures from the ordinary rules of practice. He teaches in clear and distinct language how the military surgeon must always be prepared for emergencies, ready to act promptly and vigorously with small means and impromptu appliances, never at a loss in moments of danger, when there is little time to think, or, rather, where thought and action must follow in rapid succession. He thus writes on this point:—

"In civil practice, the time occupied in any operation, especially since the introduction of anæsthetics, is generally regarded as a matter of secondary importance. And that mode which possesses even trifling points of superiority with reference to the final result, even though more tedious in its execution, justly claims the preference. Here we may properly apply the maxim, 'sat cito, si sat bene.' But in military practice, at least in most operations made upon the field, and where, as is usually the case, the number of surgeons is small in proportion to the number of wounded, time is of the first importance, and minor preferences must yield to major necessities. It will not do to let one man die of hemorrhage from the femoral artery because you wish to apply a ligature very methodically to the ulnar artery of another; nor to amputate a limb by circular incisions, when by oval incisions it can be done in half the time. Armand, whose noble sentiments one is frequently compelled to admire, speaking of his experience as surgeon to the ambulance of the Imperial Guard during the Crimean war, observes, 'In ordinary times of the siege, the local barracks, or the tents, sufficed. In the grand engagements, the encumbrance of the wounded was such that it became necessary to gather them into groups here and there; and God knows, then, how painful was the mission of the surgeons, who were compelled to multiply themselves to succour the hundreds, the thousands of the wounded, constantly imploring their aid!' There was but one precept then, '*Cite! citissime!*'

"General treatises upon surgery, and surgical teachers, assume that both the patient and his medical attendant are placed always under the most favourable circumstances: that ample time is allowed for a careful diagnosis; and, in view of an operation, that the patient is brought up to the best possible condition of preparation: that he is at least comfortably lodged, suitably nourished, and that his surgeon has at his command all the instruments and appliances which can render the execution of the operation more easy, and its success more certain. No man who has had much experience in teaching, and in examining medical students, can have failed to notice the danger of suggesting inferior alternatives for exceptional cases, which, through inattention or carelessness, are often substituted in

the minds of the pupil for the general law; and it is with much propriety, therefore, that these omissions are generally made.

"It is the special province of military and naval surgery to supply these deficiencies; instructing the pupil how, by a multitude of extemporaneous expedients, he may succour the wounded and relieve the sick when the usual resources fail, or are not at hand; how he may make the products of every country contribute to his necessities, and a single cruse of oil minister miraculously to a thousand."

In speaking of the practice in the American services, when a man falls in action, of sending two or three sound men from the ranks to carry him to the rear—it is not the practice in the British service—Mr. Hamilton thus writes:—

"The only real question then is as to the best mode of getting the soldiers wounded in battle to the hospital depots.

"A considerable proportion find no difficulty in reaching the depots without assistance; and it is wonderful sometimes through how small a wound a large amount of courage will ooze out. The slightest prick of a bayonet or the loss of a finger will cripple some men, and send them halting to the rear. These soldiers will take care of themselves.

"But when a man falls who is seriously wounded, and not killed outright, it is a common practice in both the American and British service for the officer in command to order a couple of soldiers to carry him off. This withdraws three men from the line, instead of one. But unfortunately it is well known that soldiers do not always wait for this authority. The commanding officer is not always where he can observe the conduct of all his men; and impelled by the instinct of humanity, they, in many instances, cheerfully anticipate the supposed wishes of their officers, and, seizing their fallen comrade, they bear him hastily from the field. The effect of this is most demoralizing; for while it actually and materially diminishes the force of the column, it diverts the attention of the soldiers and of the officers from their first purpose, especially by substituting the more delicate and enervating sentiments of humanity for those coarser but more stimulating passions, *revenge* and *ambition*, by which the courage of troops is chiefly sustained."

Now, however true it may be that men *do* fall out *very willingly* to carry a wounded comrade to the rear, and though we perfectly agree with the writer in the absolute necessity of having a special corps of men for this purpose alone, we certainly object to the spirit of the concluding sentences we have quoted. Revenge and ambition are not the feelings which actuate soldiers (at least not British soldiers) in action.

We believe it to be perfectly true that if the trumpet of peace were to sound in the midst of the fiercest engagement, among civilized troops, the opposing hosts would lay down their arms, and shake hands as friends.

But Mr. H.'s remarks upon the subject of having in the field a number of men available, in every battalion, for the purpose of carrying the wounded to the rear, and attending to them alone, are sound and practical, and have our fullest concurrence. Hitherto, in the British, as well as in the American service, this duty has devolved upon the regimental band, a duty to which these men are wholly unaccustomed, and entirely unfitted; it necessitates their leaving their band instruments in the rear, where they are lost or damaged, and they are called upon to perform duties from which many brave men shrink. In our own service a better system is about to be established; we had some lessons on this point in the Crimea, which we will not forget; the country, at all events, has not forgotten the corps of "Fogies," with Dr. Andrew Smith's large and unwieldy ambulance carriages, which came out to join the army under Lord Raglan. In three months this corps was annihilated; scarcely a man of those ancient heroes, who would have been better sitting in their own arm-chairs in Chelsea and Kilmainham, was left. Then we had the Medical Staff Corps, enlisted suddenly, and formed of vagabonds picked up anywhere, and packed off, untaught in these special duties, in batches to Scutari, and the hospitals in front, to tend sick and wounded men; no wonder Miss Nightingale called them a "set of sweeps." They too have been gradually absorbed; and now we have the Army Hospital Corps, which in time, it is hoped, will be efficient: a commission has recently sat in London for the purpose of regulating the duties of this corps, both in the general and regimental service. The recommendations of that commission have been fully approved by the War Office and Horse Guards, and are now officially published for future guidance, and we have no doubt, when sufficient time has elapsed to allow the system to establish itself, that much comfort to the sick and wounded on future occasions will result.

Mr. H. argues, in able terms, the claims of the medical officers of the American army and navy to a better social position. They appear to suffer in America from very much the same disadvantages our own officers labour under; and the acts of an enlightened legislature for their improvement seem to have been met with jealousy and opposition, from the same source as

in our own service. It is a well-known fact that the bitterest foes to the advancement of the medical officer are his own executive brother officers, his social companions at the mess, the men who have shared danger and discomfort with him, and at whose bedsides he has, many a time, watched with an anxiety for which he got little credit and less thanks. In our service these questions of rank and pay have long been discussed; the warrant of 1858 placed medical officers in a better position, but the privileges of rank and position excited a hurricane of jealousy among their brethren of the sword, and attacks were made on all sides on this warrant, the result of which has been that it has been shorn of its best parts, and tampered with, to meet the views of those who found that it affected their own selfish wishes. That which was considered an inviolable compact between the government and a scientific body of men has been broken, and the confidence of the medical department in their rulers and lawgivers has been destroyed. For this the Director-general is not to blame; both Dr. Gibson and his lamented predecessor have done their utmost to prevent it; and we do not hesitate to say, that if such narrow-minded policy be persevered in, the medical department of the British army will fall in efficiency and credit, and its ranks will not be filled by men of education and ability. The words of Lord Dalhousie, quoted at page 29 of Mr. H.'s introductory lecture, should be well considered by our Government.

The second chapter, on the examination of recruits, is very clear and concise; Mr. H. enters into a minute detail of all the causes of rejection. The examination of the recruit is one of the most important duties of the regimental surgeon; he can scarcely be too particular or careful in its performance; for his own sake he will be so, and it is necessary for him to have his mind fully instructed upon all the different causes which may render a recruit ineligible, sometimes difficult to detect, and often purposely concealed. We particularly notice the mode of examining a recruit copied from a Manual prepared by Dr. Tripler, U. S. A., as affording a systematic plan of inspection:—

"We have remarked that certain defects can be ascertained only by questioning the man himself, and that, in order to avoid all subsequent evasions, the answers to these questions should be recorded on the spot. We shall now suggest a method of effecting this object, as well as of making it sure that no important part shall escape inspection through any slip of the memory.

"The following printed form is to be furnished, upon which the

observations of the inspecting surgeon are to be recorded as they are made.

"Recruit A. B.
"Age Years,
"Occupation,
"Born in
"Presented by
"1. Have you ever been sick? When, and of what diseases?
"2. Have you any disease now? (Such as diarrhœa, cough, and the like.)
"3. Have you ever had fits?
"4. Have you ever received an injury or wound upon the head?
"5. Have you ever had a fracture, a dislocation, or a sprain?
"6. Are you in the habit of drinking? or, have you ever had the 'horrors'?
"7. Are you subject to the piles?
"8. Have you any difficulty in urinating?
"9. Have you been vaccinated? or, had the small-pox?

"Head.
"Ears.
"Face.
"Eyes and appendages.
"Nose.
"Organs of mastication and voice.
"Neck.
"Chest.
"Abdomen.
"Genital and urinary organs.
"Vertebral column.
"Superior extremities.
"Inferior extremities.

REMARKS.

"(Approved or rejected as the case may be.)
"Date.
"Rendezvous.

"*Inspecting Surgeon.*"

We think, however, the author has made one mistake in not touching upon the question of the discharge of soldiers. We do not know the rules by which this important part of the duties of medical officers is guided in the American service, but we cannot help regretting that some remarks were not made upon this subject, for the benefit of his younger readers.

In the third chapter, on the general hygiene of troops, a matter which of late has occupied much of the attention of our own government, the author considers, in four short sections,

the questions of diet, cleanliness, dress, and exercise. We must here observe, that it is evident this book is intended principally for the guidance of medical officers serving in the field, else we cannot think Mr. Hamilton would have been silent on many of the most important points of hygienic management. For example he has not touched at all on the subject of vaccination, and re-vaccination of soldiers; he has omitted also to speak of venereal disease, the curse and bane of every army: we would have been glad to have known if any measures had been adopted in the American service to stay this plague, when we reflect that more than half the sick of our own army, at home, are suffering from this malady, and that hundreds of young soldiers are discharged, yearly, from the service in consequence of it; and judging that matters may be somewhat the same with our cousins, we cannot but regret that we have not been favoured with the views of an experienced surgeon upon a question of such vital importance to the efficiency of an army.

On the subject of diet, in the first section of this chapter, we think it a pity the author did not introduce the scale of the soldiers' daily rations, and hospital diet, used in the U. S. Army. In our own service, the soldier in time of peace has sufficient food, and generally of good quality; the great drawback to his comfort is bad cooking; the men are not properly taught to cook. Aldershot professes to do it; flying brigades march from that camp, in the summer-time, on expeditions of a week's duration, to Woolmer Forest, Sandhurst, and other places in the neighbourhood; and it is likely the men learn in their marches something about the preparation of their own food; but the instruction is insufficient. We are not a nation of cooks, like our neighbours in France; few of us, even in Ireland, know how to boil a potato; and when we have seen the messes of our soldiers in the barrack-room, we have had great reason to regret that they have not been better taught upon a subject so nearly connected with their comfort. We are very glad to observe in the appendix to the work before us, at page 215, ample instruction on the subject of camp and hospital cooking. This may be considered a matter beneath the notice of a medical man: it is not so; the military surgeon, who has passed much of his time in active service, well knows how much of the comfort and health of the troops under his care, as well as that of the sick themselves, depends on an efficient cuisine.

The second section, on *cleanliness*, is very short and meagre. This is an important item in the sanitary condition of troops: no one unaccustomed to soldiers, would believe the amount of dirt which often lies hid under that array of pipe-clayed belts,

and polished buckles, and tightly-fitting tunics. When soldiers are quartered in barracks not supplied with baths, or where they cannot have the advantages of river or sea-bathing, dirt accumulates rapidly on their persons. We wish Mr. H. had enlarged on this point, and given the weight of his authorship in impressing upon military authorities in general the importance of providing ample bath accomodation in every barrack.

The section on dress is interesting; but it is evident the question has not been so publicly discussed in America as in England; and yet, in what have all our discussions ended? The old institution of the "leather stock" remains *sacred.* The guardsman holds like grim death to his bear-skin, and in consequence occasionally drops dead in the ranks on the march. Our semi-denuded friends, the Highlanders, still strut in the "garb of old Gaul,"—very picturesque, it may be, but not always useful or comfortable, and certainly never decent. We have seen many a stalwart Scot under arms, his teeth chattering with cold, trying in vain to pull his scanty petticoats over his shivering knees, realizing too well the play upon words, that the difference between an Irishman and a Highlander before Sebastopol was, that the latter was cold with the *kilt*, while the former was *kilt* with the cold? We were much amused the other day, when witnessing a sham-fight, with a column detached from Aldershot, near Woolmer Forest,—a distinguished Highland regiment was advancing up a hill over very rough heathery ground, well studded with thistle and furze; the regiment was ordered to "lie down," as the enemy had opened fire in their front; it was easier said than done, for men so scantily protected with garments; whereupon the colonel apologised to the general, that it was rather an uncomfortable spot for kilties to squat in and certainly Sandy seemed to think so himself. Surely sufficient nationality might be maintained without subjecting the men to so much discomfort. Let the deer-stalker wear it if he likes; let Cameron, and Farquharson, and Frazer, perform their war-dances in their native glens, in whatever war paint they choose; but, in the name of common sense, and comfort, and decency, give the soldier his *trowsers*, and cover his legs like those of other men.

We pass over the chapters on hutting, barracks, and hospitals, which do not contain much that has not been already openly discussed in our public journals; and that on the hygienic management of troops on the line of march, which we think the best and soundest, most useful and practical in the

book. The young medical officer may study it with much advantage, there being few places where his forethought and carefulness are more required, than when troops are marching.

The next chapter, on the conveyance of sick and wounded soldiers, is one of interest; the subject is all-important; any medical officer who served in the Crimea, and marched with the army from its landing to the heights of Inkerman, must have seen the misery caused by insufficient means for the conveyance of disabled men; and yet, strange to say, this question is not settled yet by our own authorities. It is true, in the medical regulations of the British army it is laid down that each battalion in the field of 850 strong is to have the following—

For medical panniers, ...	1 mule.
Cart for surgical equipment, ...	2 Do.
Ambulance car, to follow in rear of the battalion, and capable of carrying from 6 to 8 sick, with 14 stretchers, and light operating table,	2 Do.

And so on for a brigade of three regiments, and a division of six regiments, in proportion; but, to the best of our belief, these equipments exist on paper only; we do not believe the pattern of the cart, or the car, is even decided upon; and we cannot but fear that, if preparations of this kind are not made to some extent at least in time of peace, they will not be forthcoming when required for war.

In Mr. Tufnell's museum, established by him with so much industry and care, and most generously transferred by him to the army medical school at Chatham, very many specimens of inventions for the conveyance of sick and wounded are collected; mechanical contrivances of varied kinds in the shape of cars and carts, stretchers, ships' bunks, panniers, portable operating tables, tents, and huts, and apparatus for field cookery; and scarcely a week passes without some new invention arriving at Whitehall Yard for the inspection and patronage of the Director-general. With regard to the ambulance car to follow every battalion on field service, we know nothing better than the one invented by Mr. Tufnell himself; we have seen this ambulance, and believe it is at present in the carriage department at Woolwich, where we hope it will be taken as a pattern for the regimental equipment. It is in a form familiar to Irish readers, namely, a Bianconi's car, and is furnished with every particular requisite for a battalion. We would be glad, not only for the credit of our fellow-citizen, but for the advantages it would bring to the

service, to see it paraded in the rear of every regiment proceeding on active service.

The difficulty of obtaining a field-stretcher or litter, sufficiently portable and light to be easily carried, and at the same time strong enough to bear a man's weight, has long been felt; invention seems almost exhausted on this matter. As a rule, the simpler these contrivances, the better. In the equipment of the army hospital corps, we trust the authorities will see the necessity of furnishing them well in this particular. We have seen lately a litter invented by an officer in the household of the Emperor of the French, which is one of the best that has come under our notice. The stretcher consists of two parts; each man carries a "half" attached to his knapsack; and when any two men meet, the stretcher is complete. It is strong, and very portable; we have seen it tested, and believe it to answer the purpose admirably; and we hope to see it permanently introduced into the service of the army.

In section 4 of this chapter, on conveyance of sick and wounded, there is a description which we quote of a wheeled ambulance invented by Mr. Cherry, which appears to possess many advantages, and has met with the approval and commendation of Sir George Ballingall.

"Of the various plans, Ballingall thinks that the carriage invented by Mr. Cherry is by far the most ingenious which he has seen. It is intended as a 'hospital and commissariat' transport at the same time; and since the wounded need generally to be carried in a direction opposite to that in which the provisions, forage, etc., are to be carried, this may convey the latter to the army and bring back the former.

"It is a light single-horse cart, so constructed as to be readily adapted either to the carriage of stores and provisions, or to the conveyance of wounded men; for these two different purposes a great part of the frame-work is moveable, and capable of being adapted to the object required. A number of moveable spars or poles are stowed on the outside of the cart, which may in a few minutes be unpacked and placed upright round the frame-work, adapting it to the carriage of bulky articles of forage, such as hay or straw. Some of these spars, again, are fitted to be placed as ridgepoles on the top of the uprights, for the purpose of supporting a canopy for the protection of the sick or wounded. It now becomes a most commodious sick-cart, capable of conveying one person lying at length on a board within, or four men sitting erect on seats, which are suspended from a rope running round the interior of the cart, and giving the advantage of its elasticity in addition to the springs. The seats, when not used for this purpose, form a moveable part of the bottom of the cart, under which are boxes for containing the bearer and canopy when not wanted for

their respective purposes. The most ingenious part of the contrivance is that by which the ordinary springs of a cart or other carriage may be protected from injury when carrying heavy loads, while at the same time it admits of their free use when light loads are carried. This is effected by two moveable blocks sliding along the axle-tree; and which, by means of a lever connected with them, may either be moved outwards under the frame-work of the cart, so as to make its weight bear directly on the axle without injury to the springs, or, by turning the lever in an opposite direction, the blocks may be withdrawn from under the side-pieces of the cart into the hollow space formed by their thickness, and the springs thus again brought into action."

This closes the author's examination of those subjects not purely medical or surgical,—the adjuncts, as it were, of military surgery, without a competent knowledge of which, the surgeon, be his professional skill what it may, is only half-instructed, only half-prepared to meet the exigencies of a battle-field, or to contribute to the maintenance of the efficiency of those committed to his charge.

In chapter 9, on gunshot wounds, Mr. Hamilton first treats of the eccentric course which balls sometimes take after impinging upon the surface of the body; he does not cite any cases from his own experience, but relates the well-known one reported by Hennen, of a ball which struck the pomum Adami, and was found at the orifice of entrance, having gone completely round the neck.

Balls are easily deviated from a straight course after striking the body, especially if they come in contact with bone. Surgeon-major Matthew, in the report of the army medical department for 1859, relates a case of a soldier of the 86th regiment who was wounded at Jhansi by a musket-ball, which perforated the left triceps muscle, from without inwards, apparently grazing the humerus, and thus obtaining a rotatory motion, then entered the left side of the belly, over the eleventh rib, does not appear to have injured the rib, but to have hugged the skin, and made exit towards the opposite side of the body, and after a passage of 9 inches, making its exit through the muscles arising from the internal condyle of the right humerus; in this case, complete paralysis of extension of the little finger, and partial paralysis of the ring-finger of the left hand ensued.

The question may here be asked, Has the character of gunshot wounds been altered or modified by the changes and improvements which of late years have taken place in projectiles? Mr. Hamilton states his opinion on this point thus:—

"The peculiar shape, great velocity, and rotary motion of conical balls impress certain characteristics upon the wounds which they

inflict. They seldom deviate from a direct course after entering the body, nor do they often split; they produce great comminution of the bones; and when the range is short, the wound is generally smaller than that made by the round ball; but if the range is great, and the part thinly covered with soft tissues, then the wound is larger, especially at the point of exit; and more lacerated."

While we agree in some respects with this statement, we have at the same time reason to believe that the wound produced by such a bullet as that used in the Enfield rifle, which generally expands as it leaves the barrel, is larger and more lacerated than that inflicted by the circular ball.

With regard to the extraction of bullets, Mr. H. speaks highly of a forceps invented by Tiemann of New York. He gives a sketch of the instrument, but he also plainly states the great disadvantage belonging to it; namely, that the blades being furnished at their points with small teeth, like the incisors of a mouse, intended to pierce the projectile, without the necessity of grasping its entire calibre, are consequently available only for the extraction of leaden balls, and would be useless in the removal of splinters of shell or small grape-shot. There have been numerous inventions and improvements in this important instrument of late years. Mr. Weiss has invented an excellent one; Coxeter has produced his; Mr. Tufnell has likewise contributed to the surgeon's armoury in this particular; they have each their separate advantages and peculiarities. Without stating our preference, we think that no military surgeon should be content with having only one description of bullet-extractor in his case: if he fail with one, he may succeed with another.

The following is the author's procedure in arresting hemorrhage, after the removal of the missile. To this treatment we have nothing to object, save the use of the persulphate of iron: if, as Mr. H. asserts, he has seen evil consequences arise from its use, we think it had better be omitted:—

"Having removed the missile, it may become necessary, yet such is not often the fact, to take measures to arrest the hemorrhage. If it is slight and proceeds from small vessels, cold or iced water may suffice; or if it is more considerable, we may sometimes resort to moderate compression; or, what is usually much better, to the persulphate of iron. This, diluted one-half or more, may be injected into a deep wound by the syringe with which I have supplied my field-case, or it may be laid undiluted on an open bleeding surface with a camel's hair brush. I have seen the persulphate of iron, injected into the cellular structure produce inflammation; it is not, therefore, so innocuous as that it can be thrown into the long track

of a bullet, without some chance of its doing mischief. When the vessel is too large for the bleeding to be restrained by these means, we must at once proceed to tie the artery from which the hemorrhage proceeds—in the wound if we can—and perhaps that can be done by laying it freely open; but if we cannot reach it here, we must cut down and tie above.

"If a tourniquet becomes necessary, we prefer the ordinary screw tourniquet, invented by J. L. Petit.

"In an emergency we may employ as a substitute the simple field tourniquet, composed of a strap and buckle, either with or without a pad; or a simple cord, twisting it tightly with a stick, a pistol, or any short weapon.

"Ordinarily no other treatment or dressing is necessary for a gunshot wound, than to lay upon it a piece of lint saturated with cool or cold water. Sometimes, however, the condition of the parts demands that the applications should be warm, so as to encourage the return of its vitality.

"Baudens, who served in the Crimea, recommends ice as a first application. The English surgeons in the same expedition employed the water dressings to the exclusion of almost everything else; but Surgeon McLeod thinks that 'when inflammation and suppuration are present, *hot* applications will always be found of most good.'

"If water irrigations are employed, a very simple method is to bore with a gimlet a hole in the side of a pail, near the bottom, but not so near as that the dirt which settles in the pail will escape through the hole. Insert into the opening a piece of a goose-quill, and draw through this a few threads of common candle wicking. Placing the pail upon a table, or suspending it above the limb, the candle wick terminating upon the piece of patent lint with which the wounded member is covered, the water diffuses itself gently and equally over the whole surface."

With regard to gunshot wounds of the head, the author cites the following most extraordinary case:—

"Gunshot wounds of the head are generally fatal, whether the ball passes entirely through or remains within the skull, and this is especially true of gunshot wounds of the anterior half and base of the brain. Yet the exceptions to this rule are numerous. One of the most extraordinary cases of recovery upon record, probably, is that of the man Gage, who was shot through the head with a tamping iron, three feet seven inches in length, one inch and a quarter in diameter at its largest end, and weighing thirteen pounds and a quarter.

"The accident occurred in 1848; and Dr. Harlow, of Cavendish, Vermont, in whose practice the case occurred, described the wound as commencing just anterior to the ramus of the inferior maxillary bone of the left side, taking a direction upward and backward to-

ward the median line, passing through the left anterior lobe of the cerebrum, and making its exit at the junction of the coronal and sagittal sutures; lacerating the longitudinal sinus; extensively fracturing the frontal and parietal bones; breaking up a large portion of the brain, and protruding the globe of the left eye from its socket by nearly one-half its diameter.

"In 1860 this man was still living, and in the enjoyment of good health, with no impairment whatever of his mental faculties."

After this, we think, no case of injury of the head need be despaired of; truly the freaks of nature are very remarkably illustrated in cases of this kind. In the Pathological Museum of the British Army at Fort Pitt, there are some curious specimens of severe injuries of the head which did not cause death at the time. There are several instances of fracture of the cranium with extensive depression of the inner table, but which were not fatal at the period of the infliction of the injury; and the writer of this review remembers to have met a soldier late in the evening of the action of the Alma, walking about the village of Bulganak, with a bullet driven into the centre of his forehead. Such cases are inexplicable; it is difficult, if not impossible, to assign a reason why one man will be rendered insensible, and death will result from a fracture of the skull which can scarcely be discovered; while another, who has suffered an injury so severe that at first sight hope seems extinguished, will recover safely and rapidly.

Mr. Hamilton analyses at considerable length the relative merits of hot and cold applications to gunshot wounds, giving the opinions of experienced men upon the subject. When we reflect upon the difficulty of obtaining any other than cold applications on the field, we can hardly imagine how there can be any choice in the matter.

The chapter closes with some practical remarks upon penetrating wounds of the thorax—these are trying cases; the surgeon can do little in the way of manual interference; but Mr. H.'s views are sound and clear:—

"The examination will therefore consist, generally, in a limited exploration of the track of the wound, especially with a view to determine whether any pieces of clothing have been carried in, and in an inspection or careful digital manipulation of the opposite side of the thorax. Auscultation is only serviceable at a later period, nor can it be practised satisfactorily during the agitation usually consequent upon such an injury. Bloody expectoration furnishes almost positive evidence that the structure of the lungs is penetrated. The absence of this sign, however, is not proof so positive that the lungs have not been penetrated.

"The treatment consists in covering the wound with a pledget of lint, saturated with cool water, the employment of sedatives, and of antiphlogistics. The patient must be requested to lie upon the wounded side, or in such a position as that the orifice shall be depending, unless the wound is on the front of the chest. Often this is impracticable, certain positions being more painful and interfering more with the respiration than others. We have no choice then but to leave the patient to adopt that position which he finds most comfortable."

His remarks upon the "expectant" treatment of wounds of the abdomen are also of value:—

"To give to our patient, therefore, the best chance of recovery, we have to pursue an almost expectant plan. He must be laid upon his back, with his body a little flexed; a piece of adhesive plaster should be made to close the wound completely; he should be allowed no drink or food for several hours, unless it be a little ice-water or small pieces of ice at intervals. Everything received into the stomach, however bland, is apt to excite peristaltic motion, and to endanger extravasation; no cathartic or even enema; he should not be permitted to turn to the right or to the left in bed, or get up for any reason whatever. If he suffers much pain, opiates and poultices may be necessary; and eventually leeches or the lancet may be demanded."

But on two points we differ from him entirely—first, as to closing the wound with adhesive plaster, which, when the intestine may be perforated, should never be done. The wound, on the contrary, should be left open, and, if necessary, enlarged, to favour the exit of extravasated matters; for the viscera of the abdomen so completely fill the abdominal cavity, that if there be free exit through the wound, there is little danger of any matters effused from a wound of the intestines passing into the general sac of the peritoneum; and, secondly, we would have recourse to the free use of opium from the very beginning.

We now proceed to the question of amputation, discussed in chapter 10, which contains many points of practical importance. In the first instance Mr. Hamilton lays down the cases demanding amputation in army practice:—

"There are several questions relating to amputations, which need to be considered briefly, and in their proper order.

"First.— *What conditions of the limb in army practice demand amputation.*

"Simple fracture of a limb, it is unnecessary to say, does not demand amputation.

"A fracture complicated with considerable laceration of the skin, or of the skin and muscular tissue, does not of necessity demand amputation.

"A fracture, with laceration of the main arterial trunk supplying the limb, does not necessarily demand amputation. If the artery can be tied, the limb may be saved, and the fracture treated successfully.

"A fracture, accompanied with the laceration of one or more of the principal nervous trunks, does not always demand amputation, yet it is a graver accident than the one last supposed.

"A fracture, complicated with a destruction of both the principal arterial and nervous trunks, occurring in the course of a large limb, like the thigh, the leg, the arm, or the forearm, renders amputation necessary.

"Similar lesions, without a fracture, render amputation almost equally imperative.

"Comminuted fractures, accompanied with extensive lesions of the soft parts, or with a rupture of either the principal artery or the principal nerves, in the case of large limbs, generally demand amputation in army practice.

"Compound fractures, with either of the above complications, in large limbs, generally demand amputation.

"Compound fractures of the *femur*, without other complications, in army practice, *generally* demand amputation.

"Fractures accompanied with extensive and violent contusion, demand amputation oftener than the same fractures accompanied with open laceration.

"In army practice, gunshot wounds which penetrate the shoulder-joint, the elbow-joint, or the wrist-joint, demand either amputation or resection. (Guthrie says, that an arm will endure almost any amount of injury, without demanding amputation.)

"Gunshot wounds penetrating the hip-joint are generally fatal, yet amputation may be practised under some very favourable circumstances. Resection also presents a feeble ground for hope.

"Gunshot wounds of the knee or ankle-joint demand either amputation or resection. The knee more certainly than the ankle; and amputation is more often required than resection. Guthrie has seen no recovery from a gunshot wound of the knee-joint, unless the limb was amputated. Nearly all army surgeons confirm this experience.

"Gunshot wounds, in which the ball does not actually enter the joint, but in which the bone is struck above or below, and the line of fracture extends into the joint, are subject to nearly the same rules as that class of cases in which the ball enters the joint; but the rule is less imperative.

"Gunshot wounds penetrating the carpal bones do not generally exact amputation; but the same wounds penetrating the tarsal bones, generally render amputation necessary.

"Gunshot wounds through or between the phalanges of the fingers or toes, or through the bones themselves, are often cured without amputation. Similar wounds of the fingers or toes do not in general result so favourably; but the rule in this latter case cannot be stated very positively."

In reference to the practice of conservative surgery in cases of gunshot injury of the thigh, we have read with special interest the statistics bearing upon this point, as set forth in the Statistical, Sanitary, and Medical Report of the British Army Medical Department for 1859. These statistics are furnished by J. R. Taylor Esq., C. B., Inspector-general of Hospitals, and the cases were under the care of Surgeon-major Matthew. We copy some of his remarks, and one of the tables he has drawn up on the point.

"The preceding tables show, of the Indian wars as compared with the Crimean war, that the thigh-stump cases arrived home from India are a fraction more numerous than those from the Crimea, in proportion to the total arrived by all wounds; and that the recovered cases of gunshot fracture of the femur also arrived are, in proportion to the total wounded, four times more numerous from India than from the Crimea. In other words, the proportion of thigh-stump cases being so nearly the same, the gunshot fracture of the femur cases from India, over and above the proportion from the Crimea, may be received as representing the proportion of cases of this description of wound lost there by amputation, or by less favourable circumstances of service. The difference, I believe, is to be explained by the better appliances and means attending field hospitals in India, and the less frequent practice there of amputation in this description of wound. The difference is not to be explained by difference of missiles; for in the Peninsular war, where no other than the 16 to the pound bullet was used, the impression of surgeons experienced in the surgery of that war was, that in only few exceptions should a gunshot fractured thigh not at once be amputated. This rule greatly influenced the practice of surgery in the Crimean war, and hence, in a considerable measure, I believe, the less favourable results thence than from the mutiny in India, when surgeons were not only deterred from amputation of the thigh by the Crimean experience of the fatality attending that operation, but were more inclined to attempt preservation of the limb by the better means at hand for the conveyance and treatment of such compound fractured thigh cases.

"I subjoin brief extracts of ten of the cases of gunshot compound fracture of the femur, and of the thirteen thigh-stump cases referred to in the preceding remarks:—

ABSTRACT OF TEN CASES OF GUNSHOT COMPOUND FRACTURE OE THE FEMUR.

	Rank, Name, Regiment, Age, and Service.	Place and Date of receipt of Wound.	Description of Wound, and site of Fracture.	Results, as observed at Fort Pitt.
1	Private Patrick Carty, 64th Regt., aged 28. Total service 10.	On the advance to Lucknow, 29th July, 1857.	Musket ball penetrated right thigh in region of trochanter major, fracturing the bone at or just below that process, and again at middle third, where the ball appears to have lodged.	April, 1858.—Wound long since healed, and fractures firmly united. Limb shortened about 2½ inches, but in other respects good, and he walks well, with little lameness, and without crutches or stick. Sent to modified duty, 6th Sept. —Discharged to pension, 22nd Dec., 1859, by Horse Guards' order.
2	Private John Ashworth, 53rd Regt., aged 29. Total service 9 4/12.	On the 1st Nov., 1857.	Musket ball perforated right thigh, fracturing the femur in its upper third.	July, 1859.—Wounds healed and bone firmly united, leaving so good a limb that he was sent to modified duty on 6th Sept. The shortening was under 2 inches. June 1859.—Limb, with the exception of shortening, perfectly good, but he is now discharged to pension, being unfit for all duties.
3	Private Joseph Hewitt, 52nd Regt., aged 27. Total service 9 4/12.	At Goodespore, 12th July, 1857.	Musket ball penetrated front of left thigh, fractured the femur in its upper third, and was cut out behind at lower edge of glutæus.	July, 1858.—Wounds healed, bone firmly united, 1½ inches shortening; but there remains a good useful limb. Discharged to pension, 22d July, 1858.
4	Corp. Edward Collins, 75th Regt., aged 32. Total service 14 2/12.	Delhi, 8th June, 1857.	Perforated musket ball wound, fracturing the femur in its upper third. Ball recorded to have been extracted.	July, 1858.—Wound healed, bone united, ends overlap, and callus large; 2½ inches shortening; has, nevertheless, a good useful limb, and he walks well. Passed to modified duty, 6th Sept., 1858, but discharged to pension by Horse Guards' order.
5	Private James Burke, 53rd Regt., aged 26. Total service 9 1/12.	Lucknow, 16th Nov., 1857.	Musket ball penetrated front of left thigh, fractured femur at middle third, and was cut out at inner and posterior aspect of limb.	Aug., 1858.—Wound healed, fracture united, 1½ inches shortening. Has a good useful limb, and walks so well that he was sent to modified duty on the 16th Sept., 1858. Discharged to pension, 10th June, 1859.

ABSTRACT—*continued.*

	Rank, Name, Regiment, Age, and Service.	Place and Date of receipt of Wound.	Description of Wound, and site of Fracture.	Results, as observed at Fort Pitt.
6	Private Samuel Hunter, 93rd Regt., aged 21. Total service 3.	Cudjee, 1st November, 1857.	Musket ball perforated left thigh, fracturing bone at junction of middle and lower third.	Sept., 1858.—Apertures of entrance and exit of ball healed, but there is a sinus through which dead bone is detected; 1 inch shortening; great deposition of callus, obstructing motions of knee joint. Discharged to pension, 5th December, 1858.
7	Private William Cunningham, 1st Bat. 8 Foot, aged 31. Total service $13\frac{6}{12}$.	Delhi, 14th September, 1857.	Gingall had passed across front of left thigh, fracturing the femur at junction of upper and middle third.	April, 1859.—Wound healed. This is an unfavourable specimen of recovery with the limb on, because of the fractured ends having been allowed to overlap and unite at an angle, causing $4\frac{3}{4}$ inches shortening; but with the help of a mechanical contrivance furnished by Mr. Bigg, the man is able to get about. Discharged to pension.
8	Private Samuel Shaw, 53rd Regt., aged 36. Total service $15\frac{6}{12}$.	Lucknow, 23rd Feb., 1858.	Perforating musket ball wound, fracturing the femur in the lower third.	May, 1859.—Wound lately healed, bones firmly united; $1\frac{1}{2}$ inches shortening; knee joint stiff; walks, however, very well. Discharged to pension, June, 1859.
9	Private George Williams, 24th Regt., aged 29. Total service 10.	Umritsir, 18th October, 1857.	Musket ball entered right groin below Poupart's ligament, external to the vessels, and passed out behind great trochanter, fracturing the femur, probably through the trochanter.	June, 1859.—Opening of entrance and exit healed, but a sinus open behind, leading to dead bone. There is about $1\frac{1}{4}$ inches shortening. The man remains in Fort Pitt, having lately suffered erysipelas of the injured limb, which no doubt, however, will be eventually good and useful. He is now in good health.
10	Private John Curtis, 86th Regt., aged 35. Total service $14\frac{2}{12}$, of which 13 years in India.	Mendesoor, 23rd Nov., 1857.	Musket ball entered left groin, and passed out obliquely near great trochanter, fracturing the femur just below that process.	June, 1859.—Necrosis of fractured ends; openings not quite healed; $3\frac{1}{4}$ inches shortening; health good. This soldier remains at Fort Pitt to be fitted with an apparatus like that given to private Cunningham.

Such statistics as these are strong inducements to practise conservative surgery; at the same time it is possible to carry it too far, and Mr. Matthew gives judicious warning on the subject. He instances a case of compound comminuted frac-

ture of the femur in a private of the 8th Foot, and describes it as being "a very unfavourable example of the results of treatment of this description without amputation; the limb is only an incumbrance, the shortening is from 4½ to 5 inches, and there is great deformity."

In reference, also, to cases of gunshot wounds through the phalanges of the fingers or toes, which Mr. Hamilton declares are often cured without amputation, Mr. Matthew cites the following case:—

"Private Patrick Kennedy, 1st Battalion, 5th Foot, was wounded on the 2nd December, 1858, at Mohee, by a musket-ball through the web of the ring and middle finger of the left hand, shattering the adjacent phalangeal and metacarpal bones. I call attention," says Mr. Matthew, "to this case, because it well illustrates the malpraxis, to which I am sorry to have to say, the abuse of the fashionable term, 'conservative surgery,' often leads. If both the metacarpal bones were shattered, there can be no doubt the finger should have at once been amputated, and the fragments cleared away. Had this been done, in all probability the forefinger and little finger would have remained useful; as it is, all the fingers are now stiff in the extended position: the ring-finger, by bony anchylosis to the metacarpus, and the others by adhesions of tendons; the hand is almost utterly useless, and there is little or no prospect of improvement. It appears to me," adds Mr. Matthew, "that this is 'conservative surgery' in the wrong direction."

We cannot, however, dismiss the question without calling to mind one of the triumphs of conservative surgery, in the case of a private soldier upon whom the operation of resection and removal of the head and a large portion of the shaft of the femur was performed by Mr. O'Leary, surgeon of the 68th Regiment, in the Crimea.

We saw this man after his return to England; and the writer was present when he was examined by Guthrie, then fast sinking into the grave, who seemed to derive great satisfaction from contemplating the success of an operation which he had advocated twenty years before.

The "method" of amputation is also considered by the author in this chapter, and the relative merits of the flap and circular operations discussed.

He states, which we believe to be the case, that preference is generally given to the former in the field; on this point the surgeon must be guided by the peculiar circumstances under which he finds himself placed; no rule can be laid down; if he is much hurried, as in retreat, and he is required to move

his wounded at short notice, and if they are pouring in rapidly upon him, he must then, undoubtedly, have recourse to that operation, which will save time, and enable him to attend to a larger number of cases. If, on the other hand, he is with an advancing column, with well-organized field hospitals in his rear, and good transport at hand, it is our belief, with that of Mr. Hamilton, he will find the circular method—at all events, as regards the thigh and arm—less hazardous than the flap, and more likely to secure for the patient a useful stump.

On the question of the use of anæsthetics in the field, Mr. Hamilton, after analysing the opinions of several military surgeons in the English, French, and American services, sums up his opinion in these words:—

"Finally, after comparing our own experience with that of others, we will state our belief and conclusions as follows:—Anæsthetics are of inestimable value in their effects as remedial agents, and in their power to extinguish sensibility, temporarily, and especially during the performance of severe surgical operations; but we prefer ether to chloroform, as being the least liable to destroy life; and we would never employ either when the system was greatly prostrated by disease, or by the shock of a recent injury, unless the patient exhibited an unconquerable dread of the pain of the operation, or the operation was likely to prove exceedingly painful.

"It is our opinion, also, that anæsthetics sometimes, and especially chloroform, prevent the union of wounds by adhesion, or by 'first intention.'"

We mainly concur with the author in his view of this highly important matter, and we think most military surgeons who have seen much active service will, to a great extent, corroborate his statements; here, again, the surgeon must be guided by circumstances. For example, in a general action, where large numbers of wounded are brought in rapid succession to the surgeon's rendezvous, many requiring immediate operation, all more or less suffering from the depressing effects of the "shock," with the prospect of their being exposed, perhaps for nights, with but indifferent shelter, or having to undergo the suffering and fatigue of transport, we think, under such or similar circumstances, the surgeon will do well to pause ere he exposes such cases to the additional depressing effects of so powerful an agent as chloroform. But we cannot, however, endorse the author's opinion with regard to anæsthetics preventing union by the first intention: we do not think this statement is borne out by experience either in military or civil practice.

Our readers, doubtless, have not forgotten that most un-

happily worded memorandum issued by Sir John Hall, the principal medical officer of the Crimean army, previous to the battle of the Alma. Although, in common with the whole medical profession, we deprecate the manner in which his views on the use of chloroform were couched, we cannot but admit at the same time that in principle they were not erroneous.

We by no means wish to convey the idea that we object to the use of that which we cannot but regard as one of the greatest blessings ever conferred on suffering humanity; and while we would advocate its administration in all cases—unless specially contra-indicated—where the patient can be housed and kept at rest, and in some measure of comfort, we cannot too strongly combat its indiscriminate application to the urgent cases and sudden emergencies of a battle-field where troops are in motion.

We will now close our observations on this volume, with a few remarks on the chapter relating to "dysentery;" and we might here inquire of the author why he has omitted the subject of cholera from his pages?

If dysentery can be classed under the category of "military surgery," so may cholera. If, as Dr. Watson asserts, "there is no malady which is so crippling to an army in the field," surely cholera may be considered equally so. Who that saw the numbers of men who dropped to the rear, and died on the march to Sebastopol, or witnessed the hospital tents crowded with hopeless inmates after the Alma, or remembers how many strong men succumbed to this disease on the heights of Inkerman, can doubt that its onset is more deadly than the bullets of the enemy. It is true, perhaps, Mr. Hamilton could not have thrown much additional light on the subject of its treatment; but a chapter on this question would have been a good addition to his book, and might have drawn the attention of the young medical officer to at least the preventive measures most likely to be of use during an epidemic of this most fatal malady.

On the treatment of dysentery, Mr. Hamilton advocates strongly the use of opium in large doses, after the judicious administration of saline purgatives, and states that he has witnessed the successful exhibition of "the sulphate of morphia in doses of a grain *hourly*, continued during the twenty-four hours for several days, in a case of severe epidemic dysentery, without the production of any of the phenomena of narcotism."

We do not intend to criticize this mode of treatment; we would rather draw the attention of our military readers to what

we think a safer and surer method, as set forth in a paper by Dr. Massey, surgeon, 2nd Dragoon Guards, reported at page 280 of the Army Medical Report of 1859, and having special reference to the treatment of acute dysentery by large doses of ipecacuanha: this treatment was first used by Mr. Docker, surgeon, 7th Fusiliers, in the Mauritius, in 1855; and his views were published in the Lancet of the 3rd July, and the 4th August, 1836.

Speaking of his success, Mr. Docker says:—"In all constitutions, robust as well as delicate, under all circumstances, the result is the same;" and Surgeon Massey endorses that opinion in the following terms, and gives a detail of his plan of treatment:—

"In nearly every case of acute dysentery, when first seen, half an ounce of castor oil is at once given, with a view of clearing out scybalæ and vitiated secretions. As soon as the oil has freely acted, say in from four to six hours, a drachm of ipecacuanha is given in a little water, a mustard plaster having been applied to the stomach about half an hour previously, at which time, likewise, thirty drops of laudanum are given. Mr. Docker's view on this point seems to be that the mustard plaster and laudanum tend to enable the stomach to retain the ipecacuanha. I regret to be at issue with him in any portion of his remarks, but I have not found the same tolerance of the stomach for large doses of ipecacuanha that he seems to have experienced. I sometimes have encountered difficulty in this respect; but it seldom happens, I imagine, that the entire drachm can be thrown up, even when sickness is quickly induced. When one dose is rejected, I usually give a second soon after; this generally succeeds, but if not, by waiting a few hours the object is often readily effected. If great sickness and retching are caused by the medicine when given in fluid, it is often retained if given with a little opium in five grain pills, three or four at a dose; and two or three drops of hydrocyanic acid, given a little before the ipecacuanha, often assists its retention. I have likewise exhibited it frequently in the form of infusion in enema with tinct. opii, but I am not satisfied that I have seen very marked benefit from this mode of exhibition. It has commonly been as an adjunct to medicine given by the mouth. I have no case to record of treatment solely by enemata of ipecacuanha. The ingenuity of the prescriber may be taxed to provide that a sufficiency of the drug be retained, but by a little management it has hitherto always occurred to me to succeed. I have noticed that intolerance of the stomach to large doses of ipecacuanha was more

frequently encountered in weakly men than in the more robust; and when dysentery had existed for a few days, there has been less power in retaining the medicine than in cases submitted to early treatment. Mr. Docker's statement to the effect, that if the medicine is retained for even a quarter of an hour before sickness is induced, it seems to exert its beneficial influence, is to be borne in mind. This, doubtless, results in a great measure from the circumstance that only a portion of the ipecacuanha is thrown up. Whenever tolerance from the first prevailed, a speedy cure, thorough and complete, was the result.

"In cases of acute dysentery the effect of one or two large doses of ipecacuanha is usually to produce one or two feculent motions, and the disease terminates. There is in general no gradual alteration of secretion or other symptoms, the disease seeming simply to end; confinement to the recumbent position for a day or two and farinaceous diet are alone necessary; pain, tormina, tenesmus, procidentia ani, blood, mucus, jelly-like secretion, all cease; the appreciable action of the medicine, being a few bilious loose motions. But in some instances the ipecacuanha does not act so speedily, or with such decided benefit, and its exhibition at stated invervals may be necessary for two or even three days. Not infrequently the intolerance of the stomach for the medicine prolongs the treatment.

"Again, though the dysentery is cured, a degree of looseness of the bowels may continue for a short time; and in cases where dysentery has prevailed for some days before treatment is sought for, the cure is usually somewhat protracted. I have also seen occasionally a troublesome symptom continue, I allude to the formation of scybalæ. This tendency, or at least the condition that creates it, is so liable to lead to the invasion of fresh symptoms of acute disease, that, as long as it lasts, it is always to be watched and prescribed for; but, as has been before observed, the remedy finally succeeds.

"Numerous cases might easily be quoted from the Hospital Register, but it will probably be deemed equally conclusive to present two short returns, the one embracing the period included by the General Return of 1858, and the other that of the year 1859. In the year 1858 the ordinary treatment practised in India of late years was pursued, consisting chiefly of leeching, preparations of mercury with small quantities of ipecacuanha, opiate enemata, counter-irritants, &c. In the year 1859, the treatment was exclusively that by large doses of ipecacuanha. In 1858, 103 cases of acute dysentery were

admitted into the regimental hospital, 7 of chronic, and 5 cases remained over from the previous year, making in all 115. Of these, 14 died, and 3 were invalided to England, being a loss to the service of something less than 1 in 6 from deaths and invaliding. In 1859, there were admitted 115 cases of acute dysentery, 3 of chronic, and 2 remained over from the previous year, giving a total of 120 treated. Of these, 2 died and none were invalided, causing a loss to the service by deaths and invaliding of 1 in 60. The return of 1859, therefore, shows a great contrast with that of the previous year; and still more is it deserving of notice, from the fact that of the two deaths recorded in 1859, one occurred in a thin weakly man, who had frequently suffered from dysentery before; and the second, though included in the return as dying under the head of acute dysentery, actually died suddenly from heat apoplexy when a patient in hospital for the former disease.

"How, then, does this medicine act? A feasible idea appears to be that the portal system is relieved by action upon the liver and small intestines; the free feculent bilious motions would argue this; but then the portal system can be relieved in other ways, yet the dysentery remain uncured. Leeches to the anus will unload the vessels to some degree; mercurial purgations often produce a cholagogue effect, which would tend to relieve the portal circulation; yet these means do not cure dysentery as ipecauanha does.

. . . . . .

"Dr. Corrigan, of Dublin, has pointed out the value of ipecacuanha in emetic doses in jaundice. Considerable experience has convinced me of the truth of Dr. Corrigan's statements on this subject, but I have long held the opinion that the ipecacuanha exerted other influence than the mere mechanical effect of an emetic. It appears to me, that no other means so effectually or so speedily produce an action on the liver and small intestines as ipecacuanha, in large doses, without inducing other deleterious effects. Mercury, it is true, acts as a cholagogue, but it also often acts as a drastic purgative. It irritates the inflamed mucous membrane.

"In addition to the effects of ipecacuanha just mentioned, it seems to be powerfully sedative. It lowers the pulse, and induces diaphoresis, possibly by the nausea it creates. Possibly in a similar way may be produced its influence upon the peristaltic action of the bowels, which is often the most remarkable immediate effect. Frequent purging and straining are allayed on taking ipecacuanha, often as soon as one large free motion occurs. It is difficult to suppose that the entire power

of the medicine is expended upon this secretion, or that a single motion could give rise to such immense results, unless there was some marked sedative action."

Our task is now done, and we close this little work, which, as we have said, presents a few imperfections, some serious omissions, and possesses, perhaps, but little originality; but, so far as it goes, we believe the views of the author to be in general sound and practical. We close it in hope—first, that it may be followed by larger and more extended editions; and, secondly, that it may act as the pioneer to other works on the same subject from our own countrymen. The Army Medical Service is sadly in want of literature bearing upon questions of great public importance; we know there are medical officers in the service, of experience and ability, who are quite able to fill up the blank in this particular. A sound practical work is required, not purely on military surgery, "*per se*," but upon military medical science in its entirety, embracing every point likely to meet a medical officer in the performance of his duty in peace and war. In proportion as medical officers are conversant with their professional and official duties, and prompt and energetic in the discharge of them, in the same proportion will they be regarded with respect by those in command. No class of men have more faithfully served their country, or more nobly discharged their arduous, and often thankless labours; they earn no golden rewards; but when we reflect upon how many breasts of such "non-combatants" the Victoria Cross glitters; when we remember that in the ranks of the medical department there are such men as Jee, and Mowat, and Sylvester, who have not obtained the emblem of courage and valour by any act of reckless daring from motives extraneous to their professional calling, but in the holy cause of saving human life, we congratulate the British soldier, that amid the smoke, and din, and blood of battle, such help is likely to be found.

"Patent certantibus campi—manat undique cruor—salus una restat moribundis,

"Ecce chirurgus!"

No 18
19th Regiment
27

ON THE

USE OF CREASOTE

IN

SCORBUTIC CAMP DYSENTERY.

BY

JOHN BRAMSTON WILMOT, M.D.,

OF CAIUS COLLEGE, CAMBRIDGE;

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS.

"In desperate diseases, desperate remedies, energetically pursued, are the most efficacious."
Hippocr. Aphor. vi.

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PREFACE.

"Nursing,—even female nursing,—cannot, however, bring men in the last stage of dysentery to rally, and they die off in a very few days. Scorbutic dysentery is very prevalent amongst them."—*Morning Chronicle, Feb.* 3, 1855.

From "Our Own Correspondent."

Constantinople, Jan. 22.

"The surgeons appear to be entirely baffled by this chronic dysentery, which seems to have taken hold upon the constitutions of the men, and over which medicine has no power."—*Times, Feb.* 3, 1855.

From "Our Own Correspondent."

Scutari, Jan. 22.

The following pages comprise all the essential particulars of a paper that was read and discussed at the Royal Medical and Chirurgical Society, on the 13th of May, 1845. The Author not being a member of the Society, the paper was communicated by his friend Dr. Watson. It was not printed in their Transactions, but a slight notice appeared in the weekly periodicals.

The two passages quoted above, and the terrible lists of deaths from dysentery in the nominal returns from our Army-Hospitals, brought vividly to mind an idea that suggested itself at the time the paper was composed, namely, that the day might come when we should see a repetition of the fatal occurrences in the Peninsular war, where nearly 5000 men perished in less than three years from this fearful scourge of camps.

The Author's first intention, was to have forwarded the paper to Sir John Forbes; but since Sir J. has been induced to resign the task of forming a hospital in the East,

that idea is of course abandoned; and on further consideration, he has thought that if the treatment recommended should be considered worthy of trial, the communication should not be confined to the Authorities of the proposed convalescent hospital at Smyrna, where possibly the most desperate cases of dysentery might not be met with.

It is sometimes said that the members of our profession are jealous of any proposal to change the routine of their practice. The Author does not believe they are more impatient of novelties than men of other callings; but on the contrary, that, although they may be irritated by the pretensions of ignorant empirics, and teased by theoretical absurdities, they will listen with candour to suggestions that are founded on observation and experience.

The Author claims no peculiar merit for adopting a practice which required no extraordinary powers of ingenuity or invention, but he professes to have studied practically the nature and treatment of disease,—to weigh well his evidence before he is convinced,—to look with jealousy on remedies vaunted for particular complaints,—and to value the results of true inductive reasoning.

In the hope that some one of our fully occupied brethren in the army-hospitals may find leisure to glance at these pages, he publishes them with the assurance that nothing therein detailed is stated with bias or exaggeration.

In the most hopeless stages of scorbutic dysentery, when the mucous membrane was sphacelated and ejected along with putrid blood,—and in the obstinately chronic form of the disease, he is as convinced of the efficacy of the remedy he employed as he is of the protective power of vaccination,—the value of the stethoscope in diagnosis,—or the effects of anæsthetic agents.

In four out of five cases it will be remarked, that the administration of the creasote caused pain. Let no one be

deterred by this,—the subsequent relief was undeniable. In the case where gangræne had proceeded to the greatest extent, no pain was felt.

The remedy is simple: creasote, the "flesh-preserver," is unchangeable by time or climate; it is neither bulky nor expensive. Should one single human being, whose case has baffled the ordinary efforts to restore him, be rescued by the method described in these pages, the end of their publication will have been answered.

Before concluding these prefatory remarks, the Author ventures to hope, that while attention is drawn to the modern purifiers and disinfectants—chlorine and charcoal—the old-fashioned method of fumigating with vinegar dropped on a hot iron held under a bed, may still be remembered as one of the most grateful and valuable purifiers where putrid fever prevails.

J. B. W.

Tunbridge-Wells,
March, 1855.

ON THE USE OF CREASOTE INJECTIONS

IN

CAMP DYSENTERY.

I SHALL offer no apology for making use of a term not strictly applicable to the locality of the complaint I am about to describe, because our profession will at once understand that by "camp dysentery" I mean the epidemic form of the disease which has so often proved a deadly scourge among communities, and not the occasional cases of dysentery which, in this country at least, very rarely prove fatal in the hands of a skilful practitioner.

On the 3rd of October, 1844, Mr. Dakins, the intelligent medical officer of the Tunbridge Union-house at Pembury, requested me to visit the house with him, as a fatal dysentery was raging, which was rapidly spreading amongst the inmates.

The Union-house is admirably situated—high and dry, and well drained. It was not at this time crowded, the weather being fine, and the season of hopping affording employment to the casual labourers of both sexes. The days were bright and sunny, the atmosphere unclouded, but the air was keen and the nights cold. Dysentery was prevailing in the neighbouring villages, but not in general in the same fatal form which it had assumed within the walls of the Union-house. Although Mr. Dakins had attended several cases amongst the cottagers of Pembury, he had not lost one.

On my arrival I found that four cases had proved fatal. Two of those I saw were in a dying state; one of them an idiotic woman, the other a child who had been brought in a few days before, having suffered for the previous week from

pain and tenesmus, the dejections consisting of mucus and hard scybala. Soon after her admission she passed blood and mucus from the bowel, and was now lying prostrate and insensible, with cold and livid extremities, sunken abdomen, a dry brown tongue, the eyes turned upwards, the eyelids half-closed—symptoms sufficiently indicative of approaching death. She died that afternoon. The idiotic woman lived till the following day.

Those who were suffering from the disease in a less advanced stage were continually discharging from the bowels blood and shreds of mucous membrane, without a particle of fæcal matter. The stench of these dejections was almost insupportable; it was the stench of putrid animal matter, not of fæces. Vomiting was present in some cases, though not in the majority. The appetite was lost in all. There was no thirst; the tongue was not usually dry until the last stage; the pulse was feeble; the skin was harsh and dry, but not hot; the abdomen was neither tense nor painful on pressure, but the tormina and tenesmus were distressing. From the first onset there was extreme prostration of strength. The accompanying fever was slight; as the disease advanced it was attended with a low muttering delirium; and towards the close the patient fell into a half comatose state.

Only one had been rescued from the acute form of the disease; this was a man named Lee, about forty years of age. He was now emaciated, pale, and haggard; subject to occasional rigors; with feeble pulse, soreness of the bowels, loose motions now and then containing moss-like flocculi streaked with blood; in short, with all the symptoms of chronic dysentery with ulceration of the mucous membrane of the colon.

Fear pervaded the minds of all, and rumour had exaggerated the extent of the evil. With the exception of the child I have mentioned above, and two or three very old and decrepid women, the severe cases were in the male wards.

There was a man named Hickmott, about forty-five years of age, who had only been ill three or four days, but whose case was almost desperate, although the danger was not so

imminent as with the child. He had low delirium, or rather confusion, a brown dry tongue, and feeble pulse, and passed his putrid excretions of blood and shreds of membrane as he lay in his bed. He lived till the 6th, and I shall presently give an account of the appearances presented on examining his body. It would be presumptuous to say that any plan of treatment could have saved him, but I regret that the measures I was subsequently led to adopt had not suggested themselves in time to apply them in his case.

The remedies used had been principally calomel and opium, and astringent mixtures containing catechu, &c.

We agreed to give opium freely where the tenesmus was urgent, especially in the form of injection with starch; brandy and stimulants when required; beef-tea, porter, caudle, &c. There was nothing to induce us to bestow a second thought on bleeding, either general or local. Calomel seemed neither indicated by present symptoms nor recommended by past experience. The dietary of the sick was entirely at the discretion of the medical officer. We at once suggested to the Board of Guardians an improvement in the ordinary diet of those who had not yet been attacked, with a view to arrest the progress of the disease; to this they immediately assented.

I was not officially employed, and had only visited the house at the request of Mr. Dakins, to advise with him on the best course to be pursued.

A week after,—on the 10th October,—Mr. D. again called upon me, wishing me to visit the patients, and assist at the *post mortem* examination of two persons who had died of the complaint since my former visit. The first of these was the man Hickmott, who died on the 6th. The other was a girl æt. six, who was taken ill on the 7th, and died this morning, the 10th. And I proceed to describe the appearances noticed on dissection.

Case I.— —— Hickmott, æt. 45. Examined eighty hours after death. The body, remarkably well-formed, presented no external signs of putrefaction. The muscles were finely developed, and there was a considerable quantity of fat under the integuments. The general colour of the intes-

tines, when the abdomen was opened, was a dingy, dark red, especially pervading the cæcum and lower five feet of the ileum; the redness and putrid appearance gradually decreasing towards the jejunum, and in the other direction being shaded off to the further extremity of the arch of the colon. On opening the lower two feet of the ileum,—the intestine being thinner than natural,—the inner surface was seen to be injected with dark blood, which had exuded from many small points; and larger patches of ecchymosis were here and there deposited in the submucous tissue. The mucous membrane was scarcely to be found, the greater part had been carried away, leaving only a tracery-work like lace, or the fibrous skeleton of a leaf whose parenchyma has been destroyed by soaking in water. The ulceration which had destroyed this tunic had not penetrated into the subjacent tissues. The cæcum presented a different appearance. Instead of being unnaturally thin, its inner surface was embossed, and on these raised parts were ulcers, for the most part in a state of commencing cicatrisation. The ulcers did not extend beyond the cæcum, though the colon was reddened as far as the descending portion, from the blood having *run* in the submucous tissue; the colour gradually diminished in intensity as it approached the descending portion, which was natural both in colour and structure. The peritonæal coat was intact and transparent. The appendices epiploicæ were loaded with fat; and there did not appear to have been any absorption of this material. The liver was sound, and the gall-bladder distended with healthy bile.

In this case the ileum was more damaged than the colon, the reverse of what usually occurs in dysentery.

Case II.—A girl, æt. six. Examined twelve hours after death. Body moderately fat. On opening the abdomen, the only peculiarity that presented itself was the remarkable transparency of the small intestines. On handling the lower three inches of the colon, and the rectum, they felt thickened; the adjoining glands of the mesocolon were found to be reddened and enlarged. When these portions of the bowel were opened, their inner surface was found to be embossed and ulcerated all over. There was no infiltration

of blood. The sigmoid flexure, the descending, transverse, and ascending portions of the colon were healthy, and contained here and there a little pulpy fæces. On arriving at the cæcum, the adjoining mesenteric glands were again found to be enlarged, and the cæcum thickened. When opened, the ileo-cæcal valve was seen to be elevated, red, and ulcerated along its entire edge; while raised and hardened ridges, on which no ulcers had yet been formed, projected transversely into the gut. The lenticular glands of the cæcum were very distinct, and their open mouths were at the first glance mistaken for small ulcers. The small intestines and the rest of the abdominal viscera were quite healthy. The gall-bladder was half full of good bile.

The organic lesion in this case was confined to portions of the large intestine, and would scarcely appear sufficiently advanced to account for so rapidly fatal a termination, which seems to have been accelerated by fear and depressing causes.

Since my former visit on the 3rd, four fresh cases had occurred. One on the 5th, 6th, 7th, and 8th, respectively. One was the fatal case of this girl. One was a mild case. The two others were boys, in whom the disease assumed the malignant form. Both eventually recovered. On this day, the 10th, three fresh cases occurred; one was severe, but the other two were arrested before they went beyond a smart attack of diarrhœa with tenesmus. The improved diet seems to have checked the complaint, for out of five cases that subsequently occurred, only one, that of an insane man seized on the 12th, presented symptoms of intensity, and he recovered. The other four were women, attacked on the 16th, 19th, 22nd, and 23rd, who all escaped with simple diarrhœa.

Amongst the cases now under treatment, the most urgent in point of immediate danger was that of a fine stout man named Farleigh, æt. 51, who had been a soldier, and was in the receipt of a pension for a wound received at Corunna. He had been admitted into the house with a broken leg on the 16th Sept., and on the 1st of Oct. was attacked with dysentery. When I saw him on the 3rd he had frequent urgings to stool, and passed a great quantity of pure blood; but he had very little accompanying fever, nor did he com-

plain of much pain in the abdomen, excepting that which attended the straining. His tongue was moist and tolerably clean; there was a little nausea and a total loss of appetite. Although a witness to the fatal character of the disease, and well aware of the danger of his case, he presented a marked contrast to the rest of the patients, and betrayed no symptom of despondency or alarm. When I now saw him again on the 10th, a week of bodily suffering and perpetual drain had exhausted his frame and subdued his spirit. He could no longer command his nerves. His hand trembled when his pulse was felt, and his lips quivered when essaying to speak with unconcern of his perilous condition. Yet he responded as cheerily as he was able to the words of encouragement offered him. His pulse was feeble. His tongue still tolerably clean and moist. There was no great amount of vomiting, though his stomach loathed food, and had two or three times rejected the beef-tea. The stimulus of brandy afforded him, as well as the rest, a marked though temporary relief. I will not say that the laudanum injections had been of no service to this man; but although they had been steadily persevered in for a week, there was rather an increase than a diminution in the quantity of blood passed. To-day, for example, by one o'clock, he had had recourse to the bed-pan seven times; and he declared that during the past night the same thing had occurred more than twenty times. The evacuations which I saw consisted of blood with a quantity of shreddy matter, which there could be little doubt were portions of the lining membrane of the bowel. There was one clot of fresh bile held together by shreds, but no fæcal matter whatever. The smell was putrid in the extreme, fleshy, and gangrenous. I recommended hot turpentine to the abdomen,—a perseverance in the opiate injections—while he continued to take cordial and astringent medicines.

Oct. 11th. The Board of Guardians requested me to attend the house as long as the epidemic prevailed. In consultation with Mr. Dakins, it was agreed that the soldier Farleigh should have the hot turpentine application this evening (owing to circumstances it had not yet been applied);

that he should take decoction of bark, with compound tincture of bark, and sulphuric acid; and that a drachm of creasote in twelve ounces of thin starch or gruel should be thrown into the bowel. His state was so desperate, that unless some mitigation of his symptoms were speedily obtained, he must very shortly sink. I did not suggest the creasote empirically or without design. A consideration of the symptoms that attended this epidemic,—the character of the accompanying fever,—the inertness of remedies introduced by the stomach,—the little control hitherto exercised by opiates topically applied,—the local nature of the disease as shown by the post-mortem examinations yesterday,—the disposition to gangræne as well as ulceration,—and the antiseptic and stimulant qualities of creasote, of which I had often successfully availed myself in the treatment of indolent sloughing bed-sores in paralytic patients;—all these considerations determined me in having recourse to this preparation.

Had there been no such substance as creasote, I should have prescribed turpentine in the same form.

Oct. 12th. Farleigh was a trifle better. His pulse was rather firmer. The evacuations were less frequent, though still composed of blood, &c. The injection had caused a tingling sensation, but no pain. The hot turpentine had slightly reddened the abdomen.

Oct. 14th. Farleigh's appearance and pulse perceptibly improved. The injection and the hot turpentine had been used three nights. The bark and acid appearing to disagree with his stomach, the former mixture of laudanum and catechu had been substituted. This morning his bed-pan had been emptied; but he said there was yellow, loose motion in it, and very little blood. This was confirmed by the attendant. He had very little pain in the bowels. Not relishing his beef-tea, rice was substituted according to his wish. He had been very low yesterday, as had all the patients; and a glass of brandy was served round.

Oct. 16th. Farleigh much improved in appearance. Evacuations quite free from blood, loose, fæculent, with a fair proportion of bile. The abdomen was not painful, but

felt hard, as if loaded with fæces. Pulse firmer. Tongue slightly inclined to fur, which it had not been before.

Ordered some castor-oil. Continue the creasote injection at night, but omit the turpentine.

Oct. 18th. Better in every respect. He sleeps well, and has more relish for his rice. The castor-oil was not administered till yesterday. The first evacuations were highly offensive; contained a quantity of hard scybala, and were accompanied by a great discharge of flatus. He has now no pain whatever, but complained that the oil had griped him much. No blood nor shreds were passed. The abdomen is more supple, but still harder than natural. Tongue slightly furred in the centre. He complains of thirst for the first time. We omitted the astringent mixture to-day, and substituted a saline. To repeat the castor-oil, and the creasote once more.

The hot turpentine had been applied four times, and the creasote injection seven times, *i.e.* every night since the 11th.

Thus there had been very little blood passed since the 13th, and none at all since the morning of the 14th.

I ceased my attendance to-day, as all the severe cases were recovering, and the recent cases assumed a mitigated form.

Farleigh rapidly improved, and was quite convalescent on the 1st of November.

I will briefly refer to some of the other cases. In the case of the man Lee, whose symptoms I have described above as those of chronic dysentery with ulceration; the opium and starch had been sedulously introduced into the bowel since the 3rd of October. Other means had been resorted to, and such tonics as he could bear were administered; but he made not the slightest progress. On the 14th, I directed him to have the creasote injection. It was said to have caused him much pain, and at first to have increased the disturbance of the bowels; it was not repeated, and the starch and opium were continued. On the 18th he had considerably improved, and on the 27th he was discharged cured.

Three boys were suffering from the complaint in its

severer form. To one of them, whose case was the most unmanageable, I directed the creasote to be administered in half the quantity. His tongue was becoming dry and brown; his countenance and extremities were livid; he was feeble and stupid, and at night had low delirium. His dejections emitted the unmistakeable stench of gangræne. The creasote was administered once on the 16th of October; it caused him considerable pain, and seemed at first to increase the irritability of the bowels. From that time, however, a progressive improvement took place, and on the 3rd of November, he was discharged, cured.

The other cases recovered principally under the use of opiate injections.

Mr. Dakins had a patient in the village, a very stout woman, whose case, I have his own authority for saying, he considered desperate. He introduced the creasote in the form of a suppository, the bowel being so irritable that an enema could not be administered. He says it seemed to work a revolution in her system, for after the first irritation had subsided she rallied. The hæmorrhage ceased, the excretions returned to their natural state, and she rapidly recovered.

At this time I had occasion to meet a medical gentleman in a neighbouring village. On asking him if he had any bad cases of dysentery, he said there was a poor person's child, two years old, under his care, in which he could not check the bloody dejections, and that the child was sinking. I urged him to inject the creasote, which he did that day. He told me afterwards that the child screamed, and was in much pain for some time, but that the discharge of blood and shreds ceased, healthy evacuations were passed, and the child rallied and was doing well. On inquiry some time after, I learnt that this child subsequently fell into a low state, and died of some undefined chronic disease.

I have thus given a true and unadorned account of the cases treated with creasote. The numbers were but few. For the sake of illustration, though not of humanity, I could wish they were more nnmerous. Every one was successful; no death occurred after the practice was adopted: and let it

be remembered that, in order to test its efficacy, I purposely avoided directing it in any but the worst cases, where the ordinary remedies had been continued to the very verge of safety, and had proved ineffectual. I am as satisfied that these cases were saved by the plan, as I am morally convinced that some of those who died before it was adopted, would have been restored.

The number in the Union-house who were attacked by this epidemic was thirty-four;—seventeen males, seventeen females. The deaths were eight;—four males, four females. The cases were not all of equal severity. There were besides, four other inmates, who died with dysenteric symptoms; but as they were extremely decrepid and advanced in years, they sunk in the very earliest stage of the complaint, and could scarcely be returned as dying of dysentery.

The value of a generous diet is so well understood, that it would be superfluous to dwell on its efficacy in preventing and arresting the spread of such diseases. Where from want of this, or from other causes, such disease unfortunately shows itself, our attention must be directed to therapeutic agents.

No one who has watched the nature of an epidemic through a series of recurring visitations, can be ignorant how much the specific characters of the same complaint will vary at different periods. It is this variableness which calls for constant change in the treatment of complaints to which no change of designation is applied;—which brings discredit and oblivion on a plan or a remedy that was in one season successful, and which requires that those who undertake the cure of disease should be well grounded in the elements and general principles of their art. Impressed with this truth, which was enunciated by our oldest master, I still venture to draw the attention of those who have charge of the hospitals in the East, to the contents of this pamphlet; since, from all the accounts that have reached us, there is a marked similarity between the complaint which is victimizing our soldiers at Scutari, &c., and the complication of scurvy and dysentery herein described.

THE END.

DES

AMPUTATIONS

CONSÉCUTIVES A L'OSTÉOMYÉLITE,

DANS

LES FRACTURES DES MEMBRES

PAR ARMES A FEU.

DISCOURS

PRONONCÉS A L'ACADÉMIE IMPÉRIALE DE MÉDECINE,

le 1er, le 8 et le 15 mai 1860.

PAR

M. H. Bon LARREY.

PARIS

J.-B. BAILLIÈRE ET FILS

LIBRAIRES DE L'ACADÉMIE IMPÉRIALE DE MÉDECINE

RUE HAUTEFEUILLE, 19.

1860

Extrait du *Bulletin de l'Académie impériale de médecine.*

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DES AMPUTATIONS

CONSÉCUTIVES A L'OSTÉOMYÉLITE,

DANS LES FRACTURES DES MEMBRES

PAR ARMES A FEU.

Une question majeure de chirurgie, et plus spécialement de chirurgie militaire, question nouvelle ou renouvelée quant aux faits d'observation, mais neuve et inattendue pour leur interprétation pratique, a été soulevée dans la dernière séance de l'Académie, par l'un de ses plus honorables membres correspondants, M. le docteur Jules Roux, premier chirurgien en chef de la marine, à Toulon (1).

Il s'agit, pour le dire tout d'abord, de l'ostéomyélite, dans les plaies d'armes à feu des membres, et de la désarticulation consécutive substituée à l'amputation dans la continuité.

Les termes seuls qui résument, selon nous, cette importante communication, démontrent assez qu'elle ne pouvait être soumise, comme on l'avait cru, à une discussion immédiate ou improvisée. Elle exige donc un examen attentif et suivi, que je tâcherai, pour ma part, de développer dans les limites du sujet, tracées par M. Roux lui-même. Je reprendrai de point en point chacun des arguments de son discours, tel qu'il l'a prononcé devant l'Académie, ou de l'extrait de son mémoire, tel qu'il l'a publié dans un journal de médecine (2).

Notre honoré collègue, faisant d'abord allusion aux débats suscités principalement depuis la mémorable initiative de l'ancienne Académie de chirurgie (3), *sur l'amputation des membres à la suite des coups de feu*, indique, sans avoir besoin

(1) *Bulletin de l'Académie impériale de médecine*, 24 avril 1860.

(2) *L'Union médicale*, 26 avril 1860.

(3) *Prix de l'Académie royale de chirurgie*, t. III, 1786.

de les désigner, les travaux successivement entrepris à diverses époques, et les controverses des chirurgiens, soit dans leurs écrits ou d'après leurs leçons, soit devant les compagnies savantes, et, en dernier lieu, il y a déjà douze ans, au sein de cette Académie (1).

La communication de M. J. Roux, susceptible peut-être, comme il le pense, de raviver d'anciennes discussions, a trait plus particulièrement aux effets consécutifs de toute une série de plaies d'armes à feu, chez des blessés de la campagne d'Italie. Disons que ces blessés avaient été évacués secondairement sur les hôpitaux du Midi ou du centre de la France, comme ils avaient été primitivement évacués des ambulances sur les hôpitaux du Piémont et de la Lombardie.

Notre confrère de la marine présumant, avec raison, que l'histoire médico-chirurgicale de cette grande guerre serait faite un jour par le médecin en chef de l'armée, d'après les rapports officiels et les documents officieux de ses collaborateurs, a bien voulu m'offrir de mettre plus tard à ma disposition les précieux matériaux recueillis par lui-même ou à son hôpital. Il a bien voulu aussi, pour sa présente communication, faire appel à mes souvenirs, en pensant que je considérerais comme un devoir de lui répondre et de discuter ses opinions, sous cette garantie, que si je ne pouvais les adopter absolument, je n'en serais pas moins convaincu de leur valeur exceptionnelle et de leur autorité pratique.

M. Roux a dû circonscrire ses recherches dans le centre d'observation déjà vaste au milieu duquel il était placé. C'est à l'hôpital de la marine de Saint-Mandrier, sur les bords de la rade de Toulon, qu'il a vu plus de deux mille blessés, et près de trois mille fiévreux de notre armée. Les blessés observés par lui en aussi grand nombre, se trouvaient effectivement dans des conditions spéciales pour l'étude clinique des effets ou des accidents consécutifs des plaies d'armes à feu.

Ce n'était plus, comme nous l'avions vu sur le champ de bataille, aux ambulances ou dans les hôpitaux de premiers secours, les effets immédiats des projectiles, des lésions trauma-

(1) *Bulletin de l'Académie nationale de médecine*, juillet et août 1848.

tiques récentes, des plaies contuses à tous les degrés, des hémorrhagies primitives ou même consécutives, des dilacérations profondes ou étendues des parties molles, des fractures comminutives et compliquées des membres ou des articulations.

Ce n'étaient pas encore les résultats définitifs des anciennes blessures ou des opérations, comme on les remarque si bien aux Invalides, des cicatrices offrant les caractères les plus différentiels, intéressant tous les tissus, toutes les régions, avec des adhérences, des rétractions, des difformités ou des maladies secondaires entées sur ces diverses lésions, sans compter les nombreuses variétés d'amputations des membres, les formes distinctes des moignons et les effets mécaniques des moyens de prothèse.

C'était plutôt, comme j'avais pu l'observer au Val-de-Grâce (1), de 1855 à 1858, chez une multitude de blessés de la campagne de Crimée, des plaies anciennes, encore suppurantes ou fistuleuses, avec engorgement ou ulcération des parties molles, des abcès circonvoisins ou symptomatiques de diverses altérations des os, carie, nécrose, ostéomyélite, des cicatrices incomplètes ou détruites, des difformités encore récentes de la face et des indications d'autoplasties, des rétractions ou des déviations des membres, des fractures non ou mal consolidées, des amputations primitives ou consécutives imparfaitement guéries et nécessitant, soit de nouveaux moyens de traitement, soit des opérations ou des amputations secondaires, ou bien l'emploi d'appareils prothétiques; et, dans tous les cas, l'application des soins de la médecine et de l'hygiène aux complications générales et aux résultats inachevés des blessures soumises à cette chirurgie complémentaire.

Voilà, en effet, la question à laquelle se rattache comparativement la communication de M. J. Roux à l'Académie; elle est relative, comme il l'annonce lui-même, à la chirurgie secondaire et à un point limité de cette chirurgie, à la question *des amputations secondaires après les coups de feu.* C'est là, on ne saurait trop y insister, une question tellement

(1) *Compte rendu de la clinique chirurgicale de M. H. Larrey, par M. le docteur Gaujot, Moniteur des hôpitaux, de* 1857 *à* 1859.

grave, qu'elle exigerait une longue et minutieuse appréciation de toutes les circonstances qui peuvent tantôt confirmer, tantôt infirmer la doctrine chirurgicale de l'amputation faite longtemps après une blessure.

Et sans renouveler à ce propos d'interminables contestations sur les avantages et les inconvénients de l'amputation primitive et de l'amputation consécutive (1), je me contenterai de dire que, si l'on a bien examiné la plupart des causes de succès et d'insuccès, on n'a pas assez tenu compte, en général, des conditions mêmes dans lesquelles les chirurgiens opèrent.

Les chirurgiens militaires, par exemple, lorsqu'ils sont en campagne, n'agissent pas seulement dans un milieu différent de celui où se trouvent les chirurgiens civils; ils subissent encore, à l'égard des amputations, toutes les vicissitudes de la guerre, pendant ou après l'action, à la suite d'une victoire ou d'une défaite, avec ou sans les ressources qui peuvent assurer ou compromettre le salut des amputés, ressources telles que moyens de transports, installation des hôpitaux, approvisionnements de vivres et de médicaments, assistance ou privation des soins nécessaires, du nombre suffisant des officiers de santé, etc., sans rappeler les influences plus directes et non moins essentielles sur les résultats des amputations : la nature et les complications de la blessure, l'état individuel du blessé, l'opportunité de l'opération, le choix du moment, du lieu, de la méthode et du procédé même, le mode de faire par conséquent, le soin des pansements consécutifs et le traitement secondaire, tant médical et hygiénique que chirurgical proprement dit. Telles sont, en aperçu, les conjonctures si nombreuses qui doivent entrer en ligne de compte, lorsqu'il s'agit de comparer les résultats des amputations dans les blessures par armes de guerre.

Il faudrait pouvoir subordonner toujours les graves opérations aux éventualités dans lesquelles on doit les pratiquer, et avec la prévision de leurs avantages et de leurs inconvénients respectifs, selon les données de l'expérience ou de l'observation, et dans la limite des pouvoirs de la chirurgie.

M. J. Roux a si heureusement obtenu, pour sa part, tout

(1) *Prix de l'Académie royale de chirurgie*, etc.

ce qu'il pouvait obtenir, dans le vaste hôpital de Toulon et avec d'excellentes conditions sanitaires, que ses succès prodigieux, fussent-ils dus, en partie, aux probabilités du hasard, modifieront, s'ils ne la transforment peut-être, la manière de voir et d'agir de beaucoup de chirurgiens. Ne nous hâtons point cependant de rien préjuger d'avance à cet égard, d'autant que nous aurons de sérieuses restrictions à faire, dans le cours de cette discussion, sur la valeur des amputations dites secondaires, au point de vue de leur opportunité.

La chirurgie conservatrice est, du reste, largement entrée dans cette voie salutaire, depuis une vingtaine d'années surtout, et elle a heureusement introduit ses principes dans la pratique de l'armée, non-seulement, par exemple, pour différer ou éloigner les amputations qui ne paraissent pas primitivement indispensables, mais encore pour y substituer souvent les ressources les plus variées de la thérapeutique chirurgicale.

J'ai tâché aussi, de mon côté, de préconiser et de recommander ces principes à l'armée d'Italie, où la plus large part a été faite aux amputations *primitives* et même aux amputations *immédiates* (car j'établis une différence facile à saisir entre les deux acceptions de mots). Oui, cette chirurgie a été décisive, en excluant l'expectation toutes les fois que la gravité des blessures semblait l'exiger. J'avais rappelé à mes camarades de l'armée les préceptes des anciens maîtres de la chirurgie militaire, Ledran, Fabre, Boucher, Faure lui-même, Wisemann, J. Bell, Guthrie et Larrey (1) plus particulièrement, sur la nécessité des amputations primitives dans les cas d'arrachement total ou de séparation à peu près complète, de mutilation profonde ou d'écrasement des extrémités, par l'action du boulet ou par des éclats de bombes et d'obus, dans les fracas des grandes articulations, dans les fractures comminutives, compliquées de dilacération des parties molles, de pertes de substance considérable ou de lésion simultanée des vaisseaux et des nerfs.

(1) *Mémoire sur les amputations des membres à la suite des coups de feu*, 1797.

Mais, autant j'avais rappelé ces préceptes, autant j'avais insisté partout et auprès de tous sur l'opportunité de différer les amputations et de tenter la conservation des membres, dans tous les cas moins graves que ceux-là, et lorsque les ressources dont nous pouvions disposer permettaient d'arrêter sur-le-champ les hémorrhagies, d'immobiliser assez bien les fractures, de combattre enfin par des opérations simples, telles que des débridements méthodiques, des applications réfrigérantes et des pansements convenables, les accidents traumatiques souvent les plus graves. C'était réserver ainsi l'opportunité des amputations consécutives pour les cas de gangrène traumatique, de pourriture d'hôpital, de suppuration intarrissable, provenant ou non de l'ostéomyélite, des complications enfin incurables par les ressources ordinaires de la thérapeutique.

Et, à l'appui de ce que j'avance, je n'en citerai qu'une preuve bien évidente, dont M. J. Roux lui-même m'a donné connaissance. Il a observé, à Saint-Mandrier, quarante et une fractures du fémur par armes à feu, en voie de guérison ou déjà consolidées, provenant de divers hôpitaux de l'armée d'Italie. Cinq cas seulement, sur ce nombre, ont nécessité l'amputation consécutive de la cuisse. N'est-ce pas là un résultat surprenant, contraire aux assertions de Ribes (1), si l'on devait comparer entre eux des faits trop différents les uns des autres pour être jugés de même ?

Revenons à la communication spéciale de M. J. Roux.

L'hôpital de la marine de Toulon, ayant reçu, à lui seul, deux cents hommes amputés primitivement, soit sur le terrain et aux ambulances, soit dans les hôpitaux les plus rapprochés, a fourni encore à notre confrère l'occasion de pratiquer vingt-six amputations secondaires, ou consécutives, et il présume qu'elles auront été dans une proportion égale partout ailleurs. Je suis porté à l'admettre, d'autant plus que ce résultat s'accorde généralement avec ce qui a été fait à l'armée après la guerre.

(1) *Mémoires et observations d'anatomie, de physiologie, de pathologie et de chirurgie*, t. II, 1841.

Ce que M. Roux a vu dans l'hôpital Saint-Mandrier, je l'ai remarqué, à peu près aussi, en inspectant la plupart des hôpitaux réguliers ou improvisés de l'Italie, et ils étaient nombreux.

De telles sources d'observations, unies à tous les rapports et à tous les documents qui m'ont été transmis, avec autant d'exactitude que d'obligeance, par les médecins en chef de ces hôpitaux, par ceux des ambulances et par ceux des corps, me permettront bien d'apprécier largement les avantages de la chirurgie conservatrice pour la campagne d'Italie. Et si j'ajoute, à dessein, pour la campagne d'Italie, c'est qu'elle nous a offert les conditions les plus favorables les plus exceptionnelles à l'application de ce principe. La guerre avait lieu dans un pays allié, promptement accessible par diverses voies de communication, pourvu de toutes les ressources de l'assistance hospitalière, personnel nombreux de médecins civils réunis aux médecins militaires, organisation complète de grands établissements, fourniture facile d'un matériel considérable et approvisionnements de toutes sortes.

Dans des conditions si heureuses, il y avait lieu d'espérer beaucoup des résultats de l'expectation, non pas inactive ou impuissante, mais essentiellement chirurgicale au contraire, pour éviter, par tous les moyens possibles, les amputations qui n'étaient point immédiatement indispensables, ou qui semblaient du moins susceptibles d'être différées sans danger. M. Roux en a profité, et il entrevoit, dans l'amputation secondaire ou consécutive, envisagée à un point de vue général, des avantages qui sont déjà démontrés pour certaines mutilations des membres, et notamment pour les fractures comminutives et compliquées, par armes à feu, de la partie supérieure du fémur.

Le rapport (1) que j'ai eu l'honneur d'offrir à l'Académie, sur un excellent mémoire de M. Legouest, démontre, par exemple, l'incontestable avantage de la désarticulation consécutive de la cuisse sur la désarticulation primitive pour des

(1) *De la désarticulation coxo-fémorale, au point de vue de la chirurgie d'armée.* (Extrait des *Mémoires de la Société de chirurgie*, t. V, 1860.)

coups de feu, et quatre des six observations communiquées depuis par M. J. Roux à l'Institut, confirment pleinement cette démonstration (1). Mais ce principe, que je crois à peu près absolu pour la désarticulation coxo-fémorale, ne saurait être généralisé pour les principales amputations, sans porter atteinte aux préceptes de l'expérience des temps passés, et sans trouver de puissantes contradictions dans les résultats de la pratique contemporaine.

Les plus frappants, quoique les plus ignorés encore, sont les relevés statistiques de toutes les amputations faites dans la campagne de Crimée, attestant, pour cette campagne du moins, les avantages des amputations primitives sur les amputations consécutives, dans l'articulation radio-carpienne et dans l'articulation tibio-tarsienne, ainsi que des amputations partielles du pied, et des amputations dans la continuité de la jambe. J'en présenterais maintenant un tableau numérique à l'Académie, si je ne craignais d'abuser de sa bienveillante attention, en dehors de la question relative aux blessés de l'armée d'Italie, et si l'intéressante lettre de M. Legouest (2), lue à l'ouverture de cette séance, n'était précisément basée sur des nombres provenant de la même source, et exposant des résultats d'amputations faites en Crimée ou à Constantinople.

Ces relevés statistiques, établis avec un soin persévérant et consciencieux par M. le docteur Chenu (3), médecin principal au Val-de-Grâce, et à l'aide des documents les plus complets, les plus authentiques ; ces relevés, disons-nous, seront sans doute bien des fois différents de ceux dont il a déjà entrepris le travail pour la campagne d'Italie; mais ils s'expliqueront aussi bien pour les esprits dégagés de préventions, à l'égard de toutes les causes qui font varier les résultats de la chirurgie militaire.

En effet, et que l'Académie me le permette, si l'on reporte sa pensée vers les circonstances dans lesquelles s'est accomplie,

(1) *Compte-rendu de l'Académie des sciences*, 16 avril 1860.

(2) Lettre à l'Académie de médecine.

(3) La statistique générale des amputations de la campagne de Crimée, sera probablement publiée, par les soins du ministère de la guerre, d'après la proposition du Conseil de santé des armées.

pour l'armée française, la longue expédition de Crimée : navigation pénible, fatigues de la guerre, privation de ressources alliées, insuffisance ou difficulté des approvisionnements, embarras ou empêchement des évacuations, intempéries du climat et par-dessus tout, le désastre des épidémies, de scorbut tout d'abord, de choléra ensuite, de dysenterie et de typhus, de pourriture d'hôpital enfin, on comprendra sans peine pourquoi certaines séries d'amputations primitives ont eu alors plus de chances de succès que les amputations consécutives qui, elles-mêmes d'ailleurs, ont subi également les fatales nécessités au milieu desquelles il avait fallu opérer.

Songeons au contraire à ce que fut pour nous la rapide et brillante campagne d'Italie, avec une armée d'élite, pleine de force, d'énergie, et vaillamment commandée par celui qui nous témoignait, chaque jour, la plus vive sollicitude pour les blessés; avec un corps d'officiers de santé dont le nombre, quoique insuffisant, se multipliait par l'émulation du dévouement et du courage; au milieu d'un pays allié qui nous offrait tous les secours, toutes les ressources nécessaires pour élargir l'installation des ambulances et des hôpitaux, pour organiser les transports et les évacuations, pour effectuer enfin la dissémination des troupes; et nous reconnaîtrons combien d'aussi heureuses influences devaient être favorables aux opérations de la chirurgie. Car telle avait été, dès notre départ jusqu'au retour, ma préoccupation constante, comme médecin en chef de l'armée, vis-à-vis de l'intendant général, et comme chirurgien de l'Empereur, auprès de Sa Majesté; c'était de prévenir, par tous les moyens possibles, l'encombrement des hôpitaux, en multipliant leur nombre sur les principaux points (il y a eu vingt-trois hôpitaux à Milan et trente-cinq à Brescia); c'était d'assurer le service constant et régulier des évacuations, de faire aérer les locaux hospitaliers, d'espacer les lits et d'installer ou de préparer des tentes partout où besoin serait, afin d'éloigner les épidémies toujours menaçantes, au milieu de la multitude des troupes, des marches continues, et sous les effets, non-seulement d'un climat chaud, mais de sa température la plus élevée.

Grâce surtout à de plus hautes interventions qu'il ne m'appartient pas de faire prévaloir ici, le résultat des mesures sanitaires a dépassé toutes les prévisions, et, en préservant l'armée des maladies épidémiques, il a nécessairement réagi beaucoup sur les conséquences des blessures et des amputations, en faveur de la chirurgie conservatrice.

Telles sont les réflexions qu'il me paraissait utile d'exposer brièvement, pour mieux faire connaître et discuter les faits observés à Toulon et soumis par notre honorable collègue au jugement de l'Académie.

M. J. Roux, examinant, à son point de vue, les accidents bien connus des blessures par armes à feu, soit comme accidents primitifs, soit comme accidents consécutifs, en forme deux groupes, le premier *physique*, c'est le traumatisme local proprement dit, appartenant à la chirurgie primitive; le second, *vital*, ou l'inflammation symptomatique et ses conséquences dependant de la chirurgie, dite *secondaire*, et qui fixe toute son attention. Admettons que l'on puisse séparer les deux choses, malgré leur connexion intime, et suivons notre confrère dans l'exposé de ses propositions.

La pensée fondamentale émise et soutenue par lui, c'est qu'à la suite des coups de feu, l'inflammation traumatique se développant dans les os, comme dans les parties molles, constitue ce que l'on appelle l'ostéomyélite. Cette complication grave de la blessure déjà bien décrite, quoiqu'à un point de vue différent, et M. Roux l'indique, est pour lui fatalement inséparable de toute lésion osseuse, « lorsque sur-
» tout le tissu spongieux des os larges et courts, les extrémi-
» tés articulaires et le canal médullaire des os longs ont été
» entamés par un projectile. »

Sans préjuger d'avance si cette remarque n'est pas formulée d'une manière trop absolue, rappelons qu'elle n'a pas échappé à l'attention des observateurs qui ont décrit l'inflammation du tissu médullaire des os longs, soit à propos de l'ostéite, de l'exostose, de la carie, de la nécrose ou de l'ostéomyélite proprement dite, comme Troja, Weidmann, Macdonald, Ribes, Gerdy, Rognetta, MM. Flourens, Cruveilhier, Verneuil,

Foucher; soit plus spécialement à la suite des amputations, comme Dubrueil, Desruelles, Blandin, MM. Reynaud, Tharsile Valette, d'autres encore, et enfin plus particulièrement, M. Chassaignac (1), qui a bien étudié l'ostéomyélite traumatique, indépendamment même des amputations.

Pouvons-nous admettre que toute lésion des os par un coup de feu, et principalement, selon un terme d'autrefois, toute entamure profonde du tissu spongieux par un projectile, soit nécessairement suivie d'ostéomyélite, comme le veut M. Roux? Non, assurément, et en y réfléchissant bien, il ne saurait persister lui-même dans son opinion. Trop de faits témoignent du contraire, et tous les chirurgiens en ont observé; à moins de supposer qu'ils n'aient pas su voir l'ostéomyolite, de même qu'à leur tour, ils pourraient reprocher à notre confrère de la voir beaucoup trop. Ne savons-nous pas en effet que, s'il est un tissu souvent inerte et presque insensible au choc et à la pénétration des projectiles d'armes à feu', c'est précisément le tissu spongieux des os longs, qui se laisse entamer, creuser, perforer de part en part, en supportant même impunément la présence et le contact fixe ou prolongé des balles, et plus particulièrement des balles sphériques ou d'ancien calibre. Tous les ouvrages de chirurgie militaire en fournissent des exemples. Il suffit, pour s'en convaincre, de parcourir les livres de Ravaton (2), de Percy (3), de Larrey (4), d'Hennen (5), de Ballingall (6), de Guthrie (7), et de bien d'autres, sans parler même des nombreux traités des plaies d'armes à feu où abondent les faits de ce genre.

J'ai vu enfin, pour ma part, et fait connaître, dans l'occasion, des preuves irrécusables de l'innocuité complète de la

(1) *Gazette médicale de Paris*, 1854.

(2) *Chirurgie d'armée*, ou *Traité des plaies*, etc., 1768.

(3) *Manuel du chirurgien d'armée*, 1792.

(4) *Mémoires de chirurgie militaire*, 1812-1817; et *Clinique chirurgicale des camps et hôpitaux militaires*, 1829.

(5) *Principles of military surgery*, 1820.

(6) *Outlines on military surgery*, 1844.

(7) *Commentaries on the surgery, of the war*, 1855.

fixité ou de l'enclavement des balles dans le tissu spongieux des os, non-seulement depuis des blessures récentes, mais encore depuis les blessures les plus anciennes. Je n'en citerai que deux ou trois exemples choisis entre bien d'autres, et qui, en éloignant toute supposition d'ostéomyélite préjudiciable aux blessés, démontrent les bienfaits de la chirurgie conservatrice.

Un soldat de l'armée du Rhin avait reçu, pendant cette campagne, un coup de feu à l'épaule gauche; la balle ayant pénétré profondément dans les tissus, y resta cachée, sans empêcher la plaie extérieure de se cicatriser comme une plaie simple. Le blessé parvint à une prompte guérison, et, trente-six ans après, il fit, dans Paris, une chute violente sur la même épaule; des accidents phlegmoneux survinrent, et le pus ayant fusé profondément, pénétra dans l'articulation. Mon père dut pratiquer l'amputation scapulo-humérale, et, à l'autopsie du membre, nous trouvâmes la balle enclavée, mais devenue mobile, comme un grelot, dans l'épaisseur de la tête de l'humérus, où elle s'était creusé une cavité, en permettant à l'ouverture osseuse de se rétrécir, sans avoir laissé trace d'aucune autre lésion. L'amputé guéri a prolongé son existence aux Invalides (1). J'ai présenté autrefois, à la Société anatomique, cette pièce doublement digne d'intérêt pour la question qui nous occupe aujourd'hui.

Un soldat de l'armée d'Égypte avait été atteint, au siége de Saint-Jean-d'Acre, par une balle qui pénétra dans la région supérieure de la hanche gauche, en fracturant le col du fémur à sa base. Le chirurgien en chef, au lieu de désarticuler la cuisse, tenta la conservation du membre, y réussit au delà de son attente, et fit évacuer le blessé sur France, aussitôt après sa guérison. Celui-ci se retira en Belgique, et mourut, une trentaine d'années après, à Bruxelles. M. Seutin rechercha et voulut bien donner à mon père la pièce anatomique que j'ai déposée plus tard au Musée du Val-de-Grâce, et présentée à la Société de chirurgie (2). Cette pièce fait voir une

(1) D.-J. Larrey, *Clinique chirurgicale*, atlas du t. V, 1836.

(2) *Bulletin de la Société de chirurgie*, 21 novembre 1855.

balle fortement enclavée à la base de la face antérieure du grand trochanter, sans autre trace d'altération du fémur qu'une ankylose complète dans l'attitude la plus régulière du membre. Ce fait seul pourrait nous suggérer, si le temps le permettait, bien des remarques sur la question complexe soulevée devant l'Académie.

Il serait facile de citer d'autres exemples de l'innocuité absolue de l'action des projectiles sur les os, tels que des balles enclavées aussi dans l'épaisseur des condyles du fémur ou des tubérosités du tibia, comme dans les parois du crâne ou du bassin, si des faits de ce genre n'avaient été observés par bien d'autres que nous, et par M. Jules Roux aussi, je le suppose, sans avoir besoin d'une plus longue démonstration.

Le canal médullaire des os longs ne semble pas lui-même absolument condamné à l'ostéomyélite par le passage ou le séjour prolongé des projectiles d'armes à feu dans sa cavité. J'en ai communiqué un cas remarquable de guérison à la Société de chirurgie, de la part de notre célèbre collègue M. Clot-Bey (1). Il s'agissait d'une balle qui, ayant pénétré dans le canal médullaire du tibia par la partie supérieure, séjourna ensuite dans la cavité de l'os pendant quatre mois, et qui, étant enfin descendue à la partie inférieure, en fut extraite, sans accidents, par la trépanation.

Ces réserves faites à l'égard de la première proposition émise par M. J. Roux, reconnaissons qu'il a observé l'ostéomyélite traumatique mieux que personne, sans doute, et avec l'autorité de sa grande pratique. Il l'a vue d'abord locale, s'étendre et envahir successivement la totalité de l'os, en suivant les phases de l'inflammation des parties molles. Mais le peu de temps qui lui était donné pour faire son intéressante communication à l'Académie, ne lui a pas permis d'exposer au moins les principaux symptômes de cette grave complication des plaies d'armes à feu. Les chirurgiens le regretteront d'autant plus qu'il s'agissait ici d'une démonstration péremptoire, de l'exposé d'un fait, sinon nouveau, du moins nou-

(1) *Bulletin de la Société de chirurgie*, 22 décembre 1858.

vellement remarqué dans des circonstances aussi singulières qu'exceptionnelles. Mais nous espérons bien que M. Roux suppléera, par la publication complète de ses observations, au simple énoncé qu'il a été obligé de restreindre encore sur cet important sujet.

Distinguant trois degrés ou périodes dans l'ostéomyélite des membres, à savoir : 1° d'hypérémie ou de résolution; 2° de ramollissement ou d'amputation; 3° de suppuration ou de mort, il a dû renoncer aussi à nous faire connaître (dans sa communication) et même à préciser les caractères anatomiques de ces trois degrés, assez nettement pour nous permettre de ne pas confondre d'abord avec l'infection purulente le troisième degré de l'ostéomyélite, et d'appliquer les signes propres à chacune des périodes aux conséquences que notre confrère en tire, et aux indications qui en résultent, selon sa manière de voir.

Mais, à défaut d'un exposé nosologique, il nous a présenté, comme à plusieurs de nos collègues, de très remarquables pièces d'anatomie pathologique tendant à confirmer la justesse de ses observations, d'après les divers degrés de l'ostéomyélite. (Il m'a montré de plus un album fort curieux de dessins relatifs à son sujet.) Reste à savoir si d'autres yeux que les siens ne verront pas là des altérations différentes quelquefois de celles de l'inflammation médullaire des os, telles que l'ostéite et l'exostose, la carie et surtout la nécrose, avec ses variétés de forme et ses effets d'élimination réparatrice.

M. Roux s'est donc contenté, comme il le dit, de l'expression la plus générale des faits.

La première période, celle d'hypérémie ou de résolution, qu'il distingue à un état de congestion *autour de la plaie osseuse, qui doit toujours suppurer*, est le plus souvent suivie de la guérison du blessé. Je ne comprends pas bien la formule de cette proposition, car, s'il n'existe que de l'hypérémie dans le tissu osseux intéressé, comment se fait-il que, dans le même état, la plaie osseuse doive toujours suppurer? S'il n'y a pas de contradiction dans le fait et dans ses conséquences, il y a

sans doute un défaut de précision dans les termes employés. J'en demande pardon à notre honorable confrère; mais, en acceptant même sa proposition telle qu'il l'a établie, on ne saurait admettre que *la plaie osseuse* doive *toujours suppurer*. La suppuration des os est un phénomène assurément bien avéré, comme le démontrent surtout les récentes recherches de Gerdy, de MM. Cruveilhier, Nélaton et d'autres; mais il s'agit plus alors de l'ostéite suppurante, de la carie des tubercules, que de la suppuration traumatique des os, comme résultat constant et exclusif de l'ostéomyélite. Celle des amputés avait été déjà décrite par M. Tharsile Valette (1).

La seconde période de l'ostéomyélite ou de ramollissement est, pour M. J. Roux, la période d'amputation, *coïncidant avec un état pathologique spécial de la moelle*, qu'il ne décrit point, mais qui entraîne, selon lui, la plus fréquente nécessité de l'extirpation des membres. Une proposition aussi grave que celle-là, si décisive qu'elle semble au premier abord, mérite d'être examinée avec une sérieuse attention, et nous fait regretter encore que notre collègue n'ait pu donner lecture des développements de son importante communication verbale à l'Académie.

L'état pathologique spécial de la moelle ne peut-il, avant tout, exister à un degré qui le rapproche de la première période, en conservant les chances favorables à la résolution? Comment reconnaître, à coup sûr, une ligne de démarcation précise entre ces deux degrés de rapprochement? Et si l'altération médullaire semble assez avancée, faut-il n'envisager qu'elle seule, sans tenir compte de l'intégrité du canal osseux? Si même le canal osseux paraît atteint, sans que les parties molles soient encore intéressées dans la blessure, ne peut-on espérer quelquefois la guérison, ou du moins différer davantage d'amputer le membre? Voilà sommairement les questions principales que je crois devoir soumettre à notre savant confrère, moins comme des objections absolues à ses idées arrêtées sur cette seconde période de l'ostéomyélite, que

(1) *Mémoires de médecine militaire*, t. XVI, 2e série, 1855.

comme des réserves nécessaires à l'adoption d'un principe trop absolu.

La troisième période, dite par M. Roux période de suppuration ou de mort, lui paraît devoir entraîner ordinairement cette funeste terminaison, parce qu'elle est, selon lui, en rapport avec la purulence la plus étendue. On acceptera plus volontiers les conséquences de cette proposition, si son principe s'applique notamment à la persistance ou à la manifestation d'une phlegmasie aiguë, intense, envahissant à la fois les parties molles et les parties dures, avec complication de symptômes généraux et de réaction grave, ou s'il ne s'agit point de résorption purulente; mais, si l'ostéomyélite suppurée se borne à l'os primitivement lésé, si la forme de l'inflammation est chronique, exempte d'accidents consécutifs autres que celui-là, faudra-t-il, dans cette condition bien définie, en venir de même à sacrifier le membre? J'hésiterais encore, pour ma part, à prendre ce parti, et je crois que beaucoup de chirurgiens s'abstiendront comme moi, sauf à recourir plus tardivement à cette dernière extrémité de l'art, s'ils ne peuvent rien espérer encore des puissantes ressources de la nature.

La suppuration, sinon totale, du moins partielle, du canal médullaire d'un os long n'est-elle donc point susceptible de diminuer, de se tarir ou de s'absorber, lorsque les forces vitales et nutritives du membre ne sont pas abolies et lorsque des soins bien dirigés, des pansements méthodiques, la position déclive, peuvent favoriser l'écoulement ou l'absorption nécessaire du pus, et la dessiccation ou la réparation de la surface du canal médullaire, sans entraîner même à la suite un travail de nécrose? N'a-t-on pas vu de plus, dans beaucoup de cas de suppuration intérieure des os longs, cette nécrose invaginée se produire, avec élimination spontanée ou artificielle d'un séquestre représentant quelquefois la totalité de la diaphyse osseuse, et ensuite la guérison complète? Les traités classiques de la nécrose, et celui de Weidmann (1) spécialement, en fournissent des preuves très remarquables. Le

(1) *De necrosi ossium*, 1743.

digne président de cette Académie et la plupart des chirurgiens y siégeant pourraient en citer des exemples.

Hors ces conditions salutaires que j'ai cru devoir rappeler à notre honorable collègue, nous admettrons avec lui la nécessité de l'amputation consécutive du membre, si l'extraction de l'os nécrosé ou la résection de l'articulation malade reste insuffisante ou impraticable, et alors surtout, comme il le reconnaît lui-même, « que la vie du malade est prochainement compromise. » Sa proposition, réduite à ces derniers termes, nous paraît devoir obtenir l'assentiment de tous les chirurgiens.

M. J. Roux reproduit maintenant, pour la modifier d'après sa manière de voir, une grave question de chirurgie militaire, érigée en principe depuis le siècle dernier, et longuement reproduite par Guthrie (1) dans un traité *ex professo*, à savoir que, dans les fractures comminutives et compliquées des membres par des coups de feu, les grandes opérations, telles que la résection plus ou moins étendue, l'amputation dans la continuité ou dans la contiguïté, ou bien la désarticulation, doivent être pratiquées selon le point du membre frappé. Il rappelle que ce précepte, établi notamment pour les amputations du bras et de la cuisse, est applicable aux amputations secondaires comme aux amputations primitives.

Soit; mais, avant d'aller plus loin, que l'on nous permette de nous entendre sur la dénomination d'amputation *secondaire*. Elle signifie, pour M. J. Roux, ce que la plupart des chirurgiens comprennent sous le nom d'amputation consécutive, ou pratiquée seulement après quelques jours de la blessure, jusqu'à une époque plus ou moins avancée ou indéfinie des accidents traumatiques, tandis que l'amputation *secondaire* devrait s'entendre plus rigoureusement, selon nous, du moins, d'une seconde amputation du même membre, autrement dit de l'amputation du moignon.

Les fractures compliquées par armes à feu ont assez souvent nécessité, à deux reprises, cette ressource extrême, et, pour le dire, par occasion, notre confrère aurait trouvé dans

(1) *On gun-shot wounds of the extremities*, 1815.

certains faits de ce genre, et peut-être dans quelques-uns des siens, des arguments à l'appui de la doctrine qu'il professe, et que nous aborderons tout à l'heure. J'en appelle particulièrement pour ces deux questions, de la gravité des fractures et du choix des amputations, aux recherches spéciales de nos savants collègues MM. Malgaigne (1) et Sédillot (2).

Suivons jusque-là M. J. Roux dans l'exposé de ses opinions sur l'ostéomyélite, en admettant avec lui que la blessure d'un membre par armes à feu soit l'*accident* susceptible de nécessiter, pendant les quarante ou soixante premières heures, l'amputation primitive, de même que la réaction inflammatoire généralisée constitue l'état symptomatique, ou la *maladie*, pouvant entraîner la conséquence de l'amputation *secondaire*, c'est-à-dire consécutive. Le chirurgien en chef de l'hôpital Saint-Mandrier, dans ce qu'il appelle la maladie, reconnaît avec raison deux phases distinctes. Il nomme la première *phlegmoneuse*, pouvant, comme il l'indique, se prolonger pendant plusieurs semaines, avec tendance à se généraliser dans les parties molles, en restant localisée dans l'os. C'est l'inflammation aiguë proprement dite, y compris la fièvre traumatique des auteurs, décrite par Larrey (3) entre autres.

La seconde phase de cet état inflammatoire c'est, pour M. Roux, l'ostéomyélite, susceptible de durer plusieurs mois, une année même, dans des conditions inverses, à savoir que la phlegmasie se généralise dans l'os, et devient locale dans les parties molles, en raison de la différence de texture et de vitalité de chaque tissu. Cette altération particulière du tissu osseux a été, avons-nous déjà dit, l'objet de recherches spéciales fort intéressantes de la part de plusieurs observateurs, dont notre honorable confrère connaît aussi bien que nous les travaux, et auxquels il a fait, du reste, allusion dans son exposé devant l'Académie.

(1) *Traité des fractures et des luxations*, 1847.

(2) *Avantages et inconvénients des amputations dans la continuité, et des amputations dans la contiguïté des membres.* Thèse de concours, 1836.

(3) *Clinique chirurgicale*, t. I, 1829.

Il pense que, dans l'état de phlegmon du membre, l'amputation secondaire (ou consécutive) est toujours commandée principalement par la lésion des parties molles. Je serais loin de me déclarer partisan de cette doctrine, sans faire auparavant la réserve de tous les moyens propres à combattre les accidents inflammatoires, à l'état aigu ou chronique, et sans faire aussi la part de l'insuffisance ou de l'inutilité absolue de ces moyens divers ou de ces ressources d'ailleurs nombreuses.

Une amputation consécutive ou bien, si l'on veut, secondaire, pratiquée ainsi durant la période aiguë des accidents phlegmoneux serait, dans ma conviction, plutôt faite pour aggraver la situation du blessé, que pour assurer la conservation de sa vie; elle augmenterait l'intensité de la fièvre traumatique, avec imminence de complications locales dans le moignon et de réaction générale ou de résorption purulente. Mais nous devons supposer que M. Roux ferait, à cet égard, les mêmes réserves que nous, ou du moins des exceptions à la règle posée par lui.

Cependant il n'hésite pas à proposer l'amputation secondaire ou consécutive, dans la seconde phase, ou d'ostéomyélite, par le fait de la prédominance de la lésion osseuse. J'ai discuté cette opinion déjà, et je n'y reviendrai plus tard, que si le temps ou l'Académie me le permet. J'aimerais mieux encore en laisser le soin à quelques-uns de nos honorables collègues, dont la parole a toujours une si légitime autorité.

Ici se présente une nouvelle question fort grave, soulevée par M. J. Roux, avec la raison des succès les plus surprenants. Il s'agit du siége même de l'amputation consécutive ou du lieu précis sur lequel il convient de la pratiquer, dans la phase phlegmoneuse, et plus encore dans l'état d'ostéomyélite. Si on opère dans la continuité du membre ou de l'os, et à distance variable au-dessus de la lésion traumatique, d'après les indications habituelles, on risque de trouver l'os malade ou enflammé, au delà du point où sa section a été faite par la scie, et d'aggraver peut-être les accidents auxquels on a voulu remédier, ou bien d'en provoquer de nouveaux; telle est du moins la crainte qu'a exprimée notre confrère, en se fondant sur différents faits d'observation

clinique. Il nous a montré d'ailleurs des pièces anatomiques fort intéressantes tendant à justifier ses appréhensions, jusqu'à un certain point, mais non, à beaucoup près, d'une manière aussi absolue, pour nous, qu'il a voulu l'établir, eu égard aux conséquences opératoires.

D'après cette crainte, en effet, et pour assurer plus de chances de succès à l'amputation consécutive, M. Roux n'hésite pas à s'écarter, comme il le déclare, *des préceptes les plus classiques*, en exagérant le grand principe qui *prescrit d'enlever le mal en totalité.* « Il faut donc, ajoute-t-il, presque » toujours pratiquer la désarticulation de l'os atteint d'ostéo- » myélite. » Une telle doctrine, si elle pouvait être adoptée sans contrôle, deviendrait, pour ainsi dire, la chirurgie révolutionnaire des amputations. Autant vaudrait, selon nous, assimiler l'ostéomyélite à l'ostéosarcome, c'est-à-dire au cancer des os réclamant le sacrifice d'un membre.

Et, à l'appui de cette grave proposition, M. J. Roux cite d'abord les insuccès des premières amputations consécutives qu'il eut à faire à l'hôpital Saint-Mandrier, avec ses collaborateurs imbus, comme lui, dit-il, des idées ayant cours dans la science, sur l'ostéomyélite. Il indique ensuite huit grandes opérations secondaires (ou consécutives), dont quatre amputations de cuisse dans la continuité, deux résections de la tête de l'humérus, une du tiers supérieur du péroné et une trépanation de l'os iliaque, en ajoutant que, sur les huit opérés, six moururent, et que les deux derniers guérirent seulement par l'amputation du bras, *secondairement* à la résection de l'humérus. (C'est bien ici une opération secondaire.)

Les pièces pathologiques, mises par notre collègue sous les yeux de l'Académie, démontrent effectivement que, dans chacun des faits précités, l'os se trouvait en totalité atteint d'ostéomyélite, à moins d'interpréter autrement des altérations qui semblent appartenir à cet état particulier. L'exposé complet des observations tendra d'ailleurs à faire reconnaître qu'il en est sans doute ainsi, lorsque M. Roux le publiera. Mais, autant sa pratique hardie peut être acceptée pour des cas bien précis, bien certains, autant elle nous paraîtrait inadmis-

sible dans l'application trop absolue qu'il semble vouloir généraliser, d'après sa récente expérience.

Ce principe, d'ailleurs restreint à certains membres, quoique sous un rapport différent de celui des blessures par armes à feu, n'est pas un principe nouveau. L'Académie me permettra de lui rappeler que dans les fractures les plus compliquées de l'extrémité supérieure de l'humérus, si la résection, qu'il faut toujours tenter alors, n'était pas suffisante, mon père (1) préférait la désarticulation du bras à son amputation sur un point trop élevé de sa continuité. C'était dans le but de prévenir les accidents spasmodiques d'un moignon trop court ou inutile, et d'effectuer l'ablation totale d'un os souvent atteint fort au-dessus de sa lésion apparente, en assurant en même temps une plus prompte cicatrisation de la plaie.

Voilà un premier point qui devait trouver sa place dans cette discussion.

J'en ai déjà signalé un autre, relatif à l'amputation consécutive de la cuisse, dans son articulation coxale (2), en rappelant les chances de guérison qu'elle présente quelquefois ; mais je n'y insiste pas, parce que la question a été traitée à un autre point de vue que celui dont il s'agit ici.

Et d'ailleurs, à part l'époque de l'amputation et pour le lieu, on a aussi eu recours à la désarticulation, à celle du coude, par exemple, plutôt que d'amputer l'avant-bras trop près de la jointure, mais les résultats n'ont pas répondu à l'espérance que l'on en avait conçue. Ainsi, en Orient, sur trente-trois amputations primitives dans l'articulation huméro-cubitale, cinq seulement ont réussi, et vingt-huit amputés sont morts ; sur trente et une amputations *consécutives* dans la même articulation, le tableau ne présente que sept guérisons contre vingt-quatre morts.

Même remarque s'applique plus sérieusement encore à la désarticulation du genou, malgré quelques succès, je dirais presque regrettables, puisqu'ils ont servi d'encouragement à

(1) *Clinique chirurgicale*, t. III, 1829.

(2) *Mémoires de la Société de chirurgie*, t. V, 1860.

une amputation dont la campagne de Crimée a révélé tous les dangers. La statistique de M. Chenu est là pour le démontrer en fait, à savoir : 68 amputations fémoro-tibiales, dont :

33 primitives, avec 5 guérisons et 28 morts;
6 consécutives, dont 1 guérison et 5 morts;
29 soit primitives, soit consécutives, ou indéterminées, 29 morts, sans une seule guérison...

Quelle désolante statistique!

Et cependant l'un des chirurgiens les plus éminents de cette Académie s'est déclaré autrefois partisan de l'amputation du genou, en se fondant, avec raison alors, sur ses premiers relevés, puisqu'il mentionnait treize guérisons sur quatorze amputés. C'était un chiffre comparable assurément, pour M. Velpeau (1), à ceux que vient d'annoncer M. J. Roux, et qui témoigne combien les résultats de la chirurgie opératoire peuvent subir de variations, combien ils ressemblent quelquefois à tous les hasards des œuvres humaines, se succédant de distance en distance, pour former des périodes ou des séries de réussites et de revers.

Sans pousser plus loin cette partie de mon argumentation, je crois donc fermement que M. J. Roux ne pourrait généraliser d'une manière absolue la prééminence des désarticulations consécutives sur les amputations dans la continuité, sans s'exposer à une série d'insuccès, comme il a obtenu l'une des plus remarquables séries de succès que l'on puisse signaler, et il reconnaît lui-même que cette chance n'est pas impossible.

Entreprendra-t-il, par exemple, la désarticulation consécutive du bras, et surtout celle de la cuisse, comme il l'a tenté avec un si grand bonheur, pour l'un des cas extraordinaires qu'il a rapportés? entreprendra-t-il cette redoutable opération pour une blessure de l'extrémité inférieure du membre compliquée même d'ostéomyélite? Ou bien encore préférera-t-il la désarticulation du coude ou celle du genou dans des conditions analogues? Celle du genou, principalement si

(1) *Archives générales de médecine*, 1830, et *Nouveaux éléments de médecine opératoire*, t. I, 1832.

fatale par elle-même, et si souvent suivie de mort, tandis que l'amputation de la jambe serait de beaucoup préférable, non-seulement, comme Larrey (1) la faisait quelquefois, dans l'épaisseur des condyles du tibia, mais au-dessous, c'est-à-dire dans le lieu d'élection, pour la plupart des chirurgiens, ou plus bas encore, dans le tiers moyen du membre, selon quelques opérateurs anglais, si elle était contre-indiquée, autant que je la crois souvent défectueuse au-dessus des malléoles?

Rappelons-nous, toutefois, que M. J. Roux, malgré sa préférence pour les désarticulations, a déclaré avoir pratiqué avec succès deux opérations consécutives dans la continuité de l'os blessé, à savoir : une résection de la tête de l'humérus brisée par une balle, et une amputation de jambe *au-dessus* du lieu d'élection, pour un coup de feu du tarse, avec lésion de la *malléole externe*. C'était remonter bien haut, dira-t-on. J'avoue, pour ma part, et sans prévention filiale, que je me serais sans doute écarté du point choisi dans ce cas-là par l'habile chirurgien de la marine.

Toute argumentation devrait peut-être cesser ou même s'abstenir, en présence des succès prodigieux, inouïs, qu'a signalés notre confrère devant l'Académie. Il a cité 22 désarticulations secondaires ou consécutives aux cas les plus graves et parvenues toutes à la guérison, à savoir 4 désarticulations coxo-fémorales, 13 scapulo-humérales, 1 fémoro-tibiale, 3 tibio-tarsiennes et 1 métacarpo-phalangienne. Si M. Roux ne mentionne point de revers, c'est que sans doute il n'en a pas essuyés jusqu'ici. Sur ses 22 amputations, 20 ont été pratiquées à la suite de coups de feu, dans des tissus indurés, d'après la méthode à lambeaux et sous l'influence de l'anesthésie la plus complète par le chloroforme.

L'analyse, même sommaire, de chacune des blessures et de ses complications nous aurait mieux fait apprécier la valeur ou la nécessité des plus importantes désarticulations, et mes honorables collègues en chirurgie regretteront, comme

(1) *Clinique chirurgicale*, t. III, 1829.

moi, de n'avoir pas encore eu connaissance des observations cliniques de l'hôpital Saint-Mandrier (1).

M. J. Roux, reconnaissant bien que les principes soutenus et les résultats énoncés par lui sont tout à fait en dehors de la règle et de l'expérience ordinaires, se fait un devoir de pressentir lui-même et d'indiquer quelques-unes des objections qui pourront lui être faites, en y répondant d'avance avec une loyale spontanéité.

Je n'y insisterai pas, pour ma part, parce que je crois avoir suffisamment exposé, dans cette discussion, la curabilité des fractures des membres par armes à feu, le hasard des séries heureuses ou malheureuses dans les amputations, le degré de fréquence et de gravité de l'ostéomyélite chez les blessés, ainsi que ses conditions de développement, le sens des faits d'observation qui s'y rattachent, le principe émis et généralisé par M. J. Roux, de la désarticulation consécutive substituée à l'amputation dans la continuité; et, au milieu de ces diverses questions soulevées par lui, un simple aperçu de ce quis' est passé sous nos yeux pendant la campagne d'Italie.

Je me hâte maintenant de terminer cette longue argumentation, en soumettant à l'Académie et à notre honorable collègue les changements que je voudrais apporter aux conclusions de son importante communication :

1° L'ostéomyélite, après les coups de feu, est plus fréquente qu'on ne l'a pensé jusqu'ici ; mais elle n'est pas inévitable et guérit le plus ordinairement;

2° Elle peut se limiter à un point de l'os, s'étendre assez loin ou l'envahir même en totalité plus ou moins vite ;

3° Elle doit être soumise d'abord à tous les moyens rationnels de traitement, puisqu'elle est susceptible d'ailleurs de guérison spontanée;

4° Elle nécessite quelquefois la résection ou l'amputation consécutive, tantôt dans la continuité du membre, tantôt, et de préférence, pour certains cas, dans la contiguïté.

(1) Ce travail a été publié depuis dans la *Gazette médicale*, et paraîtra avec de nouveaux développements dans les *Mémoires de l'Académie de médecine*, t. XXV.

5° Elle a pu expliquer, d'autres fois, l'insuccès des opérations partielles ou incomplètes sur les os atteints de cette inflammation.

6° Elle démontre enfin l'opportunité, ainsi que le succès relatif de diverses désarticulations; mais elle ne saurait justifier, à nos yeux du moins, la proposition beaucoup trop exclusive pour la chirurgie, de renoncer à la résection articulaire et à l'amputation dans la continuité.

La simple proposition émise par M. Jules Roux, malgré sa grande autorité dans la pratique de l'art, malgré l'intérêt extrême et la nouveauté inattendue de ses observations, malgré même les merveilleux résultats de sa pratique exceptionnelle, malgré enfin la sérieuse attention que les recherches de notre honorable collègue ne manqueront pas d'inspirer à tous les chirurgiens, cette simple proposition deviendra difficilement un précepte justifié par l'expérience et sanctionné par l'Académie.

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(Séance du 8 mai 1860).

Je ne viens pas prononcer de nouveau un long discours devant l'Académie, puisque j'ai eu l'honneur de lui soumettre, dans la dernière séance, et en y insistant assez, toutes les objections que m'avait suggérées l'importante communication de M. Jules Roux. Je les maintiens aujourd'hui, et j'y ajouterai seulement quelques remarques.

Notre honorable collègue, dans sa réponse pleine d'obligeance, vient d'établir, comme je l'espérais, quelques justes restrictions à la double doctrine soutenue par lui, sur la théorie de l'ostéomyélite et sur la pratique des amputations. Je l'en remercie doublement, puisqu'en faisant imprimer son travail, il s'est aussi montré moins explicite que dans l'exposé oral de ses propositions. Mais il y persiste assez pour que MM. Robert et Jobert de Lamballe aient voulu les combattre à leur tour, soit par quelques-uns des arguments déjà présentés dans la discussion, soit par des objections nouvelles appartenant à un autre ordre de faits ou d'idées.

Je ne m'écarterai point, pour ma part, des limites précises

de la question, et je demanderai encore à M. Roux s'il ne s'exagère pas singulièrement la fréquence et les dangers de l'ostéomyélite, en lui attribuant une trop large part dans les suites des fractures des membres par armes à feu ; s'il prétend toujours en distinguer nettement les degrés ou les périodes, pour les différencier, tantôt des effets primitifs de la blessure, tantôt des effets consécutifs de la purulence, ou bien encore de divers états pathologiques des os appartenant à des lésions d'une autre nature ?

Je lui demanderai enfin si l'ostéomyélite qui complique une fracture, en empêchant sa consolidation, est aussi l'ostéomyélite qui prépare la formation du cal, en sauvant le membre et la vie du blessé? Car il y aurait là deux espèces d'ostéomyélite fort distinctes : l'une absolument morbide, toute pathologique ; l'autre, essentiellement curative et salutaire. Mais où serait la limite entre les deux ?

Que deviendrait ensuite le rôle de la chirurgie en présence de cette ostéomyélite à double fin, l'une qui aggrave la blessure, l'autre qui la guérit, comme j'en ai vu tant d'exemples, chez des blessés surtout de l'armée d'Italie, et notamment pour la consolidation inespérée d'un grand nombre de fractures de la cuisse ? Toute la discussion pourrait recommencer sur ce point, si elle ne nous exposait à reproduire les mêmes arguments.

Ce que je viens de dire de l'ostéomyélite dans les fractures, s'applique nécessairement à l'ostéomyélite des amputés, si d'une part elle dépasse les limites de la curabilité, en exigeant une amputation secondaire, et si contrairement, d'autre part, elle tend à favoriser la cicatrisation de l'os reséqué. Suffira-t-il d'un diagnostic dépourvu d'une certitude rigoureuse, à cet égard, pour amputer une seconde fois le membre (*amputation secondaire*, selon la véritable acception du mot), et pour l'amputer dans l'articulation, que cette articulation soit voisine ou éloignée du siége de l'ostéomyélite, favorable ou défavorable aux chances habituelles de l'opération en elle-même?

Non, on ne saurait préciser en principe, et d'une manière

absolue, le lieu de cette amputation secondaire; et d'ailleurs, tous les chirurgiens ont reséqué ou amputé dans la continuité des os dont la moelle et le tissu propre se trouvaient manifestement enflammés, sans conséquence funeste et même sans que la cicatrisation du moignon en ait été empêchée.

Mais en reproduisant le terme d'*amputation secondaire* adopté par M. Roux comme titre de sa communication, je demande à l'Académie qu'il me soit permis de définir ici très succinctement les épithètes souvent confuses, usitées dans le langage médical, pour fixer l'époque des amputations.

L'amputation *primitive* ne dépassant pas le deuxième ou le troisième jour de la blessure, doit toujours précéder l'apparition des accidents inflammatoires; elle est même *immédiate*, lorsqu'elle est pratiquée sur-le-champ ou sans aucun délai.

L'amputation *consécutive* peut être faite, depuis le développement de la fièvre traumatique et pour toutes sortes de complications, jusqu'à une époque indéterminée, si tardivement même que ce soit.

L'amputation *tardive*, quoique éloignée en général ou ultérieure, se rapprocherait toutefois du moment de la blessure, par cela seul qu'elle aurait été trop différée, fût-ce de quelques jours, de quelques heures même, si elle était urgente.

L'amputation *secondaire*, comme je l'ai déjà dit, doit s'entendre en effet d'une amputation *secondairement* faite à une première opération sur le même membre, ou de l'amputation du moignon. Le mot *secondaire* amoindrit d'ailleurs l'importance du fait chirurgical proprement dit.

L'amputation *double* et les amputations *successives* s'appliquent à deux ou à plusieurs membres amputés, soit simultanément, soit à diverses époques.

On m'excusera de cette digression, que je crois utile cependant pour faire cesser la confusion des termes employés par l'habile chirurgien en chef de la marine de Toulon.

Ici se présente une autre question incidente. En introduisant dans la discussion quelques éléments partiels de la statistique des amputations malheureuses faites en Crimée ou à Constantinople, je n'ai voulu que fournir un renseignement

d'une valeur relative, mais non un point de comparaison absolue avec les amputations si heureusement pratiquées par M. Jules Roux, à l'hôpital Saint-Mandrier. C'était précisément pour faire voir, et j'ai eu soin de le démontrer, combien il est essentiel en chirurgie, notamment pour la chirurgie militaire, de tenir compte de toutes les conditions si diverses qui influent sur les résultats des grandes opérations.

Je ne voudrais pas non plus que l'on attribuât à mes remarques sur les séries de succès et d'insuccès une portée différente de l'expression de ma pensée; j'ai d'ailleurs interprété à cet égard l'opinion de la plupart des chirurgiens, et chacun de nous en citerait des preuves à l'appui, dans les proportions de sa pratique et de son expérience. Mais encore une fois, et indépendamment de cette hypothèse, j'ai fait une large part à toutes les causes probables des succès de notre confrère, comme à l'influence certaine de son savoir :

En définitive, j'admets volontiers pour mon compte, et avec les restrictions nécessaires, une partie des vues de M. J. Roux sur l'existence et les accidents de l'ostéomyélite, dans les fractures des membres par armes à feu; sur l'opportunité, quoique plus restreinte, des amputations consécutives et des amputations secondaires; sur le choix enfin de la désarticulation réservée à certains cas, et considérée alors comme lieu d'élection. Telle serait, par exemple, la désarticulation scapulo-humérale, la plus rationnelle et aussi la plus favorable de toutes les amputations dans la contiguïté, à condition encore de n'être point abandonnée elle-même, bien des fois et très heureusement, pour la simple résection de l'humérus, l'un des bienfaits incontestables, l'une des conquêtes réelles de la chirurgie conservatrice.

Mais à part ces adhésions partielles aux idées trop exclusives de notre honorable collègue, je maintiens les arguments de la discussion dont j'ai pris l'initiative; et quant aux conclusions du Mémoire, je maintiens aussi les changements que j'ai eu l'honneur de soumettre à l'Académie.

—

(Séance du 15 mai 1860.)

L'Académie, en accordant la parole à M. Jules Roux, par un dernier tour de faveur méritée, pour clore la discussion, s'attendait, comme l'avait annoncé, de sa part, M. le Président, à un simple résumé des opinions contradictoires émises par chacun de nous, et non point à une nouvelle reproduction des arguments déjà soutenus par l'orateur. J'exprime donc le regret que notre honorable collègue n'ait point tenu l'engagement pris par lui-même de récapituler seulement, avec l'impartialité d'un rapporteur, l'ensemble ou la substance des débats. Nous ne pouvons plus, de par l'ordre du jour, que rester dans cette alternative, de garder le silence ou de maintenir nos objections.

Paris. — Imprimerie de L. MARTINET, rue Mignon, 2.

NOTICE

SUR

L'HYGIÈNE DES HOPITAUX MILITAIRES

LUE A L'ACADÉMIE IMPÉRIALE DE MÉDECINE

Dans les séances du 11 et du 18 février 1862,

PAR

M. Hte Bon LARREY,

Inspecteur, Membre du Conseil de santé des armées,
Chirurgien ordinaire de l'Empereur,
Vice-Président de l'Académie de médecine,
Membre du Conseil d'hygiène publique et de salubrité.

PARIS

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MADRID, C. BAILLY-BAILLIÈRE, PLAZA DEL PRINCIPE ALFONSO, 16.

1862

EXTRAIT

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NOTICE

SUR

L'HYGIÈNE DES HOPITAUX MILITAIRES.

Lorsque j'ai eu l'honneur de discuter devant l'Académie le savant rapport de M. Gosselin sur la *résection de la hanche* (1), j'avais en vue surtout la pratique de la chirurgie militaire, dans le traitement des coxalgies suppurantes et des fractures par armes à feu de l'extrémité supérieure du fémur.

La question, incidemment soulevée par l'honorable rapporteur, sur la salubrité comparative des hôpitaux civils de Londres et de Paris, m'avait fait songer aussi à en exposer l'application aux hôpitaux de l'armée, mais, présumant que ce serait dépasser les limites du sujet, je m'étais abstenu de demander la parole.

Nous ne pouvions prévoir alors les proportions considérables que prendrait la question générale d'hygiène, en effaçant tout à fait la question spéciale de chirurgie. Il devait en être ainsi cependant, eu égard à l'autorité de notre éminent collègue M. Davenne, invoquant une longue expérience administrative, pour contester d'abord une opinion de M. Gosselin, et pour répliquer ensuite à des objections soulevées dans le sein de l'Académie ou publiées en dehors d'elle.

C'est à M. le rapporteur qu'il appartient de retracer la marche suivie dans ces débats, en présentant leur point de départ, en résumant, pour les juger à son sens, les pensées successivement émises ou les faits controversés par plusieurs d'entre nous, et en examinant les diverses communications

(1) *Bulletin de l'Académie impériale de médecine*, 12 novembre 1861.

adressées à l'Académie sur l'une des questions les plus importantes de l'hygiène publique, *la salubrité des hôpitaux*.

La réserve que j'avais cru devoir m'imposer d'abord n'a plus maintenant sa raison d'être, après l'appel bienveillant fait aux médecins de l'armée, de communiquer aussi les résultats de leurs observations sur l'hygiène des hôpitaux militaires.

L'obligation de répondre à cet appel me laisse néanmoins le regret qu'une voix plus autorisée que la mienne ne se fasse pas entendre ici, car il conviendrait davantage à mon savant collègue, M. Michel Lévy, de développer à cette tribune les principaux points relatifs à la discussion, dont il a doctement élaboré les matériaux dans un ouvrage devenu classique (1).

La question engagée devant l'Académie n'est pas seulement d'une importance majeure, elle est aussi d'une difficulté extrême, parce qu'elle se compose d'éléments multiples et ne peut être résolue que par des moyens complexes. Examinée dans son ensemble et dans ses différentes parties, au point de vue de l'hygiène des hôpitaux militaires, cette question fournira peut-être d'utiles renseignements pour la salubrité des hôpitaux civils.

Je ne reviendrai pas sur ce qui a été exposé déjà dans la discussion, si ce n'est à propos ou à l'appui des remarques applicables au service hospitalier de l'armée.

Cela dit, messieurs, il ne me reste plus qu'à solliciter l'indulgente attention de l'Académie.

—

PREMIÈRE PARTIE.

Les recherches que j'ai pu entreprendre sur l'hygiène des hôpitaux militaires ne m'ont pas fourni beaucoup de documents, parmi les travaux de quelque valeur publiés en France sur les hôpitaux en général.

Dulaurens (2) d'abord, dans un opuscule peu connu, ne présente sur le régime hospitalier que des considérations

(1) *Traité d'hygiène publique et privée*, 3e édit., 1857.

(2) *Essai sur le service des malades dans les hôpitaux*, Paris, 1787.

sommaires étendues cependant aux hôpitaux des armées de terre et de mer.

Tenon (1) ensuite, dans les cinq mémoires qui composent son volumineux recueil, ainsi que dans son rapport à l'Académie des sciences sur les hôpitaux de Paris, et plus particulièrement sur l'Hôtel-Dieu, ne dit à peu près rien des hôpitaux militaires.

Renaudin (2) n'en parle pas davantage dans un livre publié d'après les mêmes idées, sur la viciation de l'air dans les hôpitaux, spécialement à l'Hôtel-Dieu de Lyon.

Clavereau (3) dans un mémoire de moindre valeur aussi, s'abstient de toute appréciation à ce sujet.

Mais David Johnston (4) y fait parfois allusion, dans un ouvrage trop peu connu où il expose tout ce qui est relatif aux hôpitaux de France, en les faisant prévaloir, quoique Anglais, sur les hôpitaux d'Angleterre. Notre vénérable collègue, M. Villermé (5), a dignement apprécié autrefois ce travail si contraire aujourd'hui à certaines opinions.

Quoi qu'il en soit, hâtons-nous de le reconnaître, les améliorations de salubrité introduites progressivement dans les hôpitaux civils, depuis la publication de ces divers travaux, ont certainement profité à l'hygiène des hôpitaux militaires. Le plus grand bienfait qui puisse se rattacher à ce principe de perfectionnement sera de réaliser de plus en plus les avantages encore incomplets de la dissémination des malades et de l'aération des salles, pour prévenir les conséquences désastreuses de l'encombrement.

Des documents plus directs et plus précis sur les hôpitaux de l'armée nous sont offerts, en France, soit au point de vue administratif, soit au point de vue médico-chirurgical et plus spécialement hygiénique.

(1) *Mémoires sur les hôpitaux de Paris.* 1788.

(2) *Réflexions sur l'air atmosphérique et ses altérations, etc., dans les hôpitaux.* 1789.

(3) *Mémoire sur les hôpitaux civils*, 1805.

(4) *Histoire générale des institutions de charité publique en France.* 1829.

(5) *Annales d'hygiène publique*, t. III, 1830.

Citons entre autres, après une brochure de l'abbé Desmonceaux (1), le livre de Coste (2), ancien inspecteur général du service de santé des armées, celui de Ch. Courtin (3), autrefois attaché à la direction du ministère de la guerre; une brochure de Murat (4); le *Règlement général sur le service des hôpitaux militaires* (5); l'ouvrage publié avec autorisation du ministre de la guerre, par MM. Maillot et Puel (6) les tables chronologiques de M. de Piis (7) et un nouveau recueil des lois, décrets et ordonnances, par M. V. Rozier (8).

Ajoutons d'une part, à ces utiles documents des indications plus précises, fournies par le *Recueil des mémoires de médecine militaire*, par les *Annales d'hygiène et de médecine légale* (notamment par M. Boudin); par les ouvrages de Percy, Desgenettes, D. Larrey, Broussais, Gama, Bégin; par le *Traité d'hygiène*, de M. Michel Lévy; par les livres d'*Hygiène militaire*, de Révolat, de Mutel, de M. Rossignol; par les *Études d'hygiène militaire*, de M. Vincent; par l'ouvrage de M. J.-N. Périer, sur l'*Hygiène en Algérie;* et en dernier lieu par l'*Hygiène de l'Algérie*, de M. Marit, sans oublier enfin une bonne thèse de M. Desjardins sur *la salubrité des hôpitaux.*

Mentionnons, d'autre part, quelques travaux publiés en Angleterre, en commençant par celui de J. Howard (9) qui, ayant consacré sa vie et sa fortune à faire le bien, mériterait d'être assimilé à Montyon, comme l'un des bienfaiteurs de l'humanité.

Rappelons aussi les noms de Robertson, de Parkes, de Thomson, de Brunel, de Steele et de Mac Ghie déjà cités par

(1) *De la bienfaisance nationale dans l'administration des hôpitaux militaires et particuliers.* 1789, 2 vol. in-8, et atlas in-4.

(2) *Du service des hôpitaux militaires rappelé aux vrais principes*, 1790.

(3) *Recueil général des lois, décisions, etc., sur le service des hôpitaux militaires*, 1809.

(4) *De l'établissement des hôpitaux civils et militaires.* 1813.

(5) *Journal militaire officiel.* 1831.

(6) *Aide-mémoire de l'officier de santé de l'armée de terre.* 1842.

(7) *Tables chronologiques sur le service des hôpitaux militaires.* 1843.

(8) *Législation sanitaire de l'armée de terre*, 1853.

(9) *État des prisons, hôpitaux et maisons de fous.* Trad. à Paris, 1791.

M. Le Fort (1) dans son dernier travail. Mais parmi tous ces noms-là, s'en trouve un illustré par une femme qui s'est initiée de bonne heure à tous les devoirs, à tous les dévouements des vraies sœurs de charité, en sacrifiant au service des hôpitaux de l'armée anglaise, sa santé, sa position et son avenir. Miss Florence Nightingale (2) a publié même un petit ouvrage d'un grand intérêt sur la question qui nous occupe.

Il ne faut point non plus passer sous silence les traités de chirurgie militaire de Hennen, Ballingall, Guthrie, ainsi que le rapport publié, en 1858, par *les commissaires du gouvernement anglais sur l'organisation des hôpitaux*.

Sans énumérer encore un certain nombre d'autres publications étrangères, on doit pourtant une mention spéciale à l'excellent ouvrage de M. Stromeyer (3) (de Hanovre), qui semble dominer la chirurgie militaire de l'Allemagne.

Je rappellerai enfin les remarques judicieuses mais trop oubliées de Roux (4) sur les hôpitaux de Londres, contenant plusieurs aperçus utiles sur les hôpitanx de l'armée ; quelques pages de D. Larrey (5) sur un voyage (dans lequel j'avais accompagné mon père en Angleterre), en Écosse et en Irlande ; l'excellente thèse de M. Topinard (6), et les recherches toutes récentes de M. Le Fort, appuyées sur beaucoup de points par l'autorité chirurgicale de MM. Malgaigne et Gosselin, mais controversées sur bien d'autres par l'autorité administrative de MM. Davenne et Husson, désireux du reste que la lumière se fasse dans l'obscurité de ces débats.

Tels sont les matériaux assez nombreux, mais fort épars ou trop incomplets que j'ai pu recueillir, pour appliquer à l'hygiène générale des hôpitaux militaires, une expérience personnelle datant déjà d'une trentaine d'années.

(1) *Note sur quelques points de l'hygiène hospitalière en France et en Angleterre*. Paris, 1862.

(2) *Notes on hospitals*. London, 1859.

(3) *Maximes sur la médecine des armées*, Hanovre, 1860.

(4) *Relation d'un voyage à Londres en* 1814. Paris, 1815.

(5) *Relation médicale de campagnes et voyages*. Paris, 1841.

(6) *Quelques aperçus sur la chirurgie anglaise*. Paris, 1860.

Voulant éliminer tout de suite la question des hôpitaux civils de France et d'Angleterre comparés entre eux, je me contenterai de dire qu'étant retourné à Londres, il y a peu d'années, j'ai pu reconnaître quelques-uns des avantages des établissements anglais sur ceux de Paris. Mais ces avantages ne leur sont pas tous acquis à beaucoup près; ils se résument en deux conditions prédominantes de salubrité : c'est d'une part la moindre dimension des hôpitaux en général et la diminution proportionnelle du nombre des lits dans chaque salle, d'où une installation plus large des malades, un cubage d'atmosphère plus étendu pour chacun d'eux et conséquemment une aération plus facile et plus salutaire ; c'est, d'autre part, une alimentation meilleure, plus choisie, plus variée, selon une plus grande latitude laissée aux prescriptions des médecins traitants, qui ne sont pas assujettis, comme en France, aux exigences d'un régime fixe ou d'un tarif alimentaire trop uniforme.

On sait bien que ces deux avantages, si précieux pour le traitement et la guérison des malades, dépendent principalement de la richesse de la plupart des hôpitaux anglais, pourvus par des donations publiques et privées, de toutes les garanties de bien-être et même de *comfort* qui manquent aux hôpitaux français; mais, en définitive, c'est dans ces deux conditions que semble résider la supériorité hygiénique des uns sur les autres, bien plus que dans certaines particularités auxquelles on a peut-être attribué trop d'importance ou des résultats contestables.

L'opinion que je soutiens, du reste, à cet égard, est, je le crois, celle de l'un de nos confrères les plus autorisés à intervenir dans cette grave question, par une connaissance exacte et approfondie de tout ce qui touche à la pratique de la médecine et de la chirurgie anglaises. En le désignant ainsi, je dirais le nom de M. Giraldès, si je ne devais m'abstenir de le mêler à la discussion de l'Académie.

« *Curandis militum morbis et vulneribus.* » Cette inscription de la façade du grand hôpital militaire de Vienne nous amène directement à la question que j'ai seulement effleurée autre-

fois (1), et que je me propose de traiter aujourd'hui avec quelques développements. Les établissements hospitaliers d'une armée ne sont donc point seulement, comme les hôpitaux ou hospices civils, des asiles de charité; ils sont encore pour ainsi dire, des redevances de l'État envers ses défenseurs. Ce fait même laisse pressentir tout d'abord l'intérêt qui s'attache à leur salubrité.

C'est à l'étranger surtout, comme l'a exposé, à un point de vue différent, notre honorable collègue M. Bonnafond (2), que l'on peut admirer les proportions monumentales de ces établissements. Nous venons de citer l'Académie impériale Joséphine de Vienne, fondée par Joseph II ; que l'on y ajoute la Pépinière de Berlin, le grand hôpital de Saint-Pétersbourg et celui de Greenwich, à Londres, ce splendide palais des invalides de la marine, et ce sera faire comprendre assez la sollicitude des gouvernements pour la construction des édifices hospitaliers des armées.

Réorganisés en France par la Convention nationale, les hôpitaux militaires furent régularisés sous le Consulat et le premier Empire, puis successivement accrus en nombre, non-seulement pour les besoins proportionnels du service, mais aussi pour la plus grande dissémination des malades. C'est là un point essentiel à noter, puisqu'il indique pourquoi on multiplie ces établissements de première utilité.

Près d'une centaine, répartis actuellement en France et en Algérie, sont en rapport avec l'effectif ordinaire de la garnison. Les uns, dits hôpitaux *permanents*, pour les temps de paix, les autres *temporaires*, et subdivisés en hôpitaux de première, de deuxième et de troisième ligne, doivent, en temps de guerre, être assez rapprochés les uns des autres, pour assurer plus facilement les évacuations et prévenir les dangers de l'encombrement.

Ce double avantage manque fatalement aux hôpitaux blindés ou casematés des villes investies par un siége, comme

(1) Art. Hôpital militaire du *Dictionnaire de médecine usuelle*, 1849.

(2) *Bulletin de l'Académie de médecine*, séance du 4 février 1862.

j'ai eu occasion d'en voir autrefois les funestes effets, après la reddition de la citadelle d'Anvers (1).

Tous les hôpitaux militaires, à l'exception des établissements thermaux, dont nous n'avons rien à dire ici, réunissent la généralité des maladies communes dans l'armée, sans distinction particulière pour aucune d'elles. Mais, dans chaque hôpital, une séparation réglementaire existe entre la médecine et la chirurgie, formant les divisions de fiévreux et de blessés. Il y a aussi une ou deux sections à part pour les vénériens, des salles isolées pour les galeux, pour les varioleux, et des chambres pour les malades graves. On reconnaît l'opportunité de ces catégories distinctes pour l'exécution du service, pour la surveillance disciplinaire, et pour la salubrité des locaux.

Il y aurait peut-être un hôpital spécial à créer en faveur de l'armée, ce serait un asile d'aliénés, dont l'organisation, le régime, l'aspect et les habitudes militaires rappelleraient aux malades le souvenir du passé, sans leur ôter l'espoir de l'avenir. Les excellents soins qu'ils reçoivent à l'hospice de Charenton d'une part, et, d'autre part, les dépenses assez fortes qu'il y aurait à faire, sont des objections sans doute à la réalisation de ce vœu ; mais en le formulant avec réserve, j'ai la confiance que quelque jour il pourra s'accomplir.

Qu'il me soit permis, à cette occasion, d'exprimer aussi ma pensée sur l'hygiène physique et morale des deux principaux hospices d'incurables en France : Bicêtre et la Salpêtrière. Quel plus triste spectacle que celui de tant de misères humaines rassemblant dans une même enceinte, trop étroite malgré son étendue, des êtres difformes ou mutilés, des enfants infirmes, des vieillards malingres ou malades, des paralytiques, des cancéreux, des idiots, des épileptiques et des fous, soumis à la contamination de cette sorte de promiscuité, se faisant horreur les uns aux autres, si la fatale habitude de se voir ne finit par leur inspirer une indifférence et une insensibilité mutuelles ! Ne pourrait-on laisser Bicêtre et la Salpê-

(1) *Histoire chirurgicale du siége de la citadelle d'Anvers* (*Mémoires de médecine militaire*, t. XXXIV, 1833.)

trière aux incurables exclusivement, et construire pour les aliénés seuls, soit des maisons hospitalières de l'État, soit un asile digne de sa destination, par l'ensemble complet de ses ressources, afin d'assurer aide, protection et secours, si ce n'est guérison, à la plus cruelle des souffrances de l'espèce humaine, à celle qui mérite, en tous lieux, le plus de compassion et de charité?

Un rapport officiel de notre honorable collègue, M. Girard de Cailleux (1), inspecteur général des asiles d'aliénés de la Seine, a déjà signalé hautement les abus d'une telle situation et les conséquences de l'encombrement des maisons d'aliénés du département, jusqu'au point « quelquefois de ne procurer » aux malades couchés dans les dortoirs que 7 à 8 mètres cubes » d'air par individu, au lieu de 24 qui leur seraient néces- » saires ». Cette agglomération fut telle en 1844, qu'elle exigea le transfert des aliénés dans divers établissements de province.

Il appartient à M. le préfet de la Seine, qui préside si largement à l'exécution des immenses travaux de la ville de Paris, de prendre l'initiative de l'une des transformations hospitalières les plus désirables, les plus utiles, pour l'assistance publique (2).

Revenons à l'hygiène des hôpitaux militaires.

Les hôpitaux de l'Algérie ont été organisés, agrandis et multipliés, depuis l'occupation jusqu'à ce jour, avec la sollicitude constante du ministère de la guerre. Chaque ville de l'Afrique française a son hôpital, qui en forme partout le monument le plus reconnaissable et l'un des plus beaux.

(1) *Rapport sur les aliénés de la Seine, traités dans les asiles de Charenton et de la Salpêtrière*, adressé à M. le sénateur préfet de la Seine, 1861.

(2) J'ai su, depuis la lecture de ce travail à l'Académie, que M. le préfet, sous l'inspiration d'une haute pensée, avait récemment institué une commission, pour étudier la réforme et les améliorations à introduire dans le service des aliénés de la Seine. Il en a même exposé les principes et les bases au sein de cette commission, en exprimant toute sa confiance dans l'exécution d'un plan qui fera honneur à son habile et vigilante administration.

Chaque établissement reçoit, outre les malades de la garnison, ceux de la classe civile ou indigène, les femmes, et même les femmes en couches, ainsi que les enfants ; mais avec des séparations de services établies comme en France.

Construits généralement dans des proportions moyennes, qui dépassent les besoins, et situés dans les conditions de salubrité les plus favorables, les hôpitaux de l'Algérie se trouvent toujours préservés ainsi des funestes effets de l'encombrement.

L'ancien hôpital du Dey, à Alger, fait exception à cette règle des édifices ; et, quoique installé, depuis 1830, dans des baraques, comme bâtiment provisoire, il n'en a pas moins conservé, jusqu'à ce jour, une sorte d'immunité contre les épidémies. La construction définitive d'un établissement complet, entreprise d'après le système des nouveaux modèles, et bientôt terminée, réunira sans doute tous les avantages de l'hygiène hospitalière.

Un autre hôpital d'Alger, celui de Mustapha, qui appartenait aussi autrefois à la garnison, tel que je l'ai vu en 1842, était placé mieux encore, par la dispersion des malades; mais, devenu aujourd'hui hôpital civil, comme je l'ai revu dans une inspection, en 1858, il se trouve entièrement rempli, sinon encombré souvent, et ainsi moins favorisé dans son état sanitaire. Ce contraste me paraît utile à signaler.

Nous ne parlons pas de la création projetée ou proposée, mais inexécutable des hôpitaux arabes.

Je disais tout à l'heure que dans les hôpitaux de l'Algérie on admettait les enfants : ce simple fait nous rappelle la question incidemment soulevée par M. Gosselin et controversée par M. Davenne. La séparation des enfants malades dans des hôpitaux spéciaux est un principe que l'on peut adopter sans doute, d'après les considérations émises par l'honorable ex-directeur de l'assistance publique ; et j'en citerais plus d'un exemple pris dans l'ordre militaire.

Le plus marquant de tous est l'asile royal des enfants de troupe de l'armée anglaise, à Chelsea, où 1500 lits leur sont affectés. Mais il faut dire aussi, avec Roux (1), que cet éta-

(1) *Relation d'un voyage fait à Londres en* 1814. Paris, 1815.

blissement, si bien organisé qu'il puisse être, a été envahi par des épidémies assez graves, notamment depuis 1804, époque à laquelle l'ophthalmie, importée d'Égypte par la flotte anglaise, atteignit une multitude de ces enfants. L'asile royal se trouvait cependant alors sous la direction habile de l'un des médecins les plus éminents de l'armée, sir James Mac Grigor, dont le nom se rattache à d'utiles institutions pour le service de santé.

Ne pourrait-on, à l'égard des enfants, concilier les intérêts de la science et de la pratique avec ceux de l'habitude et de la morale, en réservant pour ces petits malades une salle à part dans chaque établissement? C'est ce qui existe, en grand et au complet, pour les enfants de la marine anglaise, dans le magnifique hôpital de Greenwich; c'est ce que l'on essaye de faire, quelquefois en petit, dans les hôpitaux militaires de France, lorsque plusieurs enfants de troupe peuvent être réunis et surveillés dans la même salle ou dans la même chambre, si ce n'est dans une division à part, comme à la caserne occupée au Louvre par la gendarmerie de la garde.

Les hôpitaux militaires de Paris pouvant, jusqu'à un certain point, être comparés aux hôpitaux civils, m'autorisent à en dire quelques mots.

Voici tout d'abord un fait assez curieux à introduire dans la discussion : l'encombrement de l'ancien Hôtel-Dieu et les déplorables accouplements de malades dans un même lit, ainsi que la mortalité désastreuse des femmes en couches, avaient provoqué, sous la Convention nationale, une enquête sérieuse sur les moyens de remédier promptement à cette triste situation. La commission des secours publics invita l'Académie des sciences à nommer une commission qui lui donnât son avis sur l'emploi des bâtiments du ci-devant couvent du Val-de-Grâce, et le rapport fut fait par Tenon, Sabatier et Leroy (1), avec la plus sévère attention. De là un décret de la Convention, en date du 7 ventôse an II, décidant que le Val-de-Grâce serait destiné à former un hospice pour les femmes en couches

(1) *Archives du conseil de santé des armées.*

et les enfants abandonnés. Mais ce décret ne reçut point son application. Il retraçait néanmoins, d'après le rapport, les excellentes conditions sanitaires du Val-de-Grâce, comparativement à l'Hôtel-Dieu.

Ces conditions, si avantageuses qu'elles pussent être, ne devinrent ou ne restèrent pas meilleures en 1814, lorsque la fatale invasion des troupes étrangères vint encombrer les hôpitaux de la capitale. Le Val-de-Grâce, autant que l'Hôtel-Dieu, eut à en souffrir, et la pourriture d'hôpital, envahissant les salles, les cloîtres et les corridors où se trouvaient entassés les blessés, sévit surtout parmi les amputés qui, presque tous, succombèrent.

Les anciens bâtiments existaient seuls à cette époque et ont subsisté seuls jusqu'en 1838. Ce fut alors que l'on construisit trois bâtiments nouveaux de la contenance chacun de quatre salles, selon les règles d'hygiène les mieux tracées. La dissémination des malades obtenue ainsi a eu la plus heureuse influence sur la durée de séjour des malades à l'hôpital, et conséquemment sur la mortalité.

L'hôpital du Gros-Caillou, successivement occupé par la garde du Directoire, par la garde consulaire, par la garde impériale, par la garde royale jusqu'en 1830, et rendu aujourd'hui à peu près à son ancienne destination, se trouve placé dans une situation de salubrité encore plus appréciable qu'autrefois, par l'élargissement de toutes les voies environnantes.

Nous avons pu reconnaître, à la révolution de juillet, combien cet état sanitaire a contribué à la guérison de la plupart des blessures et des opérations, à la suite des trois journées. Je ne le rappellerai pas autrement, pour n'avoir point à citer ce que j'en ai dit ailleurs (1).

Mais si favorables que soient ces garanties, elles ne pourraient dominer les influences contraires de l'accumulation des malades. C'est ce qui serait arrivé, il y a deux ans, si le conseil de santé n'avait délégué deux de ses membres pour constater l'imminence de l'encombrement du Gros-Cail-

(1) *Relation chirurgicale des événements de juillet* 1830, *à l'hôpital militaire du Gros-Caillou* (*Mémoires de médecine militaire*, t. XXX, 1831).

lou, et proposer au ministre de la guerre les mesures propres à y remédier, à savoir l'évacuation de tous les malades convalescents, la réduction du nombre des lits, l'achèvement de l'hôpital de Vincennes et la formation d'un troisième hôpital militaire, sur la rive droite de la Seine. Le ministre s'est empressé d'accorder pleine autorisation aux mesures indiquées par le conseil de santé.

L'hôpital de Vincennes, construit et organisé d'après le plan de quelques-uns des hôpitaux civils modernes, peut être considéré à peu près comme un modèle. La surveillance de son installation hygiénique y est exercée avec une sollicitude constante par le médecin en chef M. Boudin, qui n'y a constaté jusqu'ici aucune influence nosocomiale.

L'hôpital Saint-Martin (ancien hospice des incurables hommes vient d'être complétement terminé et va recevoir prochainement la plus grande partie des malades appartenant aux différents corps de la rive droite de la Seine. C'est sur lui que se déversera dès lors, à l'avantage des autres établissements, le trop-plein de la garnison de Paris. Le ministère de la guerre n'aura plus besoin par conséquent, comme autrefois, d'établir ailleurs des succursales provisoires et insuffisantes du Val-de-Grâce et du Gros-Caillou.

L'hôpital de Versailles grandement établi, offre du reste une précieuse ressource aux évacuations, nécessitées quelquefois par l'affluence des malades dans les hôpitaux du centre et contribue ainsi à en prévenir les effets pernicieux.

L'infirmerie de l'hôtel des Invalides dont l'organisation diffère peu de celle des hôpitaux militaires, présente un état sanitaire généralement bon. La mortalité y paraît assez faible, proportionnellement à l'âge et aux infirmités des anciens soldats, sur la situation desquels se fixent en ce moment même l'attention du ministre de la guerre et la haute sollicitude de l'Empereur (1).

Pour les villes départementales dépourvues d'hôpitaux militaires, c'est dans des salles spéciales des hôpitaux civils que

(1) Projet de règlement soumis à une commission spéciale, par décision de l'Empereur, du 5 février 1862.

sont reçus les malades de la garnison ; et les conditions sanitaires en sont variables, selon des causes de toute sorte; mais il nous serait difficile de les apprécier, devant l'Académie, au point de vue médical, malgré l'expérience acquise par nos inspections de chaque année. Je dirai seulement que si, dans beaucoup d'hôpitaux civils, la salubrité des salles militaires ne laisse rien à désirer, dansbi en d'autres aussi d'utiles modifications et même des érieuses réformes sont indiquées, afin de les mettre à l'abri des influences contraires à l'hygiène. Quant au point de vue administratif on peut consulter, à ce sujet, un petit livre bien fait de M. de Piis (1), ancien officier comptable.

Chaque corps de l'armée possède une infirmerie régimentaire dans laquelle sont traitées toutes les affections bénignes ou assez légères pour ne point obliger les hommes à entrer à l'hôpital. Un double avantage résulte d'une telle disposition, c'est d'abord de ne point exposer cette catégorie de malades aux effluves nosocomiales, c'est ensuite de préserver les hôpitaux d'une agglomération dangereuse.

L'installation des infirmeries régimentaires tendant d'ailleurs à se compléter et à se perfectionner progressivement, finira sans doute par restreindre aux maladies graves l'admission dans les hôpitaux. Ce sera pour l'armée un bienfait comparable à celui des secours à domicile, dont se préoccupe de plus en plus l'administration civile de l'assistance publique, et qui a déjà produit d'heureux résultats, quoique laissant beaucoup à désirer encore.

Je ne saurais passer enfin sous silence l'admirable organisation des hôpitaux de la marine dont le plus beau modèle est à Brest. Rochefort ensuite, Toulon, Lorient et Cherbourg, possèdent aussi des établissements dont la salubrité intéresse sans cesse la surveillance du conseil supérieur de santé. Une école de médecine navale, annexée à l'hôpital, lui assure ainsi par l'autorité des professeurs, les améliorations ou les réformes les plus utiles à l'hygiène. La même intervention médicale subsiste, à plus forte raison, pour le vaisseau-hôpital

(1) *Manuel du service des salles militaires dans les hôpitaux civils.* 1841.

d'une flottille, et pour l'infirmerie de chaque bâtiment. Je ne puis qu'indiquer, pour l'organisation navale, les livres spéciaux et entr'autres le savant ouvrage de M. Fonssagrives(1).

Disons que pour les hôpitaux de la marine, comme pour ceux de l'armée de terre, et aussi bien pour tous les hôpitaux en général, la question qui domine toutes les autres et sur laquelle devrait toujours se fixer l'attention des autorités administratives, c'est l'encombrement. On peut, avec toute évidence, en produire, en augmenter, en diminuer ou en supprimer les effets dans une même salle, selon que l'on abaisse ou que l'on élève le nombre des malades. Notre savant et modeste confrère, M. Reynaud, inspecteur général du service de santé de la marine, m'a dit avoir expérimenté maintes fois ces résultats concluants.

Appliquons maintenant aux hôpitaux militaires les principales règles de l'hygiène, pour démontrer à l'Académie combien cette question est complexe, mais aussi combien elle est susceptible de se simplifier, une fois dégagée de tous ses éléments accessoires. Je devrai, pour cela, procéder avec méthode, en m'excusant encore de ne pouvoir abréger davantage une étude de cette importance.

L'éloignement des établissements hospitaliers des centres de population est la première sauvegarde, mais non la garantie certaine de leur état sanitaire, en même temps qu'il préserve chaque localité d'autant de foyers d'infection.

Situés ordinairement à la circonférence des villes ou à de grandes distances, comme à Paris, les hôpitaux militaires exigent des moyens de transport rapides et bien organisés. C'est ainsi que des fourgons suspendus, analogues aux ambulances volantes, et garnis de couvertures, conduisent les malades directement des casernes ou des infirmeries régimentaires à l'hôpital, avec un billet d'admission délivré par le corps, sans les assujettir aux fatigues de la marche, et en les mettant à l'abri de tout refroidissement.

(1) *Traité d'hygiène navale*. Paris, 1856.

On a proposé d'utiliser des moyens de transport du même genre, pour les parents ou les amis des malades reçus dans des hôpitaux éloignés. Les motifs de cette proposition sont assurément légitimes, mais si elle était appliquée trop facilement, elle entraînerait de fâcheux abus, par l'affluence des visiteurs de toutes sortes, par le trouble apporté dans le repos des malades, dans la discipline et dans la propreté des salles, dans l'état même de leur salubrité, par l'agglomération d'un plus grand nombre de personnes; et enfin, par la provocation des écarts de régime, par la complication des maladies graves, et par des émotions morales dont les effets sont si contraires à la guérison. D'après cela, on ne saurait trop sévèrement réglementer les permissions de visite.

L'emplacement des hôpitaux de l'armée est choisi en général par des commissions mixtes, représentant à la fois le commandement, le génie, l'administration et le service de santé militaires, selon les préceptes d'hygiène que nous avons à peine besoin de rappeler ici : éloignement des lieux insalubres, élévation de terrain, orientation convenable, proximité de cours d'eau, entourage de plantations, etc.

De tels avantages, sans doute, ne se trouvent pas toujours réunis, et quelquefois même, comme on le voit, par exemple, à Londres, pour certains hôpitaux civils désignés par M. Husson (1), et situés dans les rues étroites de quartiers populeux, l'état sanitaire de ces établissements ne paraît pas souffrir de l'imperfection ou de l'insuffisance de leur installation; mais qu'une épidémie se déclare, et les malades seraient sans doute décimés. Mieux vaut donc pourvoir d'avance et par tous les moyens aux garanties de la salubrité.

La construction des hôpitaux a ainsi son importance première, eu égard au choix de l'emplacement, à la situation, à l'étendue, à la hauteur des édifices et à la répartition des locaux; mais telle construction, si bien établie qu'elle puisse être, perd totalement ses avantages, du moment que les salles sont encombrées ou seulement remplies de malades. Et les proportions du danger augmentent nécessairement avec

(1) *Lettre à l'Académie de médecine*, séance du 21 janvier 1861.

celles de la construction. Ne l'a-t-on pas trop souvent vérifié dans les vastes établissements, tels que l'Hôtel-Dieu de Paris et celui de Lyon ?

La forme carrée des anciens hôpitaux militaires construits par Vauban, offrant quelques avantages pour l'exécution et la surveillance du service, présente des inconvénients pour l'aération et la salubrité. On tend, du reste, aujourd'hui à remplacer ce genre de construction par le système plus général des pavillons isolés, d'après le principe de Tenon.

Cette séparation relative des bâtiments empêche d'abord la propagation directe des miasmes de l'un dans l'autre, et permettrait, jusqu'à un certain point, de circonscrire le foyer d'une épidémie. C'est ce qui a été fait utilement, par exemple, au Val-de-Grâce, dans l'un des pavillons neufs où étaient réunis les cholériques, lors des épidémies dernières, et, depuis cette époque, les malades revenus de la campagne de Crimée, avec des symptômes de typhus.

L'élévation des bâtiments ne devrait point excéder deux étages et même un seul, toutes les fois que les frais d'achat de terrain et de construction le permettraient. Les hôpitaux temporaires de l'armée, construits en bois, n'ont même qu'un seul plan, le rez-de-chaussée ; tel est, avons-nous dit, à Alger, l'hôpital de Dey, occupé depuis plus de trente ans, comme hôpital provisoire, et dont l'état sanitaire est excellent ; tel est aussi l'hôpital du camp de Châlons, à l'installation duquel j'ai pu contribuer en 1857 (1); telles sont enfin les ambulances en campagne, et alors qu'il devient impossible de pourvoir à toutes les indications de l'hygiène, on est surpris des résultats obtenus par ce simple avantage.

Les inconvénients de la superposition de plusieurs étages ont d'ailleurs été signalés depuis longtemps par Hunter, Coste, Desgenettes, Pastoret et Villermé. Il y a en effet une réaction nuisible des étages du bas sur les étages supérieurs.

(1) *Rapport sur l'état sanitaire du camp de Châlons, sur le service de santé de la garde impériale et sur l'hygiène des camps*, adressé à S. E. le maréchal ministre de la guerre. (*Mémoires de médecine militaire*, t. XXII, 2e série, 1858.)

M. Malgaigne a cité une remarque de Desgenettes attribuant à l'installation de ses malades dans une salle de rez-de-chaussée, une plus grande proportion de succès que n'en obtenait l'un de ses collègues à l'étage plus élevé. La même considération m'avait déterminé à choisir au Val-de-Grâce un rez-de-chaussée tout entier pour mes salles de clinique chirurgicale.

Si les bâtiments ou pavillons doivent être séparés les uns des autres, ils doivent l'être plus encore des dépendances de l'hôpital : pharmacie, cuisine, dépense, boucherie, lingerie, buanderie, bains, logements d'emplois, salle d'opérations et amphithéâtre d'anatomie, afin, d'une part, de ne point y propager des émanations morbides, et d'autre part, de n'en point recevoir les miasmes délétères.

Mais un voisinage inévitable et souvent nuisible, c'est celui des latrines, de toutes les dépendances, la plus difficile à bien installer. « L'hygiène publique, comme l'a dit M. Bouchardat (1), est en arrière ici de l'hygiène privée. » Il en est à peu près de même dans les hôpitaux militaires, malgré les modifications et les améliorations tendant à diminuer ou à neutraliser la mauvaise odeur, soit par des ouvertures d'appel ou par de doubles portes, soit par des lavages multipliés ou par des mélanges désinfectants. Les latrines dites à la turque, adoptées dans les bâtiments de l'armée, sont insuffisantes et incommodes pour les hôpitaux. Les siéges à supports seraient préférables, s'ils étaient assez étroits sur leurs bords pour empêcher les malades d'y monter. L'odeur la plus pénétrante provenant enfin de l'urine, il y aurait utilité à placer et à désinfecter à part les urinoirs, ou mieux encore à y établir un filet d'eau courante, comme dans certains lieux publics.

Des jardins assez vastes et ombragés, ainsi que des promenoirs couverts, soit des cloîtres, soit des galeries, assurent aux malades, dans la plupart des hôpitaux de l'armée, un exercice et une récréation salutaires.

On devrait avoir toujours soin que les escaliers fussent larges, spacieux, bien éclairés, pour faciliter, à toute heure, l'accès des salles, et permettre, en tous sens, la ma-

(1) Cours d'hygiène à la Faculté de médecine de Paris.

nœuvre des brancards. Ils ne seront que mieux disposés, si, étant clos à leurs ouvertures par des portes vitrées, ils ne communiquent point directement avec les salles. Il en est ainsi dans plusieurs grands établissements, où les courants d'air auraient sans cela une influence pernicieuse sur les malades atteints déjà d'affections de poitrine.

L'installation des salles est le point essentiel de la question d'hygiène hospitalière.

Leur capacité considérable autrefois, admettant plusieurs rangées de lits serrés les uns contre les autres, pouvait satisfaire peut-être la vue des visiteurs ou le service des employés, mais devait assurément compromettre l'état des malades et la responsabilité des médecins.

L'appropriation de chaque bâtiment à un nombre limité de salles, et surtout de chaque salle à un nombre restreint de lits, comme on l'observe dans beaucoup d'hôpitaux militaires, mais selon des proportions suffisantes, telle est la mesure qui ne saurait être trop recommandée à l'autorité supérieure, pour améliorer les hôpitaux les plus défectueux, pour perfectionner les mieux construits et pour les préserver tous des dangers de l'encombrement, avec garantie d'une réduction certaine de la mortalité.

La contenance des salles, suivant leur capacité relative, peut être bornée à 10, 15 ou 20 lits, s'étendre souvent à 30 ou 40, mais ne devrait point dépasser 50 places. Le Val-de-Grâce présente ces différences de capacité très utiles à la répartition des catégories de malades. Cette répartition laissant à désirer dans quelques anciens hôpitaux, et dans les salles militaires de bon nombre d'hôpitaux civils, est généralement satisfaisante dans la plupart des bâtiments de construction moderne, tels que ceux de l'Algérie.

La séparation des salles les unes des autres par des paliers, des vestibules, des officines ou des chambres réservées aux grands malades, en établissant l'indépendance des différents services, contribue aux résultats favorables de la salubrité.

Les divisions de fiévreux, de blessés et de vénériens, formant les trois grandes catégories de malades dans tous les

hôpitaux de l'armée, sans exception, doivent, par une prescription réglementaire, être séparées les unes des autres. Une obligation secondaire ordonne l'isolement des affections éruptives et contagieuses, telles que la variole.

On ne voit donc plus aujourd'hui, comme on le voyait autrefois au Val-de-Grâce et comme cela existe encore à la Charité, de vastes salles communes, réunies entre elles, confondant les miasmes de leur atmosphère, aux dépens des malades. Beaucoup d'établissements étrangers présentent aussi cette regrettable disposition. Tel est par exemple, à Madrid, l'hôpital d'Atocha, dont les salles n'ont pas moins de 150 à 160 malades. Nous avons fait plusieurs fois la même remarque en Italie.

L'inconvénient des trop grandes salles n'est pas seulement d'en remplir tous les lits, en temps ordinaire, c'est surtout d'en ajouter d'autres, en temps d'épidémie, et de multiplier de la sorte les conditions fatales de l'encombrement. Les lits du milieu, toutes les fois qu'ils ne sont pas nécessaires, devraient rester disponibles, ou servir à changer de grands malades, ou bien à les isoler davantage de leurs voisins, parce qu'on ne peut toujours avoir des cabinets de réserve.

Moins les salles sont grandes et moins occupées, mieux chaque malade se trouve dans les conditions favorables de l'hygiène privée, ou à l'abri des transmissions morbides. C'est un fait bien reconnu et sur lequel tous les hygiénistes sont d'accord.

La capacité de la plupart des salles des hôpitaux civils de Paris a été étudiée avec tant de soin et décrite avec tant d'autorité par M. Malgaigne (1), que je n'ai pas besoin d'y insister, pour l'application du principe à l'hygiène des salles militaires. Je dirai seulement que le cubage des salles dans les hôpitaux de l'armée, et celui de l'espace affecté à chaque lit, sont l'un des éléments les plus essentiels à la prophylaxie de l'encombrement. La prescription réglementaire en est faite, mais devrait être renouvelée, afin que ce cubage ne fût jamais

(1) *Études statistiques sur les résultats des opérations dans les grands hôpitaux de Paris* (*Archives générales de médecine*, 1842).

réduit ou diminué par l'administration, sous prétexte de donner place à un plus grand nombre de malades, en temps d'épidémie, ce qui équivaut à augmenter les chances de la mortalité.

C'est la capacité cubique et non la superficie, comme on a tort de le faire quelquefois, qui doit indiquer et fixer le nombre de lits à placer dans une salle ; cette capacité cubique doit être de 30 mètres au moins pour chacun, et davantage toutes les fois que l'on peut l'obtenir.

L'espacement ou l'intervalle des lits borné à 65 centimètres en général, ne suffit pas et exige à peu près 1 mètre, de même que 2 ou 3 au moins sont nécessaires entre chaque rangée de lits. Il en faudrait encore plus pour les salles de clinique chirurgicale, eu égard à l'affluence des assistants au milieu de tous les blessés graves. J'avais soin au Val-de-Grâce de faire alterner ceux-ci, autant que possible, avec des hommes atteints d'affections plus légères ou de plaies non suppurantes.

Il faut ajouter que non-seulement un trop grand nombre de malades, réunis dans une même salle, en vicie l'atmosphère, mais encore en trouble le repos, surtout pendant la nuit, et alors qu'un sommeil réparateur des forces épuisées devient si salutaire. Les impressions pénibles de toute nature se multiplient alors, par les plaintes ou les cris des uns, par la mauvaise odeur ou la malpropreté des autres, par les accidents nerveux ou le délire chez plusieurs, par l'agonie enfin et la mort de ceux dont les cadavres sont ensuite transportés au dehors, sous les yeux de chacun. Affligeant spectacle qu'il faudrait épargner à tous, en les disséminant dans plusieurs salles, au lieu de les entasser dans une seule.

L'évacuation régulière et successive des salles, dans les hôpitaux militaires, est une excellente mesure dont l'époque varie, selon les besoins du service, mais qui a pour avantages de réduire le nombre des malades, et de permettre l'assainissement des locaux, par le moyen des salles de rechange. On ne saurait y attacher partout trop d'importance, conformément à l'instruction de l'ancien conseil d'hygiène (1). Il en est de même du blanchiment réglementaire des salles à la chaux ou

(1) Décret de la Convention nationale, du 3 ventôse, an II.

au chlorure de chaux, comme désinfectant. Cette prescription appliquée tous les ans, sinon tous les six mois, implique beaucoup d'autres soins de propreté.

C'est d'abord le nettoyage et le balayage journaliers des salles, devant commencer seulement à une heure rapprochée de la visite du matin, avec les précautions voulues pour ne point interrompre brusquement le sommeil des malades, et ne point les exposer, en état de moiteur, à un refroidissement brusque, par l'air des portes et des fenêtres ouvertes trop tôt.

C'est ensuite l'entretien des châssis et des parquets à cirer, au lieu du lavage qui les imprègne d'humidité, s'ils sont en sapin et non en chêne. Le carrelage et le dallage sont supprimés de plus en plus dans les hôpitaux militaires, comme provoquant trop de fraîcheur dans les salles.

C'est enfin la surveillance des détails qui exclut de l'entourage de chaque malade tous les objets inutiles, ou embarrassants et ne laisse auprès de lui, ni même au voisinage des salles, nul dépôt de linge malpropre, nul débris de pansement, ni vases de déjections, ni eaux stagnantes.

La literie des hôpitaux militaires laisse peu à désirer aujourd'hui. Des couchettes en fer généralement adoptées sont pourvues d'une paillasse et d'un sommier élastique, d'un matelas, d'un traversin, de deux couvertures et d'une paire de draps renouvelés, selon le besoin. La paillasse, dont les inconvénients sont bien reconnus, sera supprimée progressivement, lorsque le meilleur système de sommier élastique aura été adopté d'une manière définitive. (J'ai suivi autrefois, comme médecin en chef du Val-de-Grâce, beaucoup d'expérimentations sur cet objet.) On fera disparaître ainsi l'une des causes d'infection inhérente à chaque lit.

Les lits sont adossés aux trumeaux des salles de préférence aux fenêtres, dont la fraîcheur peut aggraver certaines maladies ou en provoquer d'autres, telles que des affections catarrhales, des rhumatismes, des névralgies, etc. La même raison fait éviter le contact des lits contre les murs, qui suspendent une partie de la circulation de l'air ambiant, et s'imprègnent d'humidité en hiver, de chaleur en été.

La hauteur du lit, plutôt un peu élevée que trop basse,

préserve davantage le malade des émanations malsaines de la surface du sol, en facilitant l'exploration médicale et diverses applications de la chirurgie.

Des lits à tréteaux garnis de paillasse suffisent pour les hôpitaux temporaires de l'armée, ou simplement des litières de paille pour les ambulances provisoires, mais à condition d'appliquer là, comme dans les établissements déjà créés, toutes les mesures propres à prévenir l'encombrement.

Les objets de literie, après chaque décès de maladie contagieuse, sont immédiatement enlevés, blanchis, brûlés s'il le faut et renouvelés avec soin.

Quant aux rideaux de lit, dont il a déjà été question, ils ne sont pas sans influence sur l'atmosphère des salles, en diminuant l'aération et en augmentant, pour chaque malade, la concentration des miasmes, de la poussière et des insectes. Les rideaux, si convenables qu'ils puissent être, dans les hôpitaux civils pour les femmes, sont justement interdits pour tous les hommes, et souvent même pour les officiers, dans les hôpitaux militaires, excepté dans les chambres ou aux lits des ophthalmiques. Les Invalides les ont conservés aussi, quoiqu'à une certaine époque, parmi eux, la fréquence et la multiplicité des suicides par strangulation aient été facilitées par les rideaux dont ils s'enveloppaient. Cette funeste épidémie morale avait décidé mon père, alors chirurgien en chef des Invalides, à supprimer les rideaux de lit dans ses salles.

Les bienfaits de la lumière, de la chaleur et de l'aération, d'une part, sont si manifestes sur la salubrité des hôpitaux, sur la vie des malades et sur la curabilité de leurs affections; la question complexe du chauffage et de la ventilation, d'autre part, a tant occupé les médecins, les physiciens et les industriels, que je m'abstiendrai de reproduire devant l'Académie ou d'ajouter à ce sujet des détails beaucoup mieux exposés par d'autres, notamment par M. Boudin (1), avec une connaissance approfondie de la question.

Je dirai toutefois que le chauffage réglementé dans les

(1) *Annales d'hygiène publique*, t. XLVII et suivants

hôpitaux militaires, et surveillé dans chaque salle, à l'aide d'un thermomètre, a été expérimenté par les divers systèmes préconisés à l'envi les uns des autres, pour pourvoir en même temps à l'aération. Soit le chauffage par circulation d'eau et la ventilation par appel, soit le chauffage à la vapeur et la ventilation mécanique par pulsion; soit toute autre combinaison employée, les observateurs ne paraissent pas encore s'accorder sur la préférence qu'il faut accorder à tel ou tel moyen, pour garantir le mieux les salles d'hôpitaux contre les effets du froid et des miasmes délétères.

Le système d'aération présumé l'un des meilleurs jusqu'à présent, tel que celui de Lariboisière, ne soustrait pas cependant ce bel hôpital aux complications morbides observées autre part, les érysipèles, les affections diphthéritiques, les fièvres puerpérales, ainsi que l'a rappelé, dans une autre discussion, notre savant collègue M. Tardieu (1). La cause de cette constitution morbide dépend sans doute de ce que l'on a augmenté le nombre de lits primitivement affecté à Lariboisière. Je suis du moins autorisé à le croire, d'après ce que m'en a dit M. le comte de Rambuteau lui-même, qui a présidé anciennement, comme préfet de la Seine, à l'installation de cet établissement modèle.

Par conséquent, si ingénieux que soient les différents systèmes de MM. Léon Duvoir et Leblanc, Thomas et Laurens, Van Heeke, Grouvelle et Chevalier, etc., ils ne semblent pas avoir, jusqu'à présent, une influence sensible sur la diminution de la mortalité.

Deux de mes excellents collègues du conseil de santé, MM. les inspecteurs Maillot et Poggiale (2), ont fait une étude comparative des appareils mis en usage, en donnant la préférence à celui de Van Heeke, tandis que M. le médecin principal Boudin a obtenu à l'hôpital de Vincennes, par l'appareil perfectionné de Léon Duvoir, un cubage d'air considérable pour chaque lit.

(1) *Bulletin de l'Académie de médecine*, t. XXVI. Juillet 1861.

(2) *Rapport au ministre de la guerre sur les principaux systèmes de chauffage et de ventilation* (*Mémoires de médecine militaire*, 3e série, t. Ier, 1859).

Cette question difficile est soumise actuellement à de nouvelles recherches par une commission mixte dans laquelle se trouvent plusieurs membres de l'Académie des sciences. Il s'agit de la ventilation par aspiration, système procédant de l'idée ancienne des cheminées d'appel, et que le célèbre Percy (1) semble avoir proposé le premier, en le soumettant à l'appréciation du conseil de santé des armées, et au jugement de l'Institut. Darcet comprit le développement à donner à cette idée; il en fit une habile application qui a été souvent modifiée depuis, et qui, de nouveau reprise, soutenue, perfectionnée par le savant général Morin (2), est peut-être destinée à résoudre définitivement les difficultés du problème.

Quoi qu'il en soit du perfectionnement de la ventilation artificielle, l'aération naturelle par les fenêtres opposées des salles reste le moyen le plus simple et le plus facile à employer, en y joignant des ouvertures mobiles à leur partie supérieure ou des vasistas, pour préserver les malades du contact direct de l'air. Cette disposition existe dans la plupart des hôpitaux militaires, et paraît être aussi, jusqu'à présent, le système le meilleur dans les hôpitaux de la marine, dont le chauffage est généralement établi par de grandes cheminées, si favorables en même temps à l'élimination des miasmes délétères qu'elles attirent, en les chassant au dehors et à la récréation des malades qui s'attristeraient de ne point voir la lumière du foyer.

Mais il faut reconnaître que l'aération naturelle, suspendue ou nulle pendant la nuit, difficile ou nuisible en hiver, saison de l'encombrement, provoque, en été, des courants d'air, des refroidissements et des complications morbides ou des maladies intercurrentes.

Néanmoins la ventilation est tellement indispensable à la salubrité des salles où se trouve un certain nombre de malades graves, atteints par exemple de fièvres typhoïdes, que beaucoup de médecins font ouvrir fréquemment les fenêtres ou les maintiennent ouvertes assez longtemps, pour prévenir les fu-

(1) *Art.* VENTILATION, du *Dict. des sciences médicales*, t. LVII, 182

(2) *Application à la ventilation de la chaleur développée par les appareils d'éclairage*, 1860.

nestes effets de la viciation de l'air, par insuffisance ou par défaut de cette simple précaution.

Sans la ventilation, du reste, le chauffage peut devenir une cause d'accidents graves, de congestions entre autres, et d'asphyxie, comme on l'observe quelquefois dans des salles de femmes, d'enfants et de vieillards, qui se refusent d'ordinaire à l'ouverture des fenêtres ou qui parviennent à les maintenir fermées. La discipline militaire ne permet pas aux soldats de tromper la surveillance à cet égard.

L'insuffisance ou l'excès de la ventilation naturelle et les difficultés de la ventilation artificielle par des appareils qui semblent disperser les miasmes sur place, sans les expulser ou sans les détruire, tels sont les motifs qui ont suggéré l'essai d'une foule de moyens désinfectants.

Il en est un parmi eux d'origine déjà ancienne et d'un emploi vulgarisé dans les hôpitaux militaires comme dans les hôpitaux civils, à savoir les fumigations de chlore recommandées par Guyton de Morvau contre les émanations volatiles, mais ne suffisant pas, en raison de leur effet passager, contre des miasmes fixes.

C'est pour y remédier plus efficacement que M. le docteur Nonat (1) préconise des fumigations permanentes de chlorure de chaux étendu d'eau, à l'aide de vases placés dans les salles, en faisant renouveler le chlorure tous les trois ou quatre jours. Les heureux résultats que notre honorable confrère annonce avoir obtenus de l'expérimentation suivie de ce moyen, le feront essayer sans doute dans les établissements hospitaliers.

Quant aux autres agents de désinfection, ils sont si nombreux, si variés, si nouveaux ou si renouvelés des anciens, que l'appréciation de leurs effets méritera de fixer l'attention des médecins, lorsqu'un rapport spécial sur ce sujet sera présenté à l'Académie.

Les dangers de l'infection dépendent donc de la viciation de l'air, surtout pendant la nuit : les excrétions naturelles des

(1) *Lettre à l'Académie de médecine*, séance du 21 janvier 1862.

malades, l'haleine et la transpiration fétides, les expectorations de gaz et de liquides, les déjections alvines, les évacuations et les fistules urinaires, jointes aux sécrétions accidentelles, à la suppuration des plaies et des ulcères, et quelquefois à la putridité de la gangrène ou de la pourriture d'hôpital, sont autant de sources ou de foyers méphitiques, sans compter l'odeur des médicaments, des tisanes et des cataplasmes, l'évaporation de toutes les substances liquides et les émanations infectes du sol, de l'huile ou du gaz d'éclairage, de la literie, (des couvertures de laine et de la paillasse surtout), ainsi que des latrines trop rapprochées, mal construites ou mal tenues.

De tant d'effluves, de tant de causes délétères, peuvent surgir, en se développant et s'aggravant toujours, les épidémies les plus redoutables, dans les ambulances et les hôpitaux militaires, à la suite des armées en campagne, à travers toutes les fatigues, toutes les privations de la guerre, et par-dessus tout au milieu des conditions désastreuses de l'encombrement.

Les épidémies des armées, dont je n'ai pas à faire ici le sinistre tableau, ont fourni à l'histoire de lamentables documents, depuis les époques les plus reculées jusqu'à nos jours. Il suffira d'invoquer les funèbres souvenirs de nos pères, de nos maîtres, de nos confrères et même les nôtres, pour énoncer, par exemple, les ravages de la peste dans l'expédition d'Égypte et de Syrie; de la fièvre jaune dans nos colonies; du choléra, plusieurs fois en France et partout; de la dysenterie, presque toujours; du scorbut, dans la marine principalement; du typhus, dans les campagnes de Russie, d'Allemagne, de France et de Crimée; de la pourriture d'hôpital, qui procède du typhus, selon la juste appréciation de Delpech (1), et enfin de l'infection purulente, plus grave que la pourriture d'hôpital et plus insidieuse, quoique observée partout aussi, presque chaque jour, à l'état sporadique.

Il faut mentionner de plus les innombrables effets de congélation survenus dans les campagnes de Russie et de Crimée, signalés à diverses époques, même dans les ambulances de l'Algérie. Je regrette de ne pouvoir en citer quelques exemples,

(1) *Mémoire sur la pourriture d'hôpital*, Paris, 1815.

parmi lesquels l'un des plus remarquables a été rapporté par M. le docteur Shrimpton (1), lorsqu'il appartenait au service de santé de l'armée d'Afrique. Il avait reçu à Sétif, en janvier 1846, 532 malades, tous atteints de congélations à des degrés divers, entassés dans une caserne en construction, et couchés sur des paillasses, au contact les unes des autres. La mortalité fut néanmoins très légère, grâce à la précaution de faire transporter journellement les malades dans la cour, tandis que l'on ouvrait toutes les portes et fenêtres des pièces à nettoyer. Il n'y eut que 19 morts sur 477 malades, et 3 morts sur 55 opérations.

Joignons aux désastreuses épidémies les maladies contagieuses ordinaires, confondues autrefois dans les mêmes salles de l'Hôtel-Dieu, et souvent au rapport de Tenon (2), dans les mêmes lits à la fois, la syphilis, la variole, la rougeole, l'érysipèle (contagieux dans certains cas), les affections diphthéritiques, les fièvres typhoïdes, les ophthalmies purulentes, et l'on reconnaîtra que la plupart de ces maladies, déjà si graves par elles-mêmes, le deviennent d'autant plus par leur transmission directe, et nécessitent par conséquent l'application des mesures d'hygiène les plus suivies. L'isolement des malades, ou du moins de ces diverses catégories de malades, est essentiellement prescrit dans les hôpitaux de l'armée; et, si l'une de ces affections prédomine au point de constituer un état épidémique, on y organise une ou plusieurs salles spéciales, avec un service à part. C'est une règle établie par exemple au Val-de-Grâce, d'après une tradition déjà ancienne dans les hôpitaux militaires de France, car elle date de la fin du siècle dernier. Plusieurs hôpitaux civils en Angleterre paraissent l'avoir adoptée.

En dehors de ces conditions exceptionnelles, le soldat malade à l'hôpital semble mieux placé que l'ouvrier ou le pauvre, pour guérir, et pourtant, malgré sa jeunesse et son aptitude physique, malgré les soins qu'il a reçus déjà au quartier ou à l'infirmerie régimentaire, malgré l'exemption de service ou le repos prolongé qu'il peut obtenir, le soldat malade, toutes

(1) *Recueil des mémoires de médecine militaire*, t. Ier, 2e série, 1846.
(2) *Memoires sur les hôpitaux de Paris*, 1788.

choses égales d'ailleurs, est souvent atteint plus gravement que l'ouvrier, parce qu'il subit en même temps les débilitants effets des fatigues, des exercices, des factions et des marches. De là une tendance aux complications des maladies simples à la chronicité des maladies aiguës et à la terminaison funeste des maladies chroniques.

La prolongation de séjour des malades dans un hôpital militaire au delà de trois mois, nécessite de la part du médecin en chef des rapports officiels qui servent d'abord à la statistique nosocomiale, et motivent ensuite des congés de convalescence ou de réforme, afin de ne pas maintenir indéfiniment à l'hôpital des hommes qui risqueraient d'y succomber.

Le traitement des malades dans les hôpitaux de l'armée ne présente point de particularités notables pour la question qui occupe l'Académie. J'indiquerai toutefois l'influence avantageuse des premiers soins assurés à l'infirmerie ou en route par les médecins des corps; des ablutions de propreté pour chaque entrant à l'hôpital; le pansement simplifié des plaies; l'emploi de l'eau substitué souvent aux cataplasmes (comme en Angleterre et en Allemagne); la réunion immédiate remplacée, dans bien des cas, par la demi-réunion, aidée de la position; les pansements rares (dont le principe fort ancien a été préconisé longuement par César Magatus) (1), et qui offrent, comme les appareils inamovibles, de si grands avantages dans la pratique des armées, au milieu surtout des dangers de l'encombrement et sous l'imminence des épidémies.

J'indiquerai de plus les tendances progressives de l'art vers la chirurgie conservatrice, et toutes les ressources de la thérapeutique substituées aujourd'hui avec plus de persévérance qu'autrefois, à la médecine opératoire.

Apprécions aussi les heureux effets d'une surveillance réglementaire des applications diverses et des distributions, soit de médicaments, soit d'aliments, ainsi que de toutes les prescriptions de l'hygiène hospitalière.

Une alimentation assez substantielle et réparatrice, dans les cas même de blessure et après les opérations, a la plus heu-

(1) *De rarâ medicatione vulnerum*, 1733.

reuse influence sur la guérison des sujets épuisés par les hémorrhagies, par la suppuration, par la diète ou par un séjour prolongé au lit. C'est avec l'aération bien établie, l'une des deux conditions de la salubrité des hôpitaux de Londres, où les opérés sont soumis, dès le premier jour, au régime anglais du vin, du bouillon et de l'opium à doses fractionnées. Ce régime, sans l'opium, mais avec une nourriture substantielle, fournit de bons résultats en campagne et dans les ambulances, comme dans les hôpitaux de la marine, contre les maladies débilitantes et en particulier contre le scorbut. Ce qu'il faut alors c'est que les approvisionnements ne souffrent ni retard ni déchets, sous peine des plus graves conséquences.

La dégustation journalière des aliments par les officiers de santé en chef des hôpitaux de l'armée est une garantie sûre de la quantité et de la qualité des denrées fournies. Un registre spécial en consigne l'acceptation ou le rejet, et l'état sanitaire s'en ressent favorablement.

L'exercice de la promenade, en obligeant tous les malades qui ne sont pas alités à sortir des salles, a un double avantage pour ceux du dehors et pour ceux du dedans. Les impotents eux-mêmes ou les paraplégiques peuvent prendre l'air dans des chariots, introduits par exemple au Val-de-Grâce, à l'instar de ceux des Invalides,

La gymnastique, enfin, serait d'autant plus utile aux malades de nos hôpitaux que les soldats y sont exercés régulièrement, et elle pourrait être appropriée aux indications de la maladie ou de la convalescence, par des mouvements physiologiques combinés, comme ceux de la gymnastique dite *suédoise* de Ling (1).

Des influences morales agissent aussi salutairement sur les soldats malades, contents de retrouver des camarades auprès d'eux ou d'obtenir un congé, s'ils sont frappés de nostalgie. D'autres soins sont confiés plus particulièrement à la sollicitude des sœurs et des aumôniers.

Ajoutons que la triple surveillance médicale, administrative et militaire, les conférences réglées sur tous les besoins

(1) *Principes de gymnastique générale*. Upsal, 1834.

du service, les visites journalières des officiers de ronde pour recueillir, en les consignant sur un registre, les réclamations des malades, et des visites semblables de la part des officiers de santé des corps, enfin, les inspections générales de chaque année, offrent autant de garanties pour la salubrité des hôpitaux militaires.

Une salle de convalescence devrait exister dans chaque établissement. Nous en avions autrefois fait installer deux au Val-de-Grâce, l'une pour les fiévreux, l'autre pour les blessés. Ce serait d'abord un moyen de désemplir les salles de malades; ce serait ensuite une ressource utile aux soldats trop pauvres ou trop éloignés de leurs familles, pour pouvoir profiter d'un congé.

La sortie de l'hôpital, si elle est prématurée, expose le convalescent à des rechutes ou à des récidives, sinon à d'autres accidents plus graves quelquefois que la maladie première, et cette situation doit être moins fâcheuse aussi pour le soldat que pour l'ouvrier, sans force encore, sinon sans ressources suffisantes pour reprendre immédiatement son travail.

C'est par l'évacuation régulière d'un certain nombre de malades sur d'autres lieux que les hôpitaux militaires peuvent être préservés aussi des dangers de l'encombrement. Ces évacuations doivent comprendre les hommes les plus valides et les vénériens en état de supporter le transport.

Les congés de convalescence accordés chaque année et les congés de réforme délivrés chaque trimestre aux malades de l'armée, complètent, avec les évacuations, quelques-uns des avantages de l'hygiène hospitalière. Mais tous les soldats ne sont pas à même de profiter de ces congés, et les salles de convalescents installées depuis quelques années très utilement dans chaque infirmerie régimentaire, ne peuvent non plus répondre à tous les besoins.

La création des asiles de convalescence pour les hôpitaux civils, à Vincennes et au Vésinet, doit prospérer comme l'un des bienfaits publics de notre époque. C'est là une œuvre grandement charitable, dont l'application à l'armée serait digne de la haute sollicitude du gouvernement.

Deux hôpitaux militaires de convalescence pourraient être

établis, par exemple, l'un dans le midi de la France et l'autre en Algérie, dans des conditions de salubrité qui offriraient les plus précieux avantages pour le présent, et réaliseraient, malgré la dépense première, de véritables économies pour l'avenir. La proportion plus marquée des guérisons, en diminuant celle des congés de convalescence et de réforme, réduirait aussi la durée de séjour dans les établissements hospitaliers, en même temps que les rechutes ou récidives seraient prévenues par cette mesure désirable pour l'état sanitaire de l'armée.

La mortalité dans les hôpitaux militaires forme à elle seule une question vaste et complexe digne d'une sérieuse attention. L'un de nos camarades les plus distingués, chargé aujourd'hui d'une mission de confiance auprès de S. M. le Shah de Perse, M. Tholozan (1) a publié un intéressant travail sur l'*excès de mortalité dû à la profession militaire*. Je ne le suivrai pas ici dans ses laborieuses recherches, auxquelles on peut rattacher d'autres causes de mortalité.

C'est d'abord l'influence du recrutement sur l'âge, la constitution, le tempérament, la profession antérieure et les prédispositions morbides; c'est aussi l'action morale si puissante, qu'elle fortifie ou affaiblit le courage, selon les conditions individuelles de chacun. N'avons-nous pas tous été témoins, dans les hôpitaux, des contrastes de l'exaltation et de la démoralisation chez les blessés vainqueurs ou vaincus de nos sanglantes révolutions? Dupuytren (2), l'un des premiers, a bien exposé ce fait général pour l'Hôtel-Dieu, après les journées de juillet 1830.

C'est ensuite une série de conditions inhérentes aux hôpitaux eux-mêmes, mais dominées toutes par l'encombrement. « Il est incontestable, dit M. Michel Lévy (3), que la mortalité » est plus forte dans les grands hôpitaux que dans les petits » hôpitaux. Jamais on n'a rassemblé impunément plusieurs » milliers de malades dans un même établissement; 1000 à

(1) *Gazette médicale de Paris*, 4 juin 1859.

(2) *Traité des blessures par armes de guerre*, 1834.

(3) *Traité d'hygiène publique et privée*, 1857.

» 1200 est un chiffre-limite, au delà duquel les abus et les dan-
» gers de l'infection deviennent difficiles à réprimer. »

C'est aussi l'insuffisance des prescriptions d'hygiène, le défaut d'aération, la mauvaise qualité des aliments, ou un régime débilitant, et la plupart des influences pernicieuses que nous avons passées en revue, pour en faire l'application aux diverses causes de la mortalité.

C'est enfin l'effet direct d'un grand nombre d'opérations chirurgicales, dont la statistique a été si bien comparée en France et en Angleterre par MM. Malgaigne, Topinard et Le Fort. Disons toutefois que la statistique de la mortalité dans les hôpitaux de Londres et de Paris, si favorable qu'elle soit pour nos confrères d'outre-Manche, serait sujette peut-être, pendant une plus longue période, à de telles variations ou à de telles éventualités, qu'elle ne saurait être acceptée d'une manière absolue, sans bien des réserves nécessaires et sans des garanties semblables de catégories de malades, d'espèces de maladies et de groupes d'opérations. N'a-t-on pas reconnu d'ailleurs qu'en définitive la mortalité est à peu près la même en France et en Angleterre?

Il ne faut pas croire non plus qu'elle soit proportionnellement moindre, dans les grands hôpitaux des départements. Renaudin (1) l'avait démontré, dès la fin du siècle dernier, pour les hôpitaux de Lyon, et entr'autres pour l'Hôtel-Dieu, dont l'état sanitaire a été, depuis, sensiblement et progressivement amélioré.

L'hôpital militaire de cette ville a beaucoup plus souffert de la fièvre typhoïde que les établissements civils, en 1849, parce qu'il était encombré par le cantonnement des troupes de l'armée des Alpes, autour de la ville. Le tiers environ des malades succomba. (Rapport inédit de M. le médecin principal Faure.)

La mortalité à la suite des opérations chirurgicales était telle au grand hôpital civil de Marseille, il y a une quinzaine d'années, que M. Chapplain (2) disait : « Le chirurgien

(1) *Réflexions sur l'air atmosphérique, etc., dans les hôpitaux*, 1789.

(2) *De l'influence des anciens hôpitaux sur les opérations chirurgicales*, 1847.

» n'accorde qu'en tremblant les secours de l'art aux malheu-
» reux qui les réclament à cet hôpital, tant la mortalité a une
» large part dans son œuvre. »

Combien de citations du même genre ne pourrait-on pas faire? Mais en recherchant avec soin la cause prédominante de cette mortalité, on trouve presque toujours et partout l'encombrement; et on ne saurait trop le redire.

Est-il besoin de rappeler, après cela, que les chirurgiens les plus habiles, les plus expérimentés, perdent plus de malades ou d'opérés dans leurs salles trop remplies, que n'en perdent à beaucoup près, certains de leurs confrères, pratiquant quelquefois dans le même établissement, mais plus à l'écart, et dans des conditions analogues à celles de l'isolement ou de la campagne? C'est pourquoi, sans doute, l'administration de l'assistance publique s'occupe d'installer, hors de Paris, un petit hôpital exclusivement destiné aux graves opérations de la chirurgie.

C'est aussi pour semblable raison que les chirurgiens militaires opérant à l'armée, tantôt en plein air, sous la tente ou dans des ambulances découvertes, tantôt dans des hôpitaux temporaires, obtiennent souvent les plus heureux résultats, au milieu même des hôpitaux permanents, toutes les fois que ceux-ci se trouvent soustraits à l'accumulation des malades ou des blessés.

Parmi les faits nombreux qui le prouvent, j'en citerai un seul : il appartient à l'histoire de Paris, en mars 1814.

La mortalité dans les hôpitaux militaires était devenue beaucoup plus considérable que pour un nombre proportionnel de soldats admis dans les hôpitaux civils. Elle fut même décuplée, par le retour de l'armée, au milieu des troupes étrangères. La plupart des malades et des blessés graves affluaient surtout au Val-de-Grâce; tous les locaux furent bientôt encombrés, tandis que l'on évacuait principalement sur les hôpitaux civils, dont on n'avait pas augmenté le nombre de lits, tous les hommes encore assez valides pour s'y transporter. Cette situation fut clairement exposée au ministre de la guerre dans un rapport des inspecteurs généraux du service de

santé (1); on pourvut à des évacuations régulières et à toutes les mesures d'hygiène qui devaient faire cesser l'encombrement du Val-de-Grâce, et l'excès de la mortalité n'y reparut pas.

Ce fut alors en effet, comme l'a rappelé M. Malgaigne dans la discussion, que les abattoirs, transformés en hôpitaux temporaires, offrirent les résultats les plus avantageux pour la proportion des pertes.

La statistique de la mortalité ne doit pas, en définitive, se borner aux opérations chirurgicales qui ne représentent que la minime fraction des décès dans les hôpitaux, de même qu'après une grande guerre, suivie d'une désastreuse épidémie, une centaine d'amputations entre seulement en ligne de compte avec plusieurs milliers de malades.

Cette statistique doit donc comprendre toutes les causes de mort, soit par blessures, soit par maladies similaires, pendant une assez longue période. C'est ainsi qu'est instituée régulièrement la statistique semestrielle dans les hôpitaux de l'armée, dans les salles militaires des hôpitaux civils de l'intérieur, et dans les hôpitaux et ambulances de l'Algérie. Elle a pour titre : *État spécial des maladies, blessures ou infirmités qui ont été causes de mort* (2).

Une statistique différente de celle des hôpitaux militaires a été entreprise il y a deux ans, pour les hôpitaux civils, par M. A. Husson (3), directeur de l'administration générale de l'assistance publique, avec le concours d'une commission de médecins et de chirurgiens, dont le premier rapport officiel témoigne déjà tout le bien que l'on doit attendre de cette décision pour la salubrité des hôpitaux.

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DEUXIÈME PARTIE.

La question générale de l'hygiène des hôpitaux militaires m'a entraîné, messieurs, bien au delà des limites présu-

(1) *Archives du conseil de santé des armées.*

(2) Modèle n° 9, article 5 de la loi du 22 janvier 1851.

(3) *Statistique médicale des hôpitaux de Paris* (Mesures relatives à son organisation), 1860.

mées d'une discussion qui semblait, à son début, menacée d'indifférence et d'oubli. Mais je n'ai pas cru devoir céder à une impression défavorable, en réduisant à quelques aperçus sommaires tout ce que j'étais autorisé à dire sur un sujet d'une aussi grande importance. Il m'a semblé utile, au contraire, de faire intervenir dans cette discussion des éléments assez développés pour l'éclairer peut-être, en soumettant à l'appréciation de l'Académie ce que l'étude, l'observation et l'expérience m'ont appris, depuis trente ans, sur toutes les conditions sanitaires des hôpitaux de l'armée.

Le point fondamental que j'ai tâché, en définitive, de faire ressortir de l'ensemble et des détails de ce long exposé, c'est la redoutable influence de l'encombrement, et, par conséquent, l'indication essentielle de la dissémination des malades et des blessés.

Les deux campagnes de Crimée et d'Italie vont nous fournir, dans les situations les plus contraires, les plus opposées, la démonstration directe la plus évidente, la plus irrécusable du fait dominant sur lequel j'ai cru devoir tant insister.

C'est par là que je terminerai, en priant l'Académie de vouloir bien me conserver encore sa bienveillante attention.

Tous les documents que l'on possède sur l'histoire médico-chirurgicale de la campagne de Crimée, les publications spéciales de MM. Baudens (1), Scrive (2), Armand (3), G. Macleod (4), P. Pincoffs (5) et Ch. Bryce (6), la collection des matériaux relatifs au service de santé de l'armée anglaise (7),

(1) *La guerre de Crimée, les campements, les abris, les ambulances, les hôpitaux, etc.* 1857.

(2) *Relation médico-chirurgicale de la campagne d'Orient, etc.* 1857.

(3) *Histoire médico-chirurgicale de la guerre de Crimée, d'après les travaux des médecins militaires.* 1858.

(4) *Notes on the surgery of the war in the Crimea.* 1858.

(5) *Experiences of a civilian in earstern military hospitals.* 1857.

(6) *England and France before Sebastopol, from a medical point of view.* 1857.

(7) *Medical and surgical history of the british army, in the years* 1854-55-56. London, 1858.

les tableaux statistiques établis avec le plus grand soin pour l'armée française, par M. le médecin principal Chenu, qui ne les a pas encore fait imprimer, et surtout les rapports officiels, mais également inédits, de MM. les inspecteurs Michel Lévy et Baudens, ainsi que du médecin en chef de l'armée, M. Scrive, sont autant de témoignages, à divers points de vue, des funestes effets de l'encombrement dans les ambulances et les hôpitaux.

Je ne puis faire intervenir, d'abord, à cet égard, auprès de l'Académie, une autorité plus compétente que celle de notre éminent collègue, M. Michel Lévy, inspecteur-directeur du service de santé de l'armée d'Orient, pendant la première période de la campagne. Chacune des pièces de sa correspondance officielle de Constantinople, qu'il m'a engagé à parcourir et à citer ici au besoin, est un avertissement salutaire des dangers à craindre ou des mesures à prendre, au milieu des épidémies de cette pénible guerre.

Il signale, par exemple, l'agglomération formidable de deux mille cent lits à l'hôpital de Péra, et les ravages occasionnés, à Varna, par l'épidémie cholérique ainsi que par la pourriture d'hôpital ; il démontre, d'après l'expérience depuis longtemps acquise, qu'au-dessus de huit cents malades, les hôpitaux s'infectent, et comme exemple, il prouve que l'accumulation des blessés, des opérés en suppuration, des dysentériques de Crimée et des scorbutiques de la marine, pouvait engendrer des affections contagieuses et meurtrières ; il fait surtout comprendre que l'entassement des malades et des blessés, à Sébastopol, serait un immense danger pour l'armée ; il proteste de même contre l'encombrement des navires et cite l'un deux qui, ayant à son bord 1200 hommes, en eut 350 atteints du choléra, auquel 72 succombèrent en quarante-huit heures.

M. Lévy, établissant enfin, par une déclaration formelle, l'imminence du typhus et la nécessité de multiplier l'installation des hôpitaux, des baraques et des tentes, recommande instamment toutes les mesures d'hygiène, dont mieux que personne il pouvait apprécier l'importance. Mais mieux que personne aussi, il aurait droit de faire connaître à l'Académie

les résultats de sa grande expérience et de son utile intervention à l'armée d'Orient.

M. l'inspecteur Baudens, qui l'y remplaça, dans la dernière période de la campagne, avec des instructions spéciales de la part de S. E. le maréchal Vaillant, ministre de la guerre, insiste, comme M. Lévy, auprès des autorités militaires et administratives, pour prémunir les ambulances et les hôpitaux contre les redoutables effets de l'agglomération d'un trop grand nombre de malades. Il fait voir avec évidence que là est le foyer des fièvres graves, de la dysenterie, de la résorption purulente, de la pourriture d'hôpital et du typhus, soit en Crimée, soit à Constantinople, et il prescrit avec persistance les règles hygiéniques les plus rationnelles, l'espacement des lits, la désinfection des locaux et l'évacuation des malades, en regrettant que les médecins et les administrateurs ne sachent pas s'entendre sur la portée du mot *encombrement*.

M. Scrive, enfin, comme médecin en chef de l'armée, a fait aussi, pendant toute la durée de la campagne, de constants efforts, mais trop souvent insuffisants, par les obstacles à vaincre, ou par la force même des choses, pour assurer l'état sanitaire des troupes décimées en Crimée. Les causes et la propagation des épidémies semblaient au-dessus des ressources dont pouvaient disposer le commandement, l'administration et le service de santé.

Les recherches de plusieurs médecins militaires, et entre autres celles du regrettable Félix Jacquot (1), et de M. le médecin principal Garreau (2), attestent les désastres causés par le typhus, au milieu de l'affluence et de l'agglomération des malades dans les ambulances et les hôpitaux.

L'un de nos confrères de l'armée, aussi distingué par le savoir que par l'expérience, M. le médecin principal Cazalas, a bien voulu me communiquer, à ce sujet, quelques renseignements précis d'une grande valeur, partiellement extraits d'un travail encore inédit. Il m'autorise à en faire connaître à l'Académie la substance, au point de vue de la discussion.

(1) *Du typhus de l'armée d'Orient.* 1858.

(2) *Mémoire sur le typhus de l'armée d'Orient.* 1858.

Des maladies typhiques nombreuses ont apparu vers la fin de 1855, et se sont multipliées parmi les troupes françaises et anglaises. Elles se sont aggravées pendant l'hiver plus rigoureux de 1856, au milieu des Français et des Piémontais, par l'encombrement des camps, des ambulances et des hôpitaux, tandis qu'elles ont sensiblement diminué, puis disparu dans l'armée anglaise, par les bienfaits de l'hygiène la mieux comprise, et malgré les émanations infectes des cimetières voisins. Des résultats tout à fait analogues se sont manifestés dans les hôpitaux de Constantinople, et quelquefois dans le même hôpital, selon que l'encombrement, cause immédiate du typhus, augmentait ou diminuait. C'est donc là un fait général, dégagé de détails et bien concluant. Voyons quelques faits particuliers à l'appui.

L'hôpital français de Rami-Tchifflick, l'un des plus favorablement situés de la ville, est resté salubre et préservé de tout encombrement, par la fixation du nombre des lits à 900. M. Cazalas, qui en était le médecin en chef, avait rigoureusement déterminé cette limite. Elle ne fut pas dépassée non plus par M. Garreau, son successeur, et l'hôpital conserva ses priviléges de salubrité; mais plus tard, un autre chef de service aussi recommandable, M. Volage, moins inquiet, sans doute, de l'agglomération des malades, et plus confiant dans les ressources matérielles dont il pouvait disposer, éleva le nombre des lits à 1200, puis à 1400. L'hôpital, dès lors rempli progressivement jusqu'aux combles, devint le foyer le plus redoutable du typhus, et une effrayante mortalité n'épargna ni les infirmiers, ni les sœurs, ni les médecins, parmi lesquels le chef lui-même du service fut une des premières victimes. M. Cuvillon, qui le remplaça, fut frappé comme lui, bientôt après, par la fatale épidémie et ne conserva l'existence, qu'en perdant la raison.

L'hôpital militaire de Péra presque aussi encombré que l'avait été, en dernier lieu, celui de Rami-Tchifflich, devint également un foyer mortel pour les malades.

M. F. Jacquot comptait le typhus pour plus d'un tiers dans la mortalité de l'armée; il l'évaluait même à 50 pour 100 chez les hommes traités dans les hôpitaux de Constantinople. Il avait

puisé là aussi le germe de la fatale maladie qui devait le faire périr plus tard, en lui laissant encore le temps de la décrire, dans un ouvrage publié depuis par les soins de sa famille et de ses amis.

L'hôpital de l'Ecole militaire où il n'y eut jamais d'encombrement, n'a présenté que 1/10 de décès par le typhus ; et la mortalité générale de l'établissement a été inférieure à celle des années précédentes pour la même époque.

L'hôpital civil de Péra, enfin, parfaitement organisé pour 90 lits, par le docteur Vérollot son médecin en chef, ayant reçu 200 malades ordinaires et 100 typhiques, du 1er janvier au 30 avril 1856, a toujours été préservé, sans qu'un seul cas de typhus s'y soit développé. Les 220 malades ordinaires ont fourni 21 décès et les 100 typhiques 15 seulement. Ce dernier fait entraîne la conviction, sans nécessiter d'autres preuves sur les effets pernicieux de l'encombrement dans les hôpitaux de Constantinople.

Des résultats non moins concluants ont été constatés dans les ambulances de la Crimée, strictement restreintes chacune à 200 ou 400 hommes, dit F. Jacquot, et dans lesquelles on en accumulait le double ou le triple. C'est ainsi qu'à l'ambulance de la 1re division du 3e corps, un seul infirmier resta valide, et que sur 16 médecins, 15 furent malades. D'autres ambulances au contraire mieux installées et surtout non encombrées, n'eurent que des cas exceptionnels d'affections typhiques.

Diverses ambulances enfin mal appropriées d'abord aux besoins de leur situation et remplies d'un trop grand nombre de malades, furent envahies par le typhus, dont les progrès s'arrêtèrent ensuite, dès qu'un espacement plus large ou l'augmentation du nombre des tentes permit une plus grande dissémination des malades. M. le médecin-major Quesnoy (1) qui a donné connaissance de ces faits, les a bien appréciés, avec le zèle dont il a fait preuve aux ambulances.

Le service des bâtiments de la marine n'a pas moins souffert : « Sur les navires qui transportent les malades, raconte

(1) *Notice médico-chirurgicale sur l'armée d'Orient* (*Mémoires de médecine militaire*, t. XX, 2e série. 1858).

» M. F. Jacquot, même encombrement ; » et il ajoute : « M. Ar-
» naud, médecin en chef de l'hôpital de la marine à Thérapia,
» disait à la Société médicale de Constantinople : Sans discerne-
» ment, sans humanité, on a embarqué, malgré les plus vives
» réclamations de mes collègues, un nombre de malades toujours
» double de celui que les bâtiments de l'État pouvaient con-
» tenir. » Le typhus s'est développé à bord de ces navires et
» a sévi cruellement sur l'équipage. »

La statistique générale et officielle (1) des décès constatés dans l'armée française, après la campagne et après l'évacuation de la Crimée, présente un total de 67 056, sur un ensemble d'envoi de troupes de 309 268 hommes, dont plus de moitié ont été atteints de maladie.

Voici quelle a été la mortalité parmi les sœurs de charité, d'après les documents inédits de M. Cazalas :

Sur 160 sœurs employées dans les hôpitaux de Constantinople, 68 ont eu le typhus en 1856 ; 14 ont été traitées dans les établissements plus ou moins encombrés, c'étaient à la vérité les femmes les plus malades, mais sur ce nombre 14, 11 sont mortes, tandis que 54 autres ont pu être transférées à l'infirmerie Saint-Benoît, de Galata, pourvue d'excellentes conditions hygiéniques et surtout à l'abri de l'encombrement ; or sur ces 54 sœurs, pas une seule n'a péri. — Notons que 4 seulement, détachées de la maison, ont contracté le typhus, en accompagnant des convois à bord de bâtiments surchargés de malades.

Il faut ajouter que sur 30 sœurs préposées au service intérieur de l'infirmerie si salubre de Saint-Benoît, pas une seule n'a été atteinte du typhus ni d'affection typhique. Quels résultats plus remarquables pourrait-on produire à l'appui des faits exposés devant l'Académie ?

Je dirai seulement qu'au retour de Crimée, un certain nombre de malades, entrés au Val-de-Grâce avec des symptômes manifestes de typhus, l'ont transmis à plusieurs sœurs dont deux ont succombé, malgré tous les soins.

(1) *Rapport à l'Empereur par le maréchal ministre de la guerre su la guerre d'Orient.* 1856.

Mais la mortalité proportionnellement la plus forte a sévi parmi les officiers de santé, parmi ceux surtout qui étaient attachés au service des ambulances et des hôpitaux.

Ainsi, d'après M. Cazalas, sur une moyenne totale de 346 officiers de santé de l'armée de Crimée, car l'effectif a varié selon les époques de l'expédition, presque tous ont été plus ou moins malades et 83 sont morts, soit pendant la campagne, soit peu de temps après. L'immense majorité des décès appartient au typhus, quelques-uns sont dus à la dysenterie et plusieurs au choléra.

Voici les chiffres partiels de la funèbre liste dont je n'ai pas à reproduire les noms, il suffira de l'indication des grades : 3 médecins principaux; 25 médecins-majors; 38 aides-majors; 4 pharmaciens; 4 sous-aides, et 9 officiers de santé de différents grades morts quelque temps après la campagne; total : 83; presque tous atteints, en prodiguant leurs soins aux malades des ambulances ou des hôpitaux encombrés. Il ne faut pas oublier non plus ceux de nos camarades qui ont succombé plus tard encore aux suites des fatigues et des maladies qu'ils avaient aussi éprouvées, au milieu des désastreuses épidémies de cette terrible guerre.

Tels sont, messieurs, pour la campagne de Crimée, les aperçus sommaires quoique partiels, qui m'ont paru se rattacher à la discussion engagée devant l'Académie et qui tendent à démontrer une fois de plus la pernicieuse influence de l'encombrement, et la salutaire intervention de l'hygiène pour la salubrité des hôpitaux.

La campagne d'Italie entreprise dans des conditions favorables de climat, de distance, de ressources et de durée, mais exposée aux fatigues inévitables de l'excès de la chaleur, de la rapidité des marches ou de la fréquence des déplacements, et à des privations par le retard des convois ou des approvisionnements, s'est accomplie cependant avec les plus avantageuses conséquences pour la santé des troupes, grâces à la haute sollicitude du chef de l'État et de l'armée, à l'intervention éclairée du maréchal major général, à l'autorité administrative de l'intendant général, à la prévoyance de l'adminis-

tration de la guerre, et enfin à l'unité de direction, à l'entente et au dévouement de tout le personnel du service de santé.

L'Académie voudra bien me permettre de lui dire en peu de mots et avec toute réserve, dans quelle mesure j'ai pu contribuer, pour ma part, à ces heureux résultats ; car la double mission qui m'avait été confiée, comme médecin en chef de l'armée d'Italie et comme chirurgien de l'empereur, rendait ma tâche doublement difficile, en m'imposant une aussi grave responsabilité.

La première de mes préoccupations, la plus sérieuse, la plus constante, fut la pensée des désastres qui, ayant sévi au milieu ou à la suite de la plupart des grandes guerres, comme celle de Crimée, pourraient sévir de même dans la campagne d'Italie, par l'agglomération des troupes et l'encombrement des hôpitaux, sous l'influence surtout de la chaleur extrême et des marches forcées. J'en exposai à l'Empereur les suites redoutables et Sa Majesté voulut bien m'accorder toute latitude, soit pour lui soumettre, au besoin, ainsi qu'à M. le maréchal, soit pour proposer régulièrement à M. l'intendant général toutes les mesures d'hygiène qui pourraient assurer d'avance et partout la dissémination des malades et des blessés.

Une commission spéciale composée d'un sous-intendant militaire, d'un médecin principal et d'un officier d'administration fut nommée par l'intendant général, dans chaque ville où devaient séjourner des troupes, pour y organiser, avec les autorités locales, un nombre d'hôpitaux proportionné aux exigences du service, mais devant toujours en dépasser les prévisions.

La commission qui fonctionna ainsi en premier lieu, avait une grande importance, parce qu'elle devait pourvoir à toutes les nécessités d'une installation commençante, et servir, en quelque sorte, de modèle, aux autres commissions. Elle offrait pour garantie d'expérience administrative et de savoir médical les noms de M. le sous-intendant militaire de la Valette et de M. le médecin principal Boudin, médecin en chef des hôpitaux de Gênes. M. Coytier officier d'administration distingué leur fut adjoint.

Ce fut là d'abord, avant et pendant la campagne, qu'on organisa 8 hôpitaux, avec répartition de 5000 lits environ, pour suffire au mouvement des évacuations successives et prévenir ainsi les chances de l'encombrement sur d'autres points de l'occupation.

Un bienfait pour notre armée fut de trouver dans toutes les villes alliées des hôpitaux réguliers, complets et largement installés. Disons pourtant que les grands hôpitaux d'Italie, quoique bien construits en général, sur des modèles assez différents les uns des autres, et appartenant d'ordinaire à des édifices religieux favorablement situés, sont d'une trop vaste étendue, contiennent dans chaque salle un nombre de lits trop considérable (il y en a quelquefois quatre rangées), et exposent les malades aux dangers d'une aération trop forte en été, par l'ouverture permanente des fenêtres et par la ventilation des vastes rideaux des cloîtres, en provoquant la suppression brusque de la transpiration, ou le développement des complications de certaines maladies et de diverses opérations chirurgicales.

Le grand hôpital de Milan, *Ospedale maggiore*, le plus remarquable par ses proportions monumentales, par l'élévation et l'étendue de ses salles qui peuvent contenir dans leur ensemble plus de 2000 malades, ne présente néanmoins, ni par sa situation, ni par son voisinage d'un canal, les conditions sanitaires justement préférées des hôpitaux d'une moindre importance extérieure et surtout d'une population nosocomiale beaucoup plus restreinte.

L'indication première fut d'approprier tous ces hôpitaux à leur destination exceptionnelle pour le service de guerre; et les commissions déléguées à cet effet, n'eurent qu'à se louer habituellement du bon vouloir et de la sollicitude des autorités locales, d'autant plus que dans l'organisation italienne, un conseil spécial d'administration se trouve préposé à la surveillance de chaque établissement dont le médecin en chef est d'ordinaire aussi le directeur. Ce système a sans doute le grave inconvénient de ne point centraliser la direction générale du service hospitalier, de le soutraire à un

contrôle supérieur, et peut-être de l'exposer à plus d'un abus, mais il offre le précieux avantage de laisser à chacun le droit d'initiative, et la liberté d'action par tous les moyens d'une exécution prompte et facile, sans les lenteurs, sans les entraves des formalités administratives.

Il fut aisé, dans de semblables conditions, non-seulement de pourvoir à tous les besoins de chaque hôpital permanent, d'y maintenir le nombre de lits voulu, et de le diminuer au lieu de l'augmenter, comme l'autorité a trop de tendance à le faire, mais encore il fut possible de former ou plutôt d'improviser beaucoup d'hôpitaux temporaires dans la plupart des établissements publics. Les colléges, les écoles, les séminaires, les couvents, les casernes, les palais, les églises même subirent cette transformation rapide, avec la spontanéité du zèle le plus intelligent et l'impulsion du patriotisme le plus généreux. La célérité de l'installation fut si extraordinaire, que deux ou trois jours suffirent quelquefois à établir complétement des hôpitaux de la contenance de 400 à 500 lits et davantage. Les objets de literie avec tout le matériel nécessaire, et des dons de charpie, de linge, de médicaments, affluaient de toutes parts. On aurait pu tout aussi vite augmenter le nombre des places dans chaque établissemeut, si la recommandation contraire n'avait été faite de multiplier les hôpitaux, plutôt que d'en agrandir ou d'en combler quelques-uns.

La ventilation naturelle était établie librement, par des fenêtres en regard les unes des autres, ou par des portes ouvrant sur de larges escaliers, sur des galeries ou sur des cloîtres, et quelquefois par de vastes rideaux, flottant aux abords de ces lieux, lorsque ceux-ci se trouvaient occupés par des lits ou transformés en salles provisoires. Ce système d'aération était même si simple, si facile généralement, qu'il empêchait toute odeur nosocomiale de se développer et complétait ainsi les avantages de la dissémination sans cesse recommandée par nous aux autorités administratives.

La séparation des blessés des trois nations, avec isolement des Autrichiens, paraissait à beaucoup de personnes devoir

être de prime abord établie, pour épargner à tous les froissement d'amour-propre national et pour ne point entretenir la persistance des sentiments d'hostilité entre ceux qui venaient de combattre les uns contre les autres. Mais une telle mesure me sembla plus nuisible qu'utile, et capable d'exciter, au lieu de les calmer, les passions de la guerre dans les asiles de la paix, en frappant de découragement l'ennemi vaincu. De là les causes morales de certains accidents traumatiques et les conséquences probables d'une plus grande mortalité. En réunissant d'ailleurs les étrangers aux nôtres dans les mêmes salles d'hôpitaux, comme ils l'avaient été par force, au milieu du pêle-mêle des ambulances, on ne faisait que leur continuer plus attentivement les soins qu'ils avaient déjà reçus, sans exclusion les uns des autres.

Les blessés, amis ou ennemis, furent donc confondus partout dans les premiers temps, et cette mesure eut tout de suite les plus favorables résultats parmi les Autrichiens. Ils avaient éprouvé d'abord les plus vives appréhensions depuis le champ de bataille jusqu'à leur entrée aux ambulances et dans les hôpitaux, où ils ressentaient ensuite les douces émotions de la reconnaissance pour les soins qui leur étaient partagés avec une égale sollicitude.

Pourquoi ne pouvoir décrire ici quelques-unes des scènes touchantes qui ont eu tant de témoins, par cette fusion salutaire? Elle dura autant que la campagne, mais aussitôt que la paix fut conclue, la répartition des blessés par catégories de nationalité devint utile, pour régulariser l'exécution des divers services administratifs, et faciliter les évacuations de toutes parts.

La conséquence de cette répartition normale fut de placer chaque hôpital sous la direction respective des siens, comme en temps ordinaire. Plusieurs établissements restèrent dans les attributions de médecins italiens, et d'autres furent réservés à des médecins de l'armée française. Quelques-uns enfin, occupés spécialement par les blessés autrichiens, purent être confiés aux soins des officiers de santé, leurs compatriotes, faits prisonniers avec eux, ou parfois même blessés en même temps.

Cette séparation ne nous parut pas, cependant, aussi salutaire après la campagne, que la fusion l'avait été durant la guerre, malgré les avantages relatifs de la connaissance de la langue, de l'habitude du service et de la liberté de la pratique; et à cause des inconvénients de certains systèmes de médication italienne, ainsi que des tendances contraires, soit d'une thérapeutique trop aventureuse, soit d'une expectation trop inactive.

On s'occupa plus tard enfin, ou pendant la durée de l'occupation, de substituer en partie et successivement des médecins aux chirurgiens, à mesure que la période des maladies succédait elle-même à celle des blessures.

Il importait pour tous, dès le début, d'assurer une bonne direction médicale à l'ensemble des hôpitaux de chaque grande ville et de ses dépendances, en choisissant parmi les médecins principaux de notre armée, les hommes les plus dignes de cette position, par le savoir, par l'expérience, par le caractère, et en leur donnant une autorité étendue sur leurs confrères français, alliés ou étrangers de tous grades.

Ce fut ainsi que M. Boudin, après avoir activement contribué à l'organisation des huit hôpitaux de Gênes, en fut le médecin en chef, jusqu'à la fin de la campagne, époque à laquelle il devint, pour quelque temps, médecin en chef du corps d'occupation.

Le médecin en chef des neuf hôpitaux d'Alexandrie fut M. Cazalas qui nous rendit aussi les plus grands services par son entente parfaite de l'administration médicale.

Trois hôpitaux suffirent à Turin, sous l'excellente direction médico-chirurgicale de M. Salleron, et trois à Novare sous celle de M. Brun.

Mais à Milan, il y eut jusqu'à vingt-trois hôpitaux, dont M. Cuvellier fut à la fois le médecin en chef, l'un des organisateurs et l'un des chirurgiens les plus distingués.

A Brescia, enfin, trente-huit hôpitaux, avec place pour 12 000 malades ou blessés, furent préparés par les soins d'une commission spéciale, complétés ensuite par les administrations française et italienne, et soumis tous enfin à l'autorité

médicale de M. Isnard, l'un des chirurgiens opérateurs de l'armée, les plus habiles et les plus consciencieux.

Ajoutons à ces nombreux hôpitaux des grandes villes, toutes les ambulances des petites localités, celles surtout qui se trouvaient le plus rapprochées des champs de bataille de Montebello, de Palestro, de Turbigo, de Magenta, de Marignan et de Solferino. Il suffira de citer les ambulances de Woghera, de San-Martino, de Montechiaro et de Castiglione où M. Bertherand, médecin en chef du quartier général, donna l'exemple du zèle le plus actif et le plus intelligent, comme il l'avait montré déjà maintes fois en Afrique. (J'ajouterai qu'il a publié un petit volume fort intéressant sur la campagne d'Italie (1).)

Joignons encore à cette nomenclature la liste des hôpitaux secondaires d'évacuation pour l'armée active ou de résidence pour l'armée d'occupation : Bergame, Casal-Maggiorre, Côme (où il y eut même quatre hôpitaux), Crémone (ou 10 000 blessés de Solferino furent disséminés en peu de jours dans tous les locaux disponibles), Livourne, Novi, Pammatone, Pavie, Plaisance, Savone, Valeggio, Verceil, Viggevano et d'autres lieux moins importants.

Disons enfin qu'une multitude d'habitations particulières et de maisons de campagne furent ouvertes spontanément à nos blessés, que des hôpitaux de convalescence étaient déjà préparés pour en recevoir un plus grand nombre, si la guerre se fût prolongée davantage; et qu'un campement d'évacuation, sous la tente ou dans des baraques, était projeté sur le littoral, pour assurer, au besoin, plus vite et plus facilement, le transport maritime des convois sur nos hôpitaux du midi de la France, et notamment à Toulon, Marseille, Avignon et Montpellier.

Les plus heureux résultats pour l'état sanitaire de l'armée d'Italie doivent donc être attribués à l'application de cette mesure radicale, à savoir la dissémination des blessés dans des hôpitaux multiples, si petits même qu'ils pussent être

(1) *Lettres médico-chirurgicales, écrites du grand quartier général de l'armée.* 1860.

quelquefois, au lieu de l'entassement ou de l'agglomération d'un plus grand nombre d'hommes dans de plus vastes, mais plus rares établissements.

Nous avons assez insisté sur ce point, en discutant la question générale de l'hygiène des hôpitaux militaires, pour n'avoir pas besoin d'y revenir ici.

Il faut rappeler seulement que le principe de la dissémination s'est complété pendant et après la campagne, par une mesure inséparable de ce principe, c'est-à-dire l'évacuation des malades et des blessés, difficile quelquefois par l'insuffisance ou la pénurie du matériel et des moyens de transport, par l'assistance tardive du personnel, mais toujours nécessaire, lorsqu'elle est bien exécutée, pour désemplir les hôpitaux et prévenir les fatales conséquences de l'encombrement. Si les brancards, les cacolets et les voitures d'ambulance nous ont parfois manqué, nous avons trouvé partout le dévouement ingénieux qui invente et multiple les ressources, jusqu'à ce que l'intervention rapide des chemins de fer et des bateaux à vapeur eût garanti complétement et achevé l'œuvre des évacuations.

C'est ainsi qu'a pu s'effectuer progressivement, sans embarras, sans désordre, et sans les malheurs incalculables des épidémies, la suppression graduelle de tous les hôpitaux improvisés en Italie.

L'état sanitaire, d'ailleurs, en a été constamment apprécié par les médecins en chef de chaque ville, transmettant, comme ceux des ambulances et des corps, au médecin en chef de l'armée, des rapports décadaires sur le personnel médical, sur l'ensemble et les besoins du service, sur la salubrité des locaux, sur le régime alimentaire, sur le mouvement journalier des malades ou des blessés et sur la pratique des principales opérations de chirurgie.

La statistique des blessures de la campagne d'Italie laisse encore beaucoup à désirer, et offrirait des difficultés insurmontables, si elle devait réunir tous les éléments de la plus rigoureuse exactitude, pour chaque période de la guerre. On en comprendra bien les raisons ; les voici : la précipi-

tation des mouvements de troupes et des déplacements, le passage rapide des blessés, des ambulances divisionnaires aux ambulances générales et aux hôpitaux temporaires, leur évacuation successive sur les hôpitaux permanents de l'Italie, de la France ou de l'Autriche, ainsi que la dispersion d'un très grand nombre dans des maisons particulières, la disparition même de tous ceux dont on ignorait le sort, et qui sont effectivement désignés comme *disparus* sur les états officiels, telles sont les principales difficultés de cette statistique, selon au moins qu'elle devrait être établie.

Quand on songe qu'à Solferino près de quatre cent mille hommes se sont trouvés rassemblés sur une surface de pays d'environ cinq lieues d'étendue, et que pendant une journée tout entière, plus de 500 pièces d'artillerie ont constamment accompagné la fusillade, sans parler même des attaques ou des poursuites à la baïonnette, ni des accidents de toutes sortes si communs en campagne, on croit sans peine que, dans la guerre d'Italie, plus de soixante mille hommes aient été mis hors de combat, et que dans ce nombre considérable, il y ait eu quarante-cinq à cinquante mille blessés, et peut-être dix mille morts. On a même précisé, de la manière suivante, les chiffres des pertes, comprenant à la fois les hommes tués, blessés ou disparus, dans les trois armées : 38 650 Autrichiens, 17 775 Français, 6 575 Sardes ; total : 63 000.

M. Boudin, qui a une si savante habitude des travaux statistiques, ayant recherché, avec le plus grand soin, les relevés numériques, en apprécie les résultats, conformément aux évaluations qui nous ont été communiquées.

L'état général de ces pertes n'est que de 61 978, d'après les relevés officiels réunis sous la direction de M. le colonel Saget, chef des travaux historiques de la statistique militaire, au ministère de la guerre. Mais on n'a pu tenir compte, dans les états partiels, d'un nombre variable d'hommes disparus ou de blessés, dont la présence n'a pas été notifiée dans tous les hôpitaux.

Il est, par exemple, un chiffre considérable dont je ne saurais récuser l'exactitude, parce qu'il m'a été formellement

attesté, c'est qu'à la suite de la bataille de Solferino, 32 500 hommes, dont 17 000 Français, 14 000 Italiens et 1500 Autrichiens seraient entrés ou auraient été successivement évacués sur Brescia, dont les trente-huit hôpitaux et les nombreuses maisons hospitalières ont pu suffire à peine aux conditions d'espace et de salubrité nécessaires pour empêcher l'encombrement et ses redoutables conséquences. La multitude d'habitations particulères qui, dans cette ville, plus que dans toute autre, ont donné asile à nos blessés ; l'ordre sans cesse renouvelé des évacuations proportionnelles au nombre des entrées ; la vigilance, enfin, du médecin en chef, M. Isnard, et de toutes les autorités civiles ou militaires, ont assurément contribué à prévenir l'invasion du typhus à Brescia.

La statistique officielle fournie par le ministère de la guerre pour les blessés français seulement, ne donne que les chiffres suivants, fournis par les corps, après chaque combat ou bataille : Montebello, 549 ; Palestro, 233 ; Turbigo ou Robechetto, 25 ; Magenta, 3223 : Pontevecchio, 180 ; Melegnano, 734 ; Solferino, 8530 ; total : 13 474, sans compter un grand nombre d'hommes *disparus* d'abord et entrés ensuite dans les hôpitaux, pour des blessures ignorées de leurs chefs de corps.

Ce serait là, en effet, un chiffre fort au-dessous des probabilités, s'il ne devait s'élever encore par celui des blessés piémontais, évalué à 5 ou 6000, et surtout par le nombre des blessés autrichiens, présumé double des nôtres, et porté ainsi à 24 ou 25 000 environ. Ce qui paraît certain, c'est qu'après Solferino, 9 ou 10 000 blessés de l'armée autrichienne ont été évacués sur Vérone, dont les hôpitaux encombrés furent ensuite envahis par la pourriture d'hôpital et par le typhus.

Il résulterait de cette appréciation approximative, mais admissible, un total général de 42 à 44 000 blessés environ, chiffre assez rapproché du maximum de 50 000, si surtout on n'y comprend point la multitude des lésions légères qui n'ont pas nécessité l'assistance des hôpitaux, et un nombre indéterminé d'hommes tués ou morts de leurs blessures.

Je n'ai pas à faire ici le relevé d'ensemble ou le résumé gé-

néral des lésions devenues mortelles, ce serait m'écarter beaucoup trop de la question de salubrité des hôpitaux. Je donnerai seulement quelques aperçus des complications le plus souvent observées.

Les hémorrhagies immédiates ou instantanées, bien plus fréquentes, qu'on ne le pense communément, par les coups de feu, quoiqu'elles aient en réalité de la tendance à cesser spontanément, ont été maintes fois arrêtées sur place et avec succès par les chirurgiens des corps ou des ambulances. C'est pour cette raison que les hémorrhagies primitives proprement dites, ou celles qui peuvent survenir pendant les premières heures, ont été assez rares ; mais les hémorrhagies consécutives ont été observées plus souvent dans les hôpitaux et sont devenues quelquefois mortelles, soit sous l'influence de la chaleur et de l'agitation des blessés, soit par la gravité des lésions, par la fièvre traumatique et par la congestion locale, notamment chez des amputés, soit enfin par une fluidité naturelle du sang et par un état plus ou moins prononcé d'anémie, chez des hommes débilités, épuisés de fatigue ou affaiblis par les émissions sanguines de la pratique italienne.

Le tétanos a été, de toutes les complications traumatiques, la plus funeste, et proportionnellement la plus fréquente, si l'on y ajoute certains accidents nerveux regardés par les médecins italiens comme tétaniques, mais qu'un examen attentif des observations ferait considérer par beaucoup de médecins français comme différant du tétanos proprement dit.

Quoi qu'il en soit, cette terrible complication, survenue surtout chez les amputés, paraît s'être manifestée particulièrement chez les blessés admis à Brescia, dans les églises dont la salubrité ne valait pas celle des autres hôpitaux temporaires. La construction elle-même de ces édifices et l'abaissement relatif de leur température, augmentée par la funeste tendance des malades à se découvrir, pour avoir plus de fraîcheur, telle était la principale cause des accidents tétaniques.

On a compté à Brescia 61 cas de tétanos, presque tous funestes ; et à Milan 24 cas, dont 15 décès et 9 guérisons ; 5 à Crémone, 5 à Novarre et 5 à Montechiaro : 4 à Turin

(dont 1 succès attribué au curare), et 2 on 3 à Alexandrie, à Bergame et à Castiglione; ceux-ci paraissant s'être bornés au trismus, avec plusieurs guérisons par les opiacés. Mais il n'en faut pas moins compter, en ayant égard à quelques omissions, une centaine de cas présumés de tétanos vrai, devenus mortels pour la plupart.

Quelques complications de gangrène traumatique et un plus grand nombre de pourritures nosocomiales ont été observées dans divers hôpitaux, non à l'état épidémique, mais partiellement, et entre autres à l'hôpital San Francesco, de Milan, où avaient été réunis la plupart des blessés autrichiens, après la campagne. Cet hôpital, installé dans une immense caserne pour une nombreuse garnison, n'offrait pas plus que certaines églises trop spacieuses, les conditions sanitaires des autres établissements hospitaliers. L'accumulation exceptionnelle de trop de lits, la gravité et la multiplicité des plaies suppurantes, et peut-être le mode de pansement suivi par les chirurgiens compatriotes des blessés, telles furent les circonstances qui, chez une vingtaine parmi eux, déterminèrent le développement de la pourriture d'hôpital; mais il suffit bientôt de l'application des mesures d'hygiène, de l'espacement des lits et de l'évacuation des blessés les plus valides, pour arrêter les progrès de ces accidents sporadiques.

Ajoutons que les pansements furent favorablement modifiés par divers moyens, et entre autres par les premiers essais du coaltar comme topique désinfectant.

C'est à Brescia surtout qu'il importait de prévenir l'apparition des accidents typhiques; car, malgré la multiplicité de ses hôpitaux, cette ville avait été le point principal le plus rapproché des évacuations, depuis la journée de Solferino. L'affluence des blessés y était incessante et de plus en plus considérable; il y avait imminence de pourriture d'hôpital chez quelques amputés, notamment dans une salle trop remplie de l'hôpital civil; il y avait même une certaine tendance à l'aggravation des fièvres gastro-intestinales, et déjà des alarmistes propageaient la crainte du typhus.

Averti de cette situation, je chargeai le médecin en chef du

quartier général, M. Bertherand, de se rendre aussitôt à Brescia, où il reconnut, avec le médecin en chef des hôpitaux, M. Isnard, que rien ne justifiait encore de telles appréhensions. Mais les mesures nécessaires furent promptement prises pour diminuer le nombre des lits partout où il le fallait, en assurant de nouvelles évacuations; et, pour modifier les conditions défavorables à l'état sanitaire, en multipliant les soins de propreté dans les salles et dans les pansements.

L'infection purulente, cette complication la plus commune des plaies, et l'une des plus graves, étant aussi l'une des plus redoutables dans les grandes agglomérations de blessés, a épargné sensiblement ceux de nos hôpitaux d'Italie. Elle s'est déclarée néanmoins quelquefois chez des amputés qui n'avaient pu être soustraits aux émanations nosocomiales, ou chez des blessés soumis, comme plusieurs tétaniques, aux effets d'un refroidissement brusque ou d'un froid humide pendant la nuit.

Des faits particuliers me portent enfin à croire que la résorption purulente semble compliquer fatalement certaines lésions des os, et simuler entre autres l'ostéomyélite si bien décrite par M. Jules Roux [de Toulon] (1), quoique nous ayons combattu quelques-unes de ses idées sur les amputations dites secondaires, dans une discussion encore peu éloignée des souvenirs de l'Académie (2).

La chirurgie générale de la campagne d'Italie, bien qu'ayant offert beaucoup de variations, suivant les croyances et les habitudes pratiques de chacun, soit aux ambulances, soit dans les hôpitaux, a présenté néanmoins, dans son ensemble, une tendance marquée vers les principes constituant aujourd'hui ce que l'on appelle la *chirurgie conservatrice*. Les résultats n'ont pas toujours répondu, il est vrai, aux efforts tentés vers un

(1) *Mémoires de l'Académie de médecine*, t. XXIV, p. 537 à 649, avec 6 planches.

(2) *Des amputations consécutives à l'ostéomyélite, dans les fractures des membres, par armes à feu.* (*Bulletin de l'Académie de médecine*, t. XXV, 1860.

but aussi louable; mais ils ont offert des séries de succès remarquables, et la conséquence pratique qui domine en cela les particularités de cette importante question sera, j'en ai la confiance, d'affranchir désormais les chirurgiens d'armée du reproche qu'on leur adressait autrefois de trop amputer, tout en les justifiant d'agir ainsi par les nécessités de la guerre.

Je serais entraîné trop loin maintenant à parler des grandes opérations et surtout des amputations qui ont pu être évitées, ou qui ont dû être faites, à l'armée d'Italie, en les appréciant, même au point de vue de la mortalité, dans les hôpitaux.

Je dirai seulement, d'une manière générale, que les amputations immédiates ou primitives pour des blessures reconnues incurables, soit par le fracas des os ou des articulations, avec plaies profondes ou étendues, soit par des complications graves, ont justifié leur prééminence sur les amputations consécutives ou tardives, conformément aux opinions soutenues anciennement par mon père (1) à cet égard. Mais je dirai aussi qu'un grand nombre de fractures comminutives, et notamment des fractures compliquées du fémur, vouées alors à l'amputation primitive, sont parvenues, sauf un peu de difformité ou de raccourcissement, à une consolidation définitive, grâce à l'adhérence et à la contention des fragments, à l'extraction des corps étrangers, à la simplicité ou à la simplification de la plaie, aux bonnes conditions individuelles, et à toutes les ressources dont nous avons pu disposer pour le transport et le traitement des blessés.

La thérapeutique générale des blessures a exercé aussi sur leurs résultats une heureuse influence. Soins primitifs et soins consécutifs, rien n'a été épargné, avec un zèle et un dévouement dont les médecins n'ont pas seuls donné l'exemple, mais auxquels se sont associés tous les fonctionnaires des hôpitaux, les officiers d'administration, ainsi que nos braves infirmiers militaires, les sœurs de charité de divers ordres et beaucoup de dames des plus grandes familles italiennes, venant passer

(1) *Mémoire sur les amputations des membres à la suite des coups de feu.* Paris, 1797.

des journées entières dans les salles, pour y remplir les humbles fonctions d'infirmières, ou contribuer, par les attentions les plus délicates, les plus attentives, à l'exécution de toutes les mesures prescrites pour l'hygiène, ainsi qu'à la distribution des aliments et des médicaments.

Quant aux médications spéciales qui ont été le plus employées, il en est deux entre autres dont les médecins militaires n'ont pas toujours reconnu l'opportunité de la part de quelques-uns de nos honorables confrères d'Italie.

La première de ces médications est la pratique usuelle et souvent abusive, en effet, des émissions sanguines, après des blessures compliquées même d'accidents hémorrhagiques et après des amputations chez des sujets déjà débilités.

La seconde médication, fondée sur l'emploi de la glace à l'intérieur, sous forme de sorbets par exemple, a bien offert quelques résultats avantageux, eu égard à l'excessive chaleur, pour prévenir ou diminuer la réaction inflammatoire; mais cette coutume a eu souvent aussi des effets regrettables (chez des blessés de Brescia entre autres), en provoquant des frissons et des accidents de résorption purulente, si elle n'a même contribué, dans certains cas, à l'invasion du tétanos.

La statistique des décès par blessures, dans les trois armées, offre beaucoup de difficultés, d'incertitudes, de contradictions ou d'erreurs.

Ainsi, d'après un état numérique du ministère de la guerre, la bataille de Magenta aurait mis hors de combat, dans l'armée française seulement, 4 535 hommes, dont 52 officiers tués et 194 blessés; 512 sous-officiers ou soldats tués; 2951 blessés, et parmi tous les disparus, beaucoup furent retrouvés ensuite morts. Le nombre des décès a beaucoup augmenté aussi chez les blessés, proportionnellement surtout parmi les officiers. Bien d'autres omissions enfin ont été signalées.

Il en est à peu près de même pour la bataille de Solferino : le bulletin officiel évalue, par exemple, les pertes immédiates de l'armée sarde, à 5521 hommes, dont : officiers tués, 49; officiers blessés, 167; sous-officiers et soldats tués, 642; blessés, 3405; disparus, 1258 : total, 5521.

Et, pour la même bataille, les pertes primitives de l'ar-

mée française se sont élevées au chiffre de 11 670 hommes de troupes, tués, blessés ou mis hors de combat, et de 720 officiers, dont 150 tués, parmi lesquels 7 colonels et 6 lieutenants-colonels. Sur 5 généraux blessés, 2 ont succombé.

L'armée autrichienne enfin aurait perdu, d'après les mêmes documents sur cette terrible journée, 22 310 hommes, dont 2386 tués, 10 634 blessés et 9290 disparus.

La mortalité générale par les blessures a été beaucoup plus considérable parmi les Autrichiens que parmi les Français et les Italiens réunis. En voici les raisons : les soldats de l'armée autrichienne appartenant à des races ou à des origines différentes, sans unité de liens ou de sentiments, étaient la plupart, malgré leur bravoure, très jeunes encore, à peine aptes ou du moins peu exercés au service militaire, moins aguerris par conséquent aux privations, aux fatigues de la guerre, et aux marches forcées de cette rapide campagne. Leurs blessures, proportionnellement plus nombreuses par les armes blanches, et surtout par les coups de baïonnette, ainsi que par la plus longue portée, par la plus grande justesse de nos armes à feu, étaient aussi beaucoup plus graves par le calibre plus fort de nos projectiles. Elles se sont compliquées d'autant plus d'accidents traumatiques, auxquels on doit joindre les influences morales de l'inquiétude et du découragement, comme chez leurs nombreux prisonniers, dont l'agglomération n'aurait pas été sans danger, si on ne l'avait prévenu par les précautions de l'hygiène des hôpitaux. Il faut dire enfin qu'après leurs défaites, les troupes autrichiennes ne pouvant toujours emporter les blessés, laissaient forcément sur le champ de bataille un grand nombre de ces malheureux qui subirent ainsi les fatales conséquences de la privation des premiers secours, ou des opérations tardives, devenues quelquefois même impraticables.

Rappelons que l'armée autrichienne qui, à Magenta seulement, avait eu plus de 10 000 hommes hors de combat, avait éprouvé, à Solferino, des pertes désastreuses, évaluées à plus de 22 000 hommes, tant tués que blessés ou disparus, indépendamment d'une multitude de prisonniers.

Nous avons vu le soir même, sur différents points du

champ de bataille, une telle accumulation de cadavres que, s'ils n'avaient pas été assez promptement ensevelis, ils auraient sans doute provoqué, sous l'action de la chaleur, le développement de quelque épidémie meurtrière.

Les maladies de la campagne d'Italie ont été à peu près nulles, pendant la durée de l'expédition et généralement sans gravité, quoique très nombreuses, au retour de l'armée ou durant l'occupation. La proportion des malades n'est devenue assez sensible qu'à cette époque, sans que nous puissions en préciser le chiffre avec certitude.

Mais un fait capital à signaler, comme conséquence irrécusable des mesures sanitaires mises en pratique, et surtout de la dissémination des malades dans un grand nombre d'établissements hospitaliers, c'est qu'il n'y a pas eu d'épidémies vraies à proprement parler. La plus redoutable de toutes, le typhus, aurait été inévitable à Brescia ainsi qu'à Milan, où il aurait peut-être même provoqué le développement de la peste, si les 38 hôpitaux d'une part et les 23 de l'autre n'avaient pas suffi pour préserver ces deux villes d'une telle calamité.

Les maladies régnantes ou prédominantes, à la rentrée des troupes et pendant l'occupation, ont été des embarras gastriques, des diarrhées en grand nombre, quelques dysenteries et des fièvres intermittentes, eu égard au climat, à la chaleur du jour, à la fraîcheur des nuits, aux fatigues des marches, à l'abus des mauvais fruits, aux excès de boissons aqueuses ou de liqueurs frelatées, au voisinage des rizières, et secondairement aux récidives d'accès périodiques, chez des fébricitants de l'armée d'Afrique. Le cinquième corps, débarqué en Toscane, a plus souffert à lui seul, proportionnellement aux autres corps, et envoyé beaucoup plus de malades dans les hôpitaux, quoiqu'il n'eût point pris part aux différentes actions de la guerre. C'est vers Pavie et Plaisance que la constitution diarrhéique et fébrile s'est le plus manifestée.

Les influences générales que nous venons de signaler se sont produites particulièrement parmi les troupes qui, pour rentrer en France, n'ayant pu voyager en chemin de fer, ont dû subir l'obligation de faire leurs étapes à pied. Le moral

même s'est affecté chez un grand nombre d'hommes regrettant de n'avoir pu participer, comme leurs camarades, aux avantages des voies ferrées. « Nous semons nos hommes dans les hôpitaux, sur toute la route, » m'écrivait l'un des médecins de régiment, mais sans en concevoir d'inquiétude ; car, par un bonheur providentiel, la plupart de ces nombreuses affections n'eurent pas de suites fâcheuses, et guérirent presque au contact du sol de la France.

Il faut dire aussi, et l'on devait s'y attendre, que les maladies vénériennes entrent pour la plus large part dans les affections morbides de notre armée, depuis la fin de la campagne, quoiqu'elles eussent été rares pendant toute sa durée. Cette proportion considérable s'explique en partie par l'insuffisante surveillance de la prostitution en Italie ; et il n'en aurait pas fallu davantage pour encombrer promptement les hôpitaux, si le double système de dissémination et d'évacuation n'avait pourvu d'avance à un tel embarras. On a pu ainsi rendre efficace la prophylaxie radicale des épidémies, et, par-dessus tout, la prophylaxie du typhus.

La statistique des décès nous semble plus difficile encore à établir d'une manière exacte que celle des blessures. Formant d'abord, d'après les relevés officiels du ministère, un total général de 8084 hommes, tant Français que Sardes et Autrichiens, tués seulement sur le champ de bataille, cette statistique confond ensuite, pour l'armée française, les hommes qui, pendant la durée de la campagne, sont morts, soit de leurs blessures, soit de maladies.

Le chiffre des décès, dans les trois armées, depuis le 1er mai 1859 jusqu'au 1er janvier 1860, est borné, d'après M. Boudin, aux nombres suivants : Français, 3505 ; Sardes, 1045 ; Autrichiens, 1860. Total : 6410.

Mais, entre les trois nations, combien sont morts plus tard ? combien même ont été portés comme disparus, et qui ont pu périr, soit en se noyant dans les fleuves rapprochés des lieux de combats, soit autrement ? Combien les Piémontais ont-ils perdu d'hommes ? Quel est, en réalité, le chiffre exact des décès par blessures, dans l'armée autrichienne ? Nous ne le

savons pas même approximativement, et je me garderai bien, pour ma part, de présenter des nombres trop au-dessus ou trop au-dessous de la vérité. Je suis seulement autorisé à croire que la mortalité a été généralement faible, puisqu'à Milan, par exemple, où le relevé partiel a pu en être fait, depuis le 6 juin (ou après la bataille de Magenta) jusqu'à la fin de la campagne et après toutes les évacuations, les 23 hôpitaux ayant reçu 34 000 blessés ou fiévreux (dont 21 000 Français, 6000 Italiens et 7000 Autrichiens), 29 000 sont sortis guéris ou en convalescence ; 4000 se trouvaient encore en traitement ou en voie de guérison, et 1400 seulement ont succombé.

La mortalité par les maladies a donc été proportionnellement minime dans les hôpitaux, quoiqu'elle semble avoir dépassé pour l'armée française, le nombre des hommes tués sur le champ de bataille.

Il faut y joindre plusieurs cas de mort subite, survenus par la fatigue des marches forcées, sous le poids des bagages et sous l'accablement d'une chaleur torride.

Quelles eussent été ces proportions si, au lieu des maladies régnantes, ordinaires ou sporadiques, devenues cause de décès après la campagne, une grande épidémie se fût déclarée pendant la guerre et en eût compromis les succès par des désastres?

Quoi qu'il en soit, l'armée française, ayant eu un effectif élevé jusqu'à 218 000 hommes, n'a éprouvé, en définitive, que des pertes insensibles par les blessures ou les maladies.

Les résultats si salutaires que nous avions obtenus, pendant la campagne d'Italie, de la dissémination des malades et des blessés, par la multiplicité des hôpitaux et des évacuations, nous avaient autorisé à recommander pour le retour des troupes en France, le ralentissement des marches, les campements en plein air, et la fréquence de leur renouvellement, à distance les uns des autres, car l'air et l'espace ne sont pas moins indispensables aux hommes en santé.

Toutes les prescriptions nécessaires ont été faites à cet égard, mais on n'a pu toujours dominer certaines situations

difficiles ou impérieuses, et restreindre ainsi le nombre des maladies ou plutôt des indispositions.

Le même système d'hygiène a été appliqué, avec de prodigieux résultats, par le chef du service vétérinaire, M. Moulin, à toute la cavalerie du corps d'occupation. Dix mille chevaux sont restés pendant plusieurs mois dans des baraques ouvertes à l'air extérieur, au lieu d'écuries fermées, sans que la moindre épizootie se soit déclarée. C'est à peine si quelques chevaux ont été malades ; un seul a été atteint de la morve et est mort.

Personne ne pouvait confirmer ce fait général, avec plus d'autorité que notre savant collègue M. Renault, en l'ajoutant à son argumentation irrécusable sur l'importance et la nécessité de l'aération dans l'hygiène vétérinaire. Pour lui aussi, comme pour nous, l'encombrement domine donc toute la question soumise au jugement de l'Académie.

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CONCLUSIONS :

Les conclusions générales qu'il m'est permis, messieurs, de déduire de ce long exposé sur la salubrité des hôpitaux militaires, pour en faire l'application aux hôpitaux civils, se réduisent aux termes suivants :

Les influences multiples et complexes de la viciation de l'air proviennent de l'encombrement et déterminent les effets les plus graves, les plus désastreux. On ne saurait trop le reconnaître et le répéter, afin de ne point substituer des questions secondaires ou d'un autre ordre à cette question fondamentale.

L'insuffisance des mesures partielles est démontrée, soit pour l'installation des hôpitaux, pour l'aération des salles, pour les soins de propreté, etc., soit pour l'assistance des malades, sous les garanties mêmes du talent et de l'expérience des médecins.

La suppression ou la fermeture des hôpitaux présumés insa-

lubres serait une mesure inutile et regrettable, si elle pouvait être essayée. Il ne suffirait pas non plus de modifier les grandes constructions de quelques-uns pour les assimiler aux petites proportions de quelques autres.

Mais la nécessité de les assainir tous, en multipliant leur nombre, pour réduire leur étendue, pour assurer à chacun d'eux une diminution de la quantité des lits, et pour obtenir une large dissémination des malades, à tel point qu'en temps d'épidémie, mieux vaudrait fermer certains hôpitaux que les remplir ; la nécessité aussi d'une bonne nourriture et la surveillance de toutes les prescriptions de l'hygiène hospitalière; tel est dans ma conviction profonde, le but qu'il s'agit d'atteindre. Là se trouve la solution pratique de l'importante question débattue depuis longtemps déjà au sein de l'Académie.

Que la réalisation de ce vœu s'accomplisse bientôt, soit par les soins d'une commission mixte, dans laquelle l'intervention médicale serait de première nécessité, soit par la formation d'un comité spécial auprès de l'administration de l'assistance publique ; ou bien que le *conseil d'hygiène publique et de salubrité du département de la Seine* se trouve, suivant ses attributions, officiellement chargé de cette tâche difficile ; ou bien encore, et ce serait peut-être la conclusion la plus sûre, la plus décisive, que le *conseil municipal de la ville de Paris* reconnaisse l'opportunité d'entreprendre pour les hôpitaux les améliorations introduites dans tant d'autres établissements, comme conséquence rationnelle des grandes mesures d'assainissement de la capitale; et alors, messieurs, nous ne regretterons pas d'avoir étendu et prolongé, devant l'Académie, une discussion qui touche aux plus légitimes intérêts de la santé publique, et fixe désormais l'attention du monde médical tout entier, en appelant sur une question de cette importance la sollicitude, l'intervention et l'appui du gouvernement.

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