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Contributors

Gordon, C. A. Sir, 1821-1899.

Publication/Creation

London : H.K. Lewis, 1870.

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ARMY SURGEONS
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THEIR WORKS

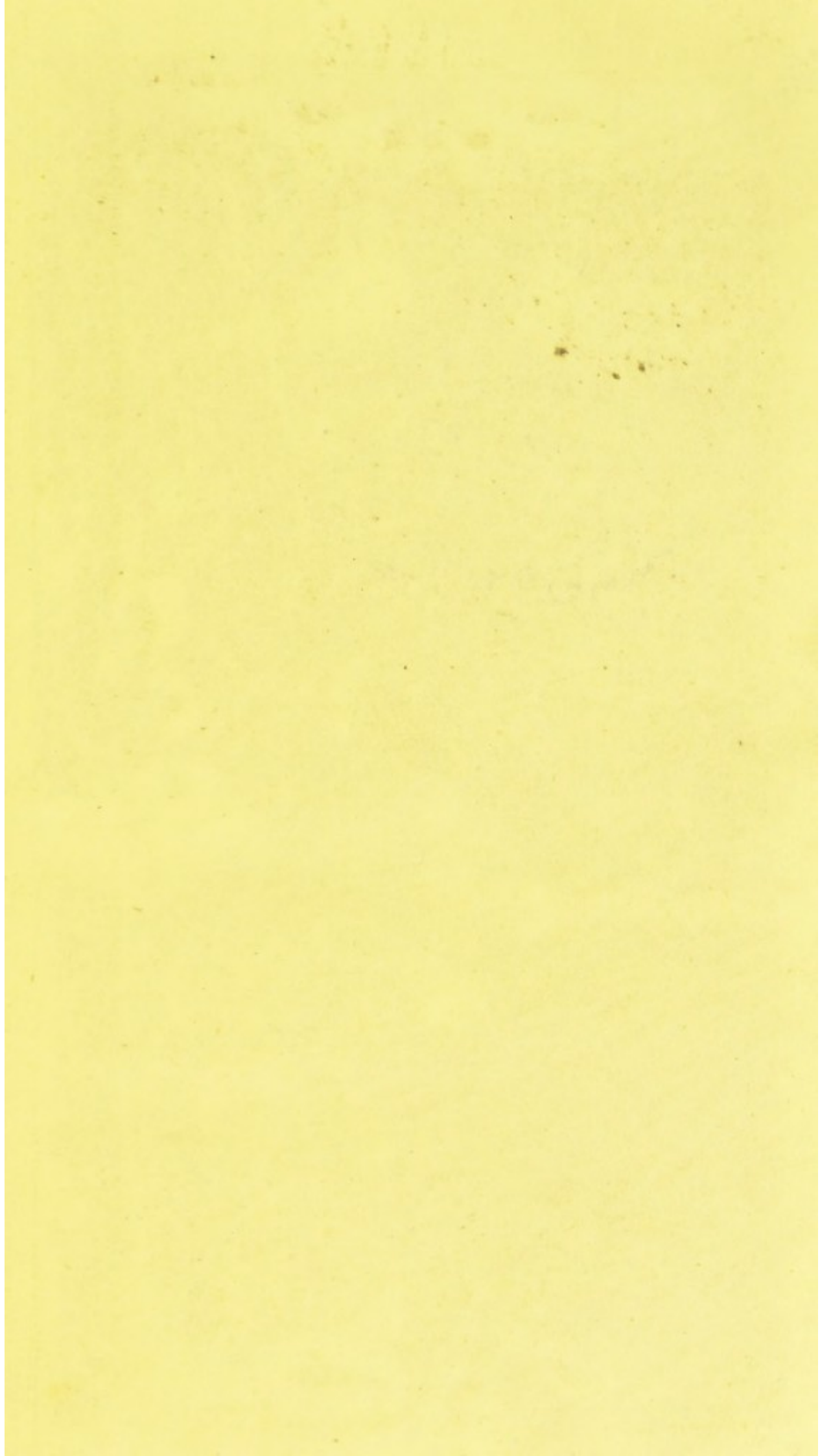
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REMARKS
ON
ARMY SURGEONS
AND THEIR WORKS.

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AND THEIR WORKS.

BY
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Reprinted from the "MEDICAL MIRROR."

LONDON:
H. K. LEWIS, 136 GOWER STREET.



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INTRODUCTION.

IN preparing the following "Remarks on Army Surgeons and their Works," which first appeared in the pages of the *Medical Mirror*, I was chiefly actuated by the circumstances I am about to state. A perusal of such of the works of members of the Army Medical Department as I have had access to convinced me that to those officers the soldier, his wife and children, are indebted for almost every improvement that has taken place in their condition, more especially from 1740 to the present date, or, in other words, during the last one hundred and thirty years. In specially referring to some of these improvements, I have, as will be observed in the text, been careful to note the page and book in which the earliest and most definite suggestions in regard to them occur; but I confess that it has been a source of chagrin and disappointment to me to discover—as any person may, who takes the trouble to peruse the books I have quoted from, and the recently published official "Reports" and "Evidences"—that while very many of the suggestions submitted by them have yet to be carried out, others have been adopted, but with this result, that the names of their original proposers are not only unrecorded in connexion with them, but the sole credit claimed by amateurs and so-called "sanitary reformers." This must be patent to all who are even moderately well acquainted

with the literature of army sanitation. I have, therefore, felt what I trust is a natural desire to recover back to the Department of which I am a member the credit which is its just due for what has been initiated by its members. I have on many occasions during a somewhat long and varied military career found that while for the most part every consideration is paid in as well as out of the Service to the Army Medical Officer personally, but a very partial and inadequate knowledge prevails in regard to the extent, nature, and importance of his official duties. But I am led to hope that in the Notes now submitted I may have been able to communicate some information on this point, and thus make clear the intimate connexion existing between an efficient Medical Department and the general interests of the Military Service ; and, in the third place, I have been anxious, while claiming the credit for my brother Medical *Officers* for professional improvements introduced or furthered by them, to remind my brother medical *men* in civil life of some of the many obligations to which they and the public are indebted to the Army Surgeon for advances made in the science and art of medicine and of surgery. Many of these are mentioned in the body of my "Remarks;" but it may not be deemed inopportune if I allude here to a few of the ordinary and routine duties that have to be performed by the Medical Department as a body, premising that, like the individual portions of a huge mechanical apparatus, so with the Army, unless all its divisions work together harmoniously and well, the jarring, friction, and irregularities of any one or set of its items must necessarily impair or destroy the efficiency of the whole. As with a machine, so in the Army, all branches are of importance in so far as their individual and separate functions are concerned ; no one wheel, for example, or set of wheels, can efficiently perform other functions than those for which they have been shaped and appropriated ; so in the Army, the members of the several branches into which it has necessarily been divided, each in their own sphere *execute* the functions for which they have been appointed, but all labouring in harmony and unison to

produce one ultimate result, namely the efficiency of the Army for the double purpose of a shield of defence and weapon of offence. Let me now allude to a few of our duties, and of the positions in which we stand to the *fighting* branches of this machine. In the first place, we have to see that suitable *material* in the shape of recruits is supplied to the Army, for which purpose a knowledge of the duties required of soldiers in peace and in war is necessary, as well as the power of readily judging from physical aspect the probabilities of the young man before us has of improving or degenerating by the new routine to which he is about to be subjected. In the next place, we are charged with the duty of preserving the soldiers, when obtained, in the highest possible condition of health, whether they are quartered at home or in the tropics, in times of epidemics, in war, or in the no less trying conditions of temporarily holding in military occupation unhealthy stations. As must be well known to all members of the Profession, this last duty involves far more than is, according to popular idea, accorded to the so-called sanitarian, who would seem to believe that nothing further is necessary than to maintain cleanliness, have free ventilation, and a certain amount of *cubic* (little is ever said of superficial) space in dwellings. In order, however, that we may offer trustworthy views on hygiene, properly so called, we must be acquainted with the science of geology, and the nature and property of soils; we must have a knowledge of meteorology in reference to its bearing upon the human system; thus means of preserving health in a damp climate with great extremes of temperature and negative indications by the electrometer, would be exceedingly unsuited to a dry climate with small variations and the prevalence of positive electricity. That our views as to the suitability of particular places as sites for barracks may be of any value, it is essential that we should be acquainted with the conditions which affect the relative temperature as indicated by transmitted heat and by solar radiation. To enable us to offer a scientific opinion in regard to the food most likely to be obtained in a particular country, or the vegetables that may with

greatest promise of success be cultivated there, we must know something of scientific and descriptive botany and of the natural distribution of plants ; and so on with various other examples of our duties in which special scientific knowledge is an absolute necessity. As a matter of course, we have to treat the troops when sick and wounded, sharing with them the risks of battle, of pestilence, and of all climates in which our forces are called upon to serve. At what cost to our members, in health and life, duties under such circumstances are performed is, unfortunately perhaps for us, not known to the general public, although familiar to all acquainted with the literature of the Army List, Gazettes, and despatches ; while it is perhaps only the officers and soldiers with whom we are actually associated who bear willing testimony *at the time* of how arduous and trying our duties are ; for, be the fact remembered, that while in health our exposure and consequent risks are scarcely if at all less than those of the men actually fighting, we have under these circumstances to preserve our faculties proof against the excitement which impels them to the onslaught, meanwhile performing serious and important surgical operations. During pestilence, and while in unhealthy localities, we are necessarily exposed to the pernicious influences which affect the masses ; but are, in addition, subjected to others that affect us in an especial manner. Thus the wear and tear upon our system caused by excessive physical and mental labour under the most unfavourable circumstances are then at their greatest ; and while our vital powers are in these respects debilitated, we are in a peculiar manner exposed to the morbid influences inseparable from large accumulations of sick, perhaps from communicable disease in hospital, witness, as examples, outbreaks of cholera or of yellow fever. Nor are these all our professional duties. One day we act as physician, the next as apothecary ; then we are called upon perhaps on the spur of the moment to perform a serious surgical operation, as for hernia, ligature of an artery, or an amputation ; and the day *or night* succeeding to officiate as accoucheur and sick nurse, especially on distant stations abroad.

It becomes our duty to weed the regiments under our respective charges of those men whose ailments or accidents are of such a nature as to be apparently not amenable to treatment ; and here our duties are not only special in their nature, but altogether different from the Medical man's in civil life. He treats his patients each with reference only to himself. We treat the soldier not so much in reference to himself as with regard to the efficiency of the general body of which he is an atom ; and inasmuch as the choice of an attendant does not rest with him, so, instead of his discharging his Medical man when no longer needed, the Medical Officer discharges him, perhaps very much against his will. Thus it may, on the one hand, be necessary for the efficiency of a regiment that certain men be compulsorily sent to hospital ; so again it may be equally necessary that instead of retaining men in the wards for long and uncertain periods, or of performing surgical operations which, however they might redound to the credit of the operator, would not be the means of restoring their subjects to the ranks, the regiment shall not be encumbered with the names of soldiers who are to all intents incapacitated for military duty. This explains how it happens that men discharged from the Service are at times operated upon in civil hospitals, and thereby rendered capable of earning a livelihood in *civil* life. The two conditions, be it observed, are in no way similar.

Turn we now to active Military service, and let us enumerate a few of the duties of our Department. It is to the Medical Officers that the general in command must look for an approximate estimate of the ordinary casualties by sickness, death, and invaliding, which, with reference to climate and general conditions, he may lay to his account, and desire reinforcements from the mother country to fill the vacancies thus to be created. To them he has to refer for approximately near views of the quantity and nature of conveyance, accommodation, servants, medicines, and appliances for hospital purposes which should attend an army ; and to them he must refer in regard to the mode of travelling best suited to non-effectives when being finally disposed as invalids. I have

elsewhere dwelt upon some of the more important of the advances in hygiene, for which the sole credit is due to the officers of our Department. For example, it was at the urgent representation of an Army Medical Officer that suitable barracks for our soldiers were erected ; that a definite proportion of cubic and superficial space per man was allotted ; that in malarious districts upper storied barracks were provided ; that suitable rations in quality and variety were issued ; that clothing has been issued with due regard to climate and nature of duties ; that canteens were established with a view to check in some measure the terrible extent to which drunkenness prevailed ; that suitable buildings as hospitals were founded ; that hospital diets were instituted with due consideration for the requirements of the sick ; that a restriction, as far as practicable, was placed upon the amount of night-duty, drills, and exercises to which the troops were subjected ; as well as many other improvements which I could enumerate. Nor must I omit to mention that many of the improvements which have of late years taken place in the moral and social condition of the soldier were first advocated by the Medical Department, as, for example, recreation rooms, the gymnasium, temperance associations, savings banks, schools, and others ; while among the first advocates of the abolition of corporal punishment we find the name of an Army Surgeon. Considering the greater efficiency as soldiers of married as compared with unmarried men, it is not to be wondered at that Army Medical Officers have ever advocated the extension of liberty to marry among them, or that they have been among the foremost advocates of increased consideration to their wives and children.

The Army Medical Officer must be acquainted not only with the phenomena of diseases which affect masses, but also with the laws which seem to influence epidemics. He must be able to recognise, and treat according to the principles of his art, individual cases of these, to suggest suitable and *practicable* measures with a view to limit as far as may be possible the ravages they are capable of committing. In many instances sporadic diseases of

various forms of this class of maladies occur. It is for the Medical Officer to discourage alarm in such a case, but with his knowledge of the fact that diseases which thus occur are capable of propagation from each case as from so many centres of infection, it becomes his duty to suggest such precautions as are likely to afford the greatest protection to the body of troops under his care. In these and various other respects it must be apparent to all that the duties which we perform are important as well as special in their nature. They demand not only long training upon our parts, but a certain aptitude, just as much as other specialties require similar qualities on the part of those who would prosecute them with success.

Nor is it only to the so-called executive officers of the Medical Department that these remarks apply. If the duties of the administrative branches are still less of what belong to the practitioners of medicine in civil life, they are not the less important on that account; no less special. Let me briefly remind you of a few. The principal Medical Officer of a district in England—say that of which Portsmouth is the head-quarters—visits the hospitals of all the corps in garrison once a month, and performs twice a year a regular formal inspection of all throughout the district, preparing a report of the manner in which they are severally conducted. He sees, in company with the several Regimental Medical Officers, important cases, and all in which a capital operation is considered to be required; his sanction being, by regulation, required before one of a serious nature can be performed, except, of course, in cases of emergency. He has to summarise as well as examine statistical reports on sickness and hygiene, prepared by Regimental Surgeons; has to make preliminary arrangements that regiments arriving in the district have suitable requirements for their sick; has to see that superfluous establishments of corps about to move are properly disposed of; has to check the expenditure of what are called “extras,” issued; to see that sufficient reason is shown by Medical Officers for any attendants beyond the authorised number whom

they may employ in their wards. Many other duties have to be performed by him, which I rather enumerate as they occur to me than attempt to classify. He has to offer his professional opinion with regard to proposed appropriation of buildings as barracks or hospitals for the troops, in regard to repairs in connexion with them, and in regard to their hygienic arrangements, including heating, light, ventilation, drainage, water supply, and conservancy arrangements. In the event of infectious or epidemic disease threatening, it becomes his duty to suggest to the General Officer Commanding such measures as are best calculated to avert the spread of the malady, as well as to propose any special measures that may have particular reference to individual sufferers. He has to make arrangements for the proper examination of non-commissioned officers who desire to qualify as compounders of medicines, and of men who desire promotion as non-commissioned officers in the Army Hospital Corps. He has to sit as President of Boards, or himself adjudicate in the cases of recruits objected to for medical reasons by Surgeons of regiments; on the cases of officers arriving from abroad on sick leave, falling sick, or making application for compensation on account of wounds. He has to make suitable arrangements in regard to the distribution of Medical Officers in the district with reference to the requirements of the troops; has to keep the roster of those in garrison, so that each shall serve in rotation, and no more, in connexion with Boards of various kinds, and as visitors of the garrison cells. He has to check the returns of expenditure of medicines and of extras in regimental hospitals, and to satisfy himself that with respect to the latter existing regulations have been complied with. He has to verify and sign the bills submitted by Medical Officers for travelling allowances; and now, under the recently introduced *Control* system, to approve the pay bills of those who do not belong to regiments. He has to nominate Medical Officers to accompany detachments proceeding to small stations, and to arrange, where occasion arises, for opening a hospital for the treatment of their sick.

He has on occasions of garrison field days and public reviews to make suitable arrangements for casualties that may occur. He has not only to check requisitions for medicines and instruments received from regiments, but also to superintend those sent in for the general supply of these for the district ; has to examine all instruments requiring to be repaired previous to submitting an estimate for the purpose. He has to inspect regiments about to proceed on foreign service from the district, selecting men who are likely to be efficient in the country for which they are destined ; to see that troop-ships are properly provided with all medical requirements before leaving the port, and that the Medical Officers proceeding in charge are provided with all necessary requirements for performing their duties. There are various other offices which he has to perform, but the list I have given is, I think, sufficient to indicate the more important, of which it is only necessary to observe that, as must be obvious to any person, much of the well-being of the officer, the soldier, and his family, depends upon the efficiency with which they are executed. It is with no desire to magnify the importance of the duties performed by us that I give this brief summary. As I have already observed, no one branch of the Army is really more important than another, but there is this very material difference between the armies of civilised nations and those of uncivilised, that whereas the sacredness and the value of human life being recognised by the former, and every practicable means adopted to economise it, no such sentiment exists in the case of the latter, and, consequently, no organisation maintained to save the fallen in battle or those who are attacked by disease.

It will be observed that in my "Remarks" allusion has not been made to the labours of Army Medical Officers in India ; these have, however, been separately detailed in a series of papers on Army Sanitation published during the present and preceding years in the *Medical Times and Gazette*, and therefore I consider it unnecessary to enter into particulars on the subject in this place. I may state, however, that from the year 1826, when an Admi-

nistrative Officer of our Department first arrived in that country, until now, all who have served there have been zealous in advocating various improvements in the arrangements for and management of the troops, and that the official records in our office at Calcutta bear ample evidence of this fact; indeed, it is much to be regretted that the Royal Commission which, from 1859 to 1863, inquired into the sanitary condition of the Indian Army, did not avail themselves of the ample reports on the subject there contained; but the fact seems to be, that they were unaware of the existence, either of that office or of the records contained in it. Had they done so, they would have seen that it was the oft-repeated representation of Dr. Burke which led to the first improvements effected in the hygienic conditions of the soldier in that country, and that he and his successors, each in their turn, directed their attention to the requirements of barrack accommodation, food, clothing, recreation, measures for the repression of vice and intemperance, and to the moral advancement of the men. A similar reference would have further indicated that, whether in times of war or during periods of peace, the exertions of our Medical Officers there were uninterrupted; that whether in the first Burmese war, the expedition to Affghanistan, or in that to China in 1840, their labours were unflinching, and that in each of these, loud protests were raised by them against mismanagement in other departments which led to the deplorable results in mortality by which they were severally characterised. Finally, they would have seen that some of the measures recently proposed as new for adoption during the prevalence of epidemics, had been in force in 1825; that the circumstances which tend to impair their full influence were duly considered at that time; and that in this, as well as many other respects, the orders and instructions for the guidance of Regimental Medical Officers would bear very favourable comparison with any of those that have lately appeared, reflecting as it were the newest advances in so-called sanitary science.

Of the various causes which have led to the strange result that the merit connected with these and the other

measures having reference to preventive medicine have slipped away from their original proposers, it is now needless to enter into particulars. What is done is done. Yet I would fain entertain a hope that those who may do me the honour to peruse the following pages will at any rate give the members of the body to which I belong the merit which I claim for them.

C. A. GORDON.

PORTSMOUTH: *January*, 1870.



REMARKS ON ARMY SURGEONS AND THEIR WORKS.

BY C. A. GORDON, M.D., C.B.,
Deputy Inspector-General of Hospitals.

THAT the armies of ancient Egypt had surgeons and physicians attached to them has been placed beyond a doubt by recent researches into the history of that people; and although no light has been thrown upon the nature of the duties professed by them, we learn that among the regulations to which they were subject, was one prohibiting the receipt by them of payment or rewards from the soldiers whom they treated.* The practice of the healing art was, in those days confined to the priesthood, and in process of time became mixed up with the mythology of the country, while incantations and astrology were abundantly appealed to in the treatment of disease. Hurried as this glance at the early history of a department of the profession must be, I may be permitted to observe that according to those priestly surgeons, no fewer than thirty-six demons presided over the human body, each demon having one of that number of regions into which it was for the purpose somewhat arbitrarily divided. The duty of the physician (or surgeon) was, having discovered the particular part and demon at fault, to invoke the deity capable of giving relief; yet it is satisfactory even now to learn that in some cases at least, the treatment was not altogether confined to forms and ceremonies,—thus *squills* were administered for the cure of dropsy, and oxide of *iron* administered in appropriate cases.

The ancient Greeks doubtless received their knowledge of surgery and medicine from the Egyptians, and so highly did this polished people esteem the professors of the combined arts, that they looked upon them as no less than sons of the gods. Under

* Fonblanque, p. 14.

them the surgeon was deemed entitled to divine honours; and we still read, side by side with accounts of the greatest achievements of their commanders, praises of the personal qualities of, and services rendered by their army surgeons.

A few brief remarks on the mythological period of the history of surgery among this people must here suffice. Chiron the Centaur, a native of Thessaly, was celebrated for skilfully applying soothing herbs to wounds and bruises. He was son of Saturn, by the nymph Philyra, and is said to have been himself wounded in the knee by an arrow discharged by Hercules, when the latter was attacked by the whole body of Centaurs, whose wine he made free with in the cave of Pholus.* On this occasion Chiron was unable to cure himself, but it is said that as a son of a god he was unable to die, although from the pain he suffered he much desired to do so.

Of Æsculapius, the father of medicine, it is only necessary to observe that he is said to have been the son of Apollo by Coronis, daughter of Phlegyas, king of the Lapithæ; that in a fit of jealousy, whether with or without cause, now matters not, the god murdered the fair Coronis, and that the birth of the future physician was posthumous. Apollo having, like many another husband or lover, repented him when too late, placed the babe under charge of Chiron. Of his early career, however, we know nothing, but he appears in history in the character of a naval surgeon, inasmuch as he accompanied Castor and Pollux on the Argonautic expedition, an expedition which, according to some authors, took place B.C. 1263, according to others B.C. 937, but of which Grote writes "not only are we not able to assign the date, or identify the crew, or decipher the log-book of the 'Argo,' but we have no means of settling even the preliminary question whether the voyage be a matter of fact badly reported, or a legend from the beginning."

On the return (fabled or actual) of the Argonautic expedition to Greece, Æsculapius set up in private practice, and so great was his success, that if we are to put belief in history, Zeus (Jupiter) considering the privileges of the gods invaded thereby, and a complaint lodged by Pluto "that by these new proceedings, as the god of darkness called the cures effected by the ex-naval surgeon," the infernal regions were being entirely depopulated," got the Cyclopes† to forge for him thunderbolts with one of which he struck Æsculapius dead.

The physician, however, although thus removed from earth, was but translated to the heavens in which, as the constellation *Ophiucus* or the serpent-bearer, he still shines; nor did he quit

* "Keightly's Mythology."

† *Cyclopes*, if we are to credit Pocock (India in Greece), were a tribe of Mahrattas or Goclopes who had emigrated westward.

the earth until his family had become somewhat numerous, the names of four of his daughters and two of his sons having descended to us. And first, of the daughters. These were *Hygiea* or health, whose worship has, of late years, been considerably revived. *Panakeia*, or universal remedy, *Iaso*, healing, and *Aigle*, splendour, of whom it is not asserted that she had any connection with her father's profession, nor has she now, except that she gives her name to a well-known genus of plants, of which the *A. marmelos* is the most useful. The two sons were named respectively, *Machaon* and *Podalirius*, of whom we are accustomed to hear a great deal as having been the earliest army-surgeons whose names have come down to the present time. Both accompanied the expedition against Troy,* B.C. 1192, and not only attended upon the wounded, but fought in the ranks. Machaon having, while so engaged been wounded by Paris, Achilles inquired anxiously after "the wounded offspring of the gods," the whole army was interested in his recovery, for as they said "a leech who like him knows how to cut out darts and relieve the smarting of wounds by soothing unguents, is to armies more in value than many other heroes."†

Of Podalirius the most important piece of information handed down to us is that he enjoys the merit of having been the first to practice phlebotomy. It is also recorded of him that on his return from Troy he cured Syrna, the daughter of Damætus, of the falling sickness, and then married her; being thus among the first, if not the very first, medical practitioner who was conquered by a fair and interesting patient. His name is commemorated in science by being applied to one of the subdivisions of the natural order of plants, Papilionaceæ, namely, the Podalyriæ. Machaon reappears as the trivial name of the swallow-tailed butterfly (*Papilio Machaon*); and of the other personages just mentioned we have the name of Paris in one of the Trilliaceæ, and both Achilles and the Centaur in genera of the Compositæ.

We are led to believe that father and sons confined their skill to external injuries; the former as healing those afflicted with self-produced ulcers, wounds from brass or stone, or injuries from summer heat or (winter) cold, his remedies being incantations, soothing drinks, external applications, and the knife. The treatment pursued by his two sons seems to have been much upon a par. Machaon when wounded before Troy, partook of a mess of meal and cheese, mixed up in strong Pra-

*The reader may be reminded that the siege of Troy, and circumstances that led to it are looked upon as but a western version of the events related in the great epic of the Hindoos, the Ramayanah.

†For the well-known metrical translation, see Pope's Homer's *Iliad*, Book XI.

mian wine, and both he and his brother paid little attention to their patients, except to dress their wounds. "If the men are sound," they argued, "wine and cheese will not hurt them; if not, let them die and make room for better men." Neither father nor sons seem to have had any actual knowledge of preventative medicine or hygiene, for we learn that on pestilence occurring in the Grecian camp, the only measures taken towards its mitigation or prevention consisted in incantations to Apollo and other deities. The Asclepiades, however, speedily began to acquire a knowledge of hygienic observances. Temperance, cleanliness, air, and exercise, were their great resources, and they appreciated the value of air, water, heat, light, and food, and highly recommended exercise on horseback.

For 600 years after the Trojan war little or no notice appears in regard to medicine and surgery. The practice of both was during that time confined to the Asclepiades, or lineal descendants of Æsculapius, whose only knowledge descended orally from father to son, and whose three great schools at Rhodes, Cos, and Cnidos are familiar to students of ancient history. Medicine and priestcraft had become strangely mixed up together; and the mysteries of both, if we are to credit what is recorded of them, were not only taught simultaneously, but were dispensed by the "lady practitioners" of those days. In the temples of Æsculapius the priests *and priestesses*, who were their guardians, prepared the remedies and directed their application. Offerings were made by their patients, who devoutly placed upon the altar such contributions as their means or gratitude led them to bestow; and the pious avarice of the medical priesthood afforded scope for ridicule to some of the satirical writers of the period.

Do my readers desire to know more particularly the ordeal through which those who resorted to those "establishments" were put? The patients reposed on the skins of sacrificed rams, in order that they might procure celestial visions. As soon as they were believed to be asleep, a priest clothed in the dress of Æsculapius, imitating his manners, and accompanied by the *daughters* of the god, that is, by young actresses thoroughly tutored in their parts, entered, and solemnly delivered a medical opinion.*

Not only did the temples here alluded to furnish the types from which some of our more recent institutions are probably taken as already mentioned, but they were in a manner Hydropathic establishments, being, as we learn, generally built on a high and healthy situation near mineral wells; and in addition to the ordeal already described, patients on being received

* See "Paris's Pharmacologia," pages 10 and 27.

into them were subjected to a system of purification by bathing, shampooing, abstinence from food, and medicated fomentations.

Pythagoras, who about B.C. 500, was the first to bring physiology to bear upon medicine, must be claimed as an army surgeon. He was taken prisoner by the Persians, but having treated successfully a dislocated ankle in the person of King Darius, and a cancer in the breast of Queen Atossa, he was loaded with wealth by the grateful monarch. To him was due the foundation of the school of Crotona, and on the breaking up of it about two centuries afterwards, the public practice of the profession ceased to be the privilege of one family or sect, as it had heretofore been.

When in the fourth century B.C., Alexander proceeded towards India, his army was accompanied by medical men, although it is to be feared the great conqueror had but little confidence in their acquirements. It is related of him that in his last illness at Babylon in the year 324, when, according to the historian, he contracted a fever, partly from exposure, and partly from debauchery, he died unattended by a physician. Had the reputation of the medical officers of the Trojan war not been worthily maintained even thus early by their successors?

But if Alexander omitted to have the personal attendance of a medical man, there is evidence that on all his warlike expeditions he bestowed much of his own attention on the sick and wounded of his armies, and that he not only personally visited those who were injured in battle, inquiring into the nature of their wounds; but that he conferred upon the parents and children of such as had fallen, privileges of distinction and exemption from civil burthens.

That means had existed even before his time for the transport of the sick and wounded of armies, we learn indirectly and rather from negative than from positive evidence. That they were well taken care of, however, does not seem to admit of doubt; thus, for example, we read that B.C. 413, when the Athenian fleet was defeated by that of Syracuse, "the Athenian commanders, seeing that they would now be left without provisions, held a council, to which they summoned most of the officers of the army." The result of their deliberations was to abandon the upper walls, and to occupy a fort where the ships were just large enough to contain the stores *and the sick*, and for the rest of the army to get on board all the vessels they had and try to force a passage to Catania.*

A papyrus also still exists whereon it is recorded that a Greek admiral previous to commencing an engagement, announced to

* Keighly's "History of Greece," page 240.

his men his resolution to abandon his sick and wounded after the battle; a proposition which was at the time looked upon as so very horrible, that he was made to answer for it before a tribunal.*

In the armies of ancient Persia, we learn that there were medical men, and that Cyrus (B.C. 530) was careful to appoint the most able physicians and surgeons to attend his troops in the field and at sieges; also that after he had obtained possession of Babylon he formed in that city a depôt for medicines and instruments for their use. It does not appear that in his army regular hospitals were established, and there is reason to fear that among the Persians both medicine and surgery were at a somewhat low ebb; consisting in a great part of astrology and magic.†

It may here be mentioned as bearing upon the period to which this portion of my notes refer that Hannibal, although he can hardly be claimed as an army surgeon, is said to have in his youth studied medicine, and that so high an opinion had he of the curative art, that in all his campaigns his armies were accompanied by practitioners of it. An incident which is related in his career shows with what care the sick and wounded of the Carthagenian forces were taken care of by that general. During the passage of the Alps, after one of his encounters with the mountaineers,‡ we read that the baggage which had been thrown down was gathered up, and the wounded were placed on litters rudely constructed on the spot, that they might be borne into a place of safety. We further learn that in a short time all was ready, and the forces resumed their march. The date of these events was 219 B.C.

Of the Huns it may be related that history first records their rise 200 B.C. From that time to the death of Attila, A.D. 452, they would appear to have possessed no arrangements whatever for the transport, accommodation, or treatment of the sick and wounded. It is related of them that they left their wounded on the field after an action, to be destroyed by the camp women, by whom their armies were accompanied; and it may perhaps be conjectured that the custom still followed in China of abandoning those who have been wounded in battle, is but a remnant of that bequeathed by this people, although as the reader is perhaps aware, they were as a power, expelled from the Chinese empire, A.D. 93.

CURATIVE medicine does not appear to have been practised

* Chevers.

† Del Institutione Cyri, lib. 8, quoted by Fonblanque, page 14. Also Hennen's Military Surgery, page 3.

‡ Abbott's "Life of Hannibal," p. 76.

in Rome earlier than the first century B.C., although *Hygiene* was recognised, and its principles followed, both under the civic authorities and in the army, for at least three centuries before that time. Of this we have evidence in the cloacæ, aqueducts, baths, and cisterns of the imperial city, many of which date back to the fourth century B.C., and in the fact that Vegetius, B.C. 386, wrote a chapter of instructions as to the means of preserving the health of troops. Many, and severe, however, were the epidemics by which, from time to time, the city was ravaged, and when, as one of the Greek Republics after another was absorbed, and notwithstanding the saying of Plato that it is to be considered a great sign of an intemperate and corrupt commonwealth when lawyers and physicians do abound, the Romans having been an imitative people, and availing themselves of the higher civilisation of their subjects, borrowed from them the system of having medical practitioners to attend to their diseases and hurts. Under these circumstances, *Arceagathus* was induced to settle among them about 100 B.C., but, unhappily for him, so extravagantly high had been the estimate formed of his professional attainments, that he, naturally falling far short of that estimate, was speedily banished the city. He was soon succeeded by a native of Pruza, in Bithynia, who, although in no way connected with the family of the Asclepiades, adopted their name, and in the year 96 B.C. commenced the practice of his profession. That he had in early life been a poor but enthusiastic student appears evident from what is said of him, that he, as a youth, earned his living by grinding at a mill during the night, in order that, during the day, he might attend lectures. He was a sceptic in regard to the power of drugs, asserting that they injured the stomach, and induced complaints more dangerous than those they were intended to cure. In cases of *ascites* he punctured the abdomen. He employed venesection, cupping, and blistering, but, in other respects, trusted almost entirely to dietetic means for the treatment of disease. So divided are authorities on his merits, however, that Cicero, whose friend he was, wrote of him and his successes that "nothing brings men nearer to the gods than by giving health to their fellow-creatures," while Pliny, on the other hand, wrote of him as "an impudent quack, who accommodated his practice to the luxury and indolence of Rome, by humouring the whims of his patients and prescribing such remedies as would be sure to please."* But Asclepiades was not an army surgeon, and is only alluded to in this place as having been the first medical man of whom we have record as practising in Rome.

* Meryon's "History of Medicine," vol. i., page 39.

From this time onwards, medical men followed the imperial armies ; and although the accounts that have come down to us of their duties and position are meagre in the extreme, we have reason to believe that as in progress of years the former became more responsible, the latter improved. We know, for example, that the discipline of that army was remarkably severe ; that drills, parades, and gymnastics were the constant occupation of the soldiers, and the unvarying routine of these was steadily persevered in through foul weather and fair. In the former the troops were exercised in covered sheds ; in the latter in the open air, by which means their health is said to have been more benefited than it was by their physicians, although the men themselves were so harassed that they hailed a campaign as a period of rest. What the precise duties of the earliest surgeons in that army were, we can now only conjecture. Probably they superintended the food, clothing, encampment, and what may be called the hygienic conditions of the troops generally ; for although the wounded seem to have always commanded the careful attention of Roman generals, that attention was directed more to their accommodation than to their surgical treatment.

Medical administration of the army had not in the time of Julius Cæsar, B.C. 40, advanced sufficiently far to enable him to establish military hospitals, although the idea of such establishments would appear to have been entertained by him, and he did as much as the circumstances of the time permitted to carry it into effect. Thus, during the night preceding a battle he ordered all the sick and wounded to be conveyed into the nearest town,* where they could enjoy repose and the best assistance. When stationary, a part of the camp, or valetudinarium, was appropriated for their accommodation under the eye of the prefect of the camp, or quartermaster-general. In like manner he, after a battle, assured himself that they were suitably disposed of. The appliances and instruments employed by the surgeons must have been comparatively simple and rude, yet, such as they were, arrangements were always made for their conveyance whenever the army moved ; and that the importance of medical officers, soon after the period of which we have been writing, obtained recognition appears from the fact of the Emperor Antoninus, A.D. 138, having personally communicated by letter with the surgeon of the 2nd Legion.† It is apparent that surgery made rapid advances in Rome ; yet the fact has descended to us that the patricians of the Imperial City refused to educate their sons to the profession. Its practitioners were obtained from Greece and Alexandria, and subsequently

* "Adouin," quoted by Fonblanque, p. 19.

† Fonblanque, p. 20.

consisted of self-educated slaves and freedmen. And yet in so far as actual remuneration was concerned, it would appear that—

In ancient Rome when men loved fighting,
And wounds and scars took much delight in,
Men menders then had noble pay,
Which we call surgeons to this day.*

Turning to Britain, we learn from various sources that in the seventh century medicine was, among the Anglo-Saxons, studied and practised as a science, works on the subject having in all probability been introduced from Rome by the clergy of the day. Accounts are unfortunately wanting of the means by which the sick and wounded of the *Fyrd* † and other forces of the time were attended; but considering the very small difference that existed between the military and civil classes, we may presume that no special arrangements were required for the one beyond what were called for by the other. Religious houses were alike open to both, as soon after this time the celebrated King Arthur himself experienced, when on the occasion of a battle having taken place between him and his nephew Medward, ‡ in which the latter was killed and the former mortally wounded, he was conveyed to the abbey of Glastonbury, the monks of which carefully tended him, and bestowed such surgical assistance as was in their power, until death released their royal patient from his sufferings.

As illustrative of the state of the profession in the country at this time, I extract two formulæ from the pages of Turner. § The first is for the *lungen adle*, or pulmonary consumption, and in modern English reads thus:—Take white horehound and hyssop and rue, and sow-bread (*cyclamen*), and bryse wort and brown wort (both now unknown by those names), and parsley and groundsel, of each twenty pennyweights; and take one *sester* || full of old ale, and seethe the herbs till the liquor be half boiled away. Drink every day fasting a *neapfull* cold, and in the evening as much warm.

The second is for *fol adle*, or gout, and is as follows, namely:—Take the heads of tuberose isis (probably iris) and dry them very much, and take thereof a pennyweight and a half, and the pear tree and roman (rowan?) bark and cummin, and a fourth part of laurel berries, and of the other herbs half a pennyweight of each, and six peppercorns, and grind all to dust, and put two egg shells full of wine. “This is true leech-craft,” so says

* British Apollo, 1703, No. 3, quoted in “A Book about Doctors.”

† *Fyrd* was the name of the first attempt at Militia in the time of the Saxons, and before that. See my papers on the “History of the British Soldier,” now being published in the *United Service Magazine*.

‡ “Military History,” p. 33. § “Anglo-Saxons,” vol. ii., p. 428.

|| About fifteen pints.

the prescription, and then adds, "give it to the man to drink till he be well." It was evidently looked upon as infallible.

That surgeons were in the ninth century employed with the armies of Leo VI. we learn from the pages of Meyrick (vol. i., p. 73). We are further told that "those who following the host look to the wounded like as do medical men, and restore them to health." Hospitals for the wounded were at the same time established. Along with their armies there were certain followers termed *deputati* distributed among the cavalry; their duties being to carry off the field such as were wounded in battle. For this purpose they had on the left side of the saddle two stirrups, to enable them the more easily to take up the wounded behind them and convey them to what must now be looked upon as the first attempt at field hospitals.

But it is undoubtedly to the period of the Crusades that we are accustomed to trace the origin of military hospitals, and a systematic treatment of the sick and wounded. During those times we read that "many a gallant knight who had escaped the dangers of the field of battle, fell victim to disease performing the humblest offices of a hospital nurse among his plague-stricken comrades."* Hence, indeed, arose the order of Hospitaliers, an order of military knights, the origin of which dates back to A.D. 1048, and whose history, as that of the Knights of Malta, need not here be more fully entered upon.

Surgery, as well as medicine, was at a low standard, and perhaps the assistance given to the wounded was somewhat unsystematic; yet it is sufficient for our present purpose to know that it was given, although, as expressed by a writer on military administration, the soldier had, for the most part, but little attention bestowed upon him; he was bought to be sacrificed, he was used while in health, and when sick or wounded left to die.† Such is the sad picture of his then condition that has been handed down to us.

In the twelfth century medicine and surgery, which had up to this time been practised simultaneously, were separated by the edict of Tours, 1163. Monks had hitherto principally followed the practice of both branches, and as we learn, continued to do so up to 1216, the above edict notwithstanding. It was during this century that hospitals were first instituted in England, St. Bartholomew's having been founded in 1122, and opened soon after that date for the reception not only of the civil population, but also of wounded and sick soldiers; an arrangement which was doubtless good so far as it went, but which did not compensate for the general imperfection of the measures then existing for the immediate care of such as were injured in battle. About

* Fonblanque, p. 25.

† Foublanque, p. 26.

this time the priesthood being prohibited from studying medicine, stigmatised the profession, and Pope Honorius III. directed that not only should no priest practise surgery, but that all should refuse their benediction to those who professed it. We shall see as we proceed that the profession in due time advanced notwithstanding these and other priestly anathemas.

That Saladin (1191) had medical officers in his armies is well known; and that some at least of them were men of considerable learning is certain. For example, Abd-Allatif, a physician of Bagdad, attached to his forces, wrote a description of the arrangements made by the Sultan, from which we gather that they were upon a much more extensive and complete scale than is now generally known. "In the midst of the camp," so wrote this medical officer, "was a large square containing a hundred and forty farriers' shops. In a single kitchen were twenty-eight coppers, each one capable of containing a sheep entire. As to the clothes market," he observes, "that exceeded all the efforts of the imagination to conceive. There were in the camp more than a thousand baths," and a bath could be had at the cost of a piece of silver. It may, indeed, be truly said that the camp of the Crusaders contained nothing like this.*

Of the surgeons with the English forces about the same time, it is related that when, during the siege of Chalus, in 1196, Richard I. was wounded in the shoulder by an arrow shot at him by Bertram de Gourdon, the attendant was so unskilful as to so rankle the flesh in withdrawing the arrow that mortification and the death of the King followed.† How far the results may have or have not been caused by bad surgery, we know not, but the remarks show that then, as in more recent times, to blame "the doctor" was not unknown.

We have reason to believe that in the thirteenth century, among the persons who, as *barbers*, accompanied armies, some were of a superior class as regards education, to what the term, as more recently adopted, would indicate; thus, we read ‡ that, on the morning of the Battle of Evesham (1265), De Montfort, seeing the approach of what he took to be the force under his son, but which turned out to be that of King Edward, despatched Nicholas, his barber, who was well versed in heraldic lore, to examine well the approaching force, for which purpose he ascended the clock tower of the abbey of that town, and "alas! soon perceived among the advancing banners the triple lions of Prince Edward, and the ensigns of De Mortimer and the traitor Worcester." He was, no doubt, a man of erudition, and had gained a considerable amount of the confidence of his master.

Edward the First seems, while in Palestine, to have had in

* *Cornhill Magazine*, No. 84.

† Goldsmith, vol. i., page 197.

‡ "Memorable Battles," p. 71.

his army a surgeon whose reputation, although not his name, has descended to us. When about 1272 that prince was attacked and severely wounded by a member of the band of assassins whose leader is still known as the "Old Man of the Mountain," his surgeon, by making deep incisions and cutting away the mortified parts, completed the cure, and restored him to health within a fortnight. Probably at this distance of time we are unable to approve of the means of cure employed by surgeons of that period. We know, however, that such as their means were they employed them zealously in the field; for to the fact of St. Louis having witnessed their services after the Crusades was due the formation of a college, or *confrérie* of surgeons, in honour of St. Cosme and St. Damian in 1268, and the promulgation of an order that wounds and sores should on the first Monday of every month be dressed gratis in the churches dedicated to those saints, but by "barbers" who had received no regular professional education.*

In 1271 the foundation of the College of Surgeons of Paris was laid by Pitard, a surgeon of eminence. And in Britain, Gilbertus Anglicanus, who lived about the beginning of the fourteenth century, seems to have been the first surgeon of any degree of eminence. About the middle of that century another eminent English surgeon lived. This was John Arden, a contemporary of a still more eminent man in France, namely, Guy de Chauliac, whose chief fame rests upon the fact of his having re-introduced the operation of the Cæsarian section. John Arden,† however, considerably advanced surgery. He first practised the operation for fistula in ano, and made some improvements in the trepan. That he is to be considered an army medical officer we know from the single fact that he accompanied the armies of Edward the Third at Crecy. Allusion has already been made to the want of an organised system of medical provision for the early Crusaders. Little if any advance in this respect seems to have been made at the time to which we now refer. We learn that the lordly and knightly combatants were, according to the ancient chivalric practice, tended by *their ladies*, many of whom are said to have possessed such a knowledge of styptics as to have been able to treat flesh wounds, but there are no accounts of any arrangements being in existence whereby to succour the common soldiers. We read also that the greater nobles had "leeches" attached to their households, and were followed by them to the field; but that as the Norman and Teutonic races had from a very early period considered the curative art as belonging properly to their women, so we

* "Medical Experiences." By Milligen, vol. ii., page 13.

† Or Arderne.

find at the time of which we now write that the *lady practitioners* were chiefly trusted when anything was the matter with the chiefs themselves. Yet not a word about attendance on their dependants. The historians of this age are loud in praise of the extent of surgical knowledge possessed by ladies; nor can we do better than here offer a few remarks on what was said regarding them. We accordingly read * that they shared with the monks in the knowledge which the age possessed of vulnerary medicaments. In those days it was believed that the professors of medicine enjoyed a holy intercourse with worlds unknown to common mortals; and we therefore read without any very great surprise that "the possession of more than mortal knowledge was readily ascribed to a pure unearthly being like woman, and the knight who felt to his heart of hearts the charm of her beauty was not slow in believing that she could fascinate the very elements of nature to aid him." It is almost needless to observe that the knights were for the most part young and susceptible men; and with this remark I would simply add the following pleasing account by Spenser illustrative of the affectionate care bestowed upon them by the lady surgeons of the period, avoiding the slightest allusion to what the results of similar treatment would probably be upon a knight of the latter half of the nineteenth century. Spenser says:—

Where many grooms and squires ready were
To take him from his steed full tenderly;
And eke the fairest Alma met him there,
With balm and wine and costly spices,
To comfort him in his infirmity.
Eftsoones she caused him to be conveyed,
And of his arms despoiled easily.
In sumptuous bed she made him to be laid,
And all the time his wounds were dressing, by him stay'd.

We moreover learn regarding the further attentions paid by these fair attendants to their knightly patients that—

His double-folded neck she reared upright,
And rubbed his temples and each trembling vein;
His mailed haberiean she did undight,
And from his head his heavy burganet did light.

All of which were, perhaps, more the duties of a nurse than of a surgeon; yet some of the results of such treatment may readily be conceived even in the present matter of fact days. Well then may the poet from whom I quote add:—

O foolish physic and unfruitful pain,
That heals up one and makes another wound!

No wonder that the Crusades were popular among the young

* See Mill's "History of Chivalry," vol. ii.

English nobility and gentry. Who would not gladly risk life and limb to receive the attentions of such ministering angels? And yet how strange that their presence with the armies of Saladin is not mentioned?

The English regiments employed by Edward II., A.D. 1307 to 1327, had upon their muster rolls the name of no surgeon belonging to the army.* It is true that attached to the Welsh corps raised by this monarch to proceed against the Scots were officers styled *medici*; but it is doubtful whether the term was applied to persons in the capacity of surgeons, physicians, or apothecaries. A corps of 1,097 men had one such officer; but that no definite rule existed on the subject appears from the circumstance noted by Grose,† that in another corps of only 968 strong were two *medici*. That matters in this respect had not much improved during the early part of the reign of Edward III. is evident from the circumstance that the name of only one medical officer is recorded as having been present at the siege of Calais or at Crecy, 1346 and 1347. That medical officer was John Arderne, to whom allusion has already been made, and that he must have been at the time far advanced in years will be apparent in comparing the dates already given. He was nominally attached to the household of the Prince of Wales, but there is every reason to believe that his functions were really more those of a historian than of a professional nature; thus, he is one of the authorities quoted in connection with two questions, each of which is perhaps of some importance in its way, namely, as to whence or how came the ostrich plume then worn by the Black Prince on that occasion, and as to whether gunpowder was then adopted. Neither is of any consequence except as points of history, but as they have been alluded to, I may mention his statement that the plumes were obtained from the helmet of the King of Bohemia, whom the Prince slew; and that as regards the use of gunpowder, he merely indicates that the mixture so named was known, and gives a receipt for its preparation, namely, one pound of sulphur, two pounds of charcoal from willows, and six pounds of saltpetre‡.

There having been no regular surgeons to the army, we need have no surprise that on the occasion of the battle of Crecy no arrangements existed for the transport of or accommodation for the wounded, regarding whom all we now learn is that as many as could be so were received into monasteries, where for

* Grose's "Military Antiquities," vol. ii., p. 274, and "Scope of Military History," p. 367.

† "Military Antiquities," vol. i., p. 238.

‡ "British Army," by Sir S. Scott, vol. i., p. 161, and vol. ii., p. 210.

the most part they were attended by monks. Soon after this time surgeons were engaged to attend upon the troops in the manner already mentioned*. The period of such engagement was limited to the duration of hostilities, or for a particular service. The rate of pay allowed was fourpence per day to each, with the privilege of shaving the men and receiving monthly from every soldier twopence in the shape of what was called "regards."

Of the state of the profession generally, and position accorded about this time to surgeons in France, Guy de Chauliac gives us some information. In 1363 he published a work, probably the first of its kind, on the healing of wounds, and in it advocated the modes of treatment said to be followed by some German knights, namely, the employment of *exorcism*, oil, wool, and cabbage leaves. According to him surgeons in that country were divided into five sects:—The first applied cataplasms indiscriminately in every description of ulcer or wound; the second in similar cases applied wine only; the third used emollient ointments and plasters; the fourth, *chiefly military surgeons*, promiscuously employed oils, wool, potions, and *charms*; the fifth consisted of ignorant practitioners and silly women, who had recourse on all occasions to the saints, praised each other's writing perpetually, and followed each other in one un-deviating track like cranes.†

Not until gunpowder had been introduced into general use in warfare, did a change take place in the manner of employing surgeons in this country, and they became a part of the military establishments. This, as the reader of history is aware, did not occur until long after the time of which we have been writing, for we learn that in 1414 Henry V. prohibited its introduction into England. Circumstances, however, were pressing with him, and in the very next year he had twelve surgeons in attendance on the army of 32,000 men, with which he invaded France.

Of the pay of these "barbers," as well as their social status, the accounts handed down to us are not flattering.‡ When Henry was organising that expedition, he took into his service Nicholas Colnet as his field-surgeon for a year. He was bound to accompany the king wherever he went; to carry with him three archers on horseback; and in return for his own and their services was to receive forty merks, to be paid at the rate of ten merks per quarter. In addition to this remuneration, however, he, as well as Morstede, who was principal medical officer of his Majesty's forces on that occasion and at the battle of Agincourt, were

* Upton, quoted by Fonblanque, p. 32.

† "Millar's Surgery." Introduction to the first edition.

‡ See Fonblanque, p. 32, and Hennen, p. 3.

each held to be entitled to receive prisoners and plunder.* No doubt both of them were exempted from the regulations that applied to the surgeons of inferior rank, for, in the military code drawn up to ensure discipline in the army, the classes of persons there enumerated as being subject to the constable included in their order "soldiers, shoemakers, tailors, *barbers, physicians, and washerwomen.*" But perhaps we need not wonder so very much at this provision in the code, when we learn that all such were pressed men. The two principal surgeons already mentioned, and *Bredewerdyn*, who was the personal attendant on the king, each were directed to have under them fifteen *pressed* assistants—Henry himself having ordered that they should *press* "as many surgeons and *other artisans* as were needful to make certain surgical instruments which were required."†

From some causes, the nature of which does not appear, the *press* does not seem to have been very successful, for it is stated that the assistants had not landed in France when Agincourt was fought. Had they done so, there would have been forty-eight medical officers including the chiefs; as matters were, there were only fifteen.

Adverting for a little to this battle of Agincourt, on the *glory* of which so many historians have dwelt with pride, let us look back to it from a departmental point of view. By so doing we find that no provision whatever on that occasion existed for the removal of the wounded from the field, but that the following very effectual substitute was had recourse to, namely, "On the morning following, the English troops, in marching off the field, *killed* all the hopelessly wounded, for the humane purpose of putting them out of pain."‡ To the more slightly wounded, a small sum of money was given, and each was told to find his way home as best he could. Prisoners were disposed of as were the severely wounded, and the reader who is curious on the subject is referred to Shakspeare's "Henry the Fifth" for further details regarding it.

In 1461 the reign of Edward IV. began, and William Hobbes was appointed physician and surgeon to his Majesty. No change was made in the position of the medical officers serving with the army. The proportion of surgeons to soldiers remained the same, as has been already mentioned, but some slight improvement took place in their rate of pay; thus, while

* Rymer's "Fœdera," quoted by Sir George Balbingall, Military Surgery, p. 10.

† Marshall, quoted by Chevers, "Moral and Social Condition of the British Soldier," p. 48.

‡ Chevers on the "Moral and Social Condition of the British Soldier," p. 7.

William Hobbes himself received two shillings per day, the military surgeons had one shilling.*

Towards the end of the fifteenth century, field hospitals were placed upon something like the footing which they have ever since retained; the credit of their introduction, however, does not remain with England. We read, indeed, that in the fifth century, *Fabiola*, a lady of Rome, established in that city a hospital for the reception of sick persons; not, however, until 1484 do we meet with accounts of an establishment of this nature for military purposes. In that year, Queen Isabella of Spain had an army at Antequara which numbered 6,000 horse and 12,000 foot; and there she caused to be established six spacious tents, with beds, and all things necessary for the sick and infirm. In 1597, *Henri Quatre* instituted similar establishments at the siege of Amiens, a boon which was so grateful to the soldiers that they designated the campaign as the "velvet campaign." His son, Louis XIII., erected the first fixed hospital at Pignerol, and Louis XIV. the *Hôtel des Invalides* at Paris.†

The first published work on gunshot wounds of which we read bears the date of 1514, its author's name being *Antonio Ferri*, physician to Pope Paul III., and its title *De Sclopetorum sive Achibursorum Vulneribus*. The reader of these pages may, perhaps, be amused to learn that the orthodox treatment then recommended for the injuries in question was to pour into the wounds boiling oil, as is, indeed, still done by the native practitioners of surgery in India. The method of performing amputation, too, was somewhat summary. The part to be removed was simply chopped off by a hatchet, and the bleeding checked by the application of a red-hot iron to the stump.

Thomas Gale‡ was probably the first British surgeon who wrote specially upon injuries arising from the use of gunpowder. He had served in the army of Henry VIII., had been present at the siege of Montreuil in 1544, and was, at the time he wrote, sergeant-surgeon to Queen Elizabeth. Two works by him bear the date of 1563—namely, one upon "Gunshot Wounds," and one upon "Wounds, Fractures, and Dislocations." In the latter he gives a formula for a styptic powder, the ingredients of which were alum, lime, arsenic, and strong vinegar. These were to be mixed and applied by means of tow covered with white of egg. In 1586 and in 1596, this army surgeon published various other works, discussing, in some of them, his

* "Scope of Military Literature," p. 386.

† The reader is referred for further details regarding hospitals to Ballingall's "Introductory Lectures," Lecture iv.

‡ I would here acknowledge my indebtedness for much information in regard to army surgeons to No. 163 of the *Edinburgh Medical and Surgical Journal*, to Millar's "Surgery," and Ballingall's "Military Surgery."

views regarding the position of medical officers, and deploring the inferiority of the persons then employed in that capacity.

It may be well to state that the limits within which, in these papers, I must confine myself, permit me only to briefly allude to some of the more prominent army surgeons, and those to whom the profession, in civil or military life, is indebted for improvements connected therewith. This circumstance, too, must account for the sketchy character of my remarks.

Among the many who have laboured well and successfully for the benefit of the soldiers entrusted to their care, and for the interests of the profession of which they were members, the name of *Paré* stands pre-eminent at this time, and deserves more than a passing notice, as some of the incidents connected with his history indicate not only the influence which he obtained over the troops, but the very important military result that was thereby produced. He served as surgeon to four successive kings of France, followed their armies from 1536 to 1569, and published the results of his varied experience in 1582. To him, surgery is believed to be indebted for the introduction of the needle and ligature; but the circumstance of greatest importance connected with his career as an army surgeon occurred at Mentz, when the *noblesse* of France were besieged in that city by Charles V., at the head of a hundred thousand men. The Duke of Guise, who commanded the garrison on that occasion, made a special application to the king, his master, that *Paré* should be sent to them. The surgeon at once obeyed the summons, and, as we learn, when he had found his way through the enemy's lines, received a most cordial welcome, not only from his Grace and all the officers, but from the soldiers also, many of whom exclaimed, "Now we shall not die, even although wounded—*Paré* is amongst us." Mentz was at this time the bulwark of France, and it has always been ascribed to the confidence inspired in the troops by the presence of this single man that they maintained their position until the army which lay around it perished beneath its walls. Well indeed may we, from this important incident, indicate how great are the results that have been brought about by the presence, with an army, of an efficient medical staff. Other instances will present themselves as we proceed.

William Clowes was properly speaking a naval surgeon; yet having been sent to the Low Countries to take charge of the wounded of Elizabeth's army, that was aiding the Dutch against Spain, he may rightly be named in this place. In 1585 he published his work on "Syphilis," in the treatment of which he employed mercury to a great extent. He also wrote on "Gun-shot Wounds," recommending mucilaginous applications to them,

a vast and important improvement on the horrible barbarism of the *orthodox* treatment of those injuries.

Peter Lowe seems to have been the first Scotsman who attained eminence as a surgeon, and he was an army medical officer; having served as "Chirurgion-Major" to the Spanish regiment at Paris. In 1596 he published his work on the whole course of "Chirurgerie," in which he advocated the system of amputation, to which allusion has already been made. "In amputating a finger or toe," said one of Peter's commentators, "we are directed to use a pair of pliers, by which the part is chopped off at once, and with the smallest pain; for this instrument in one instant cuts both flesh and bones." We are further informed that "some for this purpose do use a sharp chisel and mallet, laying the member in a block, and so cut it off." On the retirement of this medical officer from the public service he settled in Glasgow, and to him is due the credit of having originated the medical school of that city.

The next army surgeon of the sixteenth century of whom it is needful now to speak is John Woodall. In 1589 he had accompanied the forces of Queen Elizabeth, sent in that year, under command of Lord Willoughby, to the aid of Henry IV. of France. In 1626 he was charged with all the medical arrangements for the Royal Navy, and subsequently with those of the East India Company, then in its infancy. Between the years 1612 and 1639 he published various works, but his name deserves chiefly to be mentioned in connection with lime juice as a remedy for sea scurvy, he having been the first to introduce that method of treatment. He applied ligatures to large arteries instead of actual cautery for the suppression of hæmorrhage, and suggested in certain cases the propriety of amputating at the ankle-joint.

Let us here rest for a little, while we briefly review the condition of surgery and surgeons, especially as connected with the army during the century in which these surgeons lived. The task, if not particularly satisfactory, will not be a long one. It may be invidious in the present state of surgery throughout Britain to select any one school as a standard of comparison; but perhaps no objection can be urged against reference to the state of surgery in Scotland in the early part of that century. We accordingly read that "when the surgeons of Edinburgh were in 1505 incorporated under the denomination of *surgeons* and *barbers*, it was required of them to be able to read and write, to know anatomie, nature and complexion of every bodie of the human bodie, and lykeways to know all vayns of the samyn that he may make *flewbothomie* in due time, together with a *perfect knowledge of shaving beards*." As to the state of medicine we learn that it was, if possible, still more deplorable. It is

almost needless to observe that Edinburgh was then, as still, in no way behind the other schools in the three kingdoms; we need therefore have no surprise that when such were the required qualifications of a surgeon but little deference was paid to their possessor.

Among the changes introduced in the organisation of the army by Queen Mary, was the appointment of additional medical officers. In 1557, one surgeon was attached to each company of 100 to 120 men, and the rates of pay underwent revision; a surgeon drawing two shillings per day as heretofore; a junior surgeon, who may have held somewhat of the position of an "assistant" of the present day, one shilling and sixpence; but in addition to the surgeon's ordinary pay, a deduction from that of the soldiers to the same amount and under the same designation as in the time of Edward III. continued to be given to him.* The class of persons who were attracted by those terms, however, would appear to have, as a rule, been of the lowest, consisting, as stated by Thomas Gale in 1586, "of empirics, men of no education, who usurped the places of regular practitioners, among such being sow gelders, horse gelders, tinkers, and cobblers." Nor was it, perhaps, to be wondered at if such were the classes who filled the position of medical officers, when, as we may see in a code of "instructions" for forming camps in Elizabeth's reign, "the servants, the physicians, and chirurgeon of the court are classed together in the allotment of ground." That such was the status of the army surgeon is the more extraordinary when we recollect that medicine and surgery had numerous amateur students and practitioners among the higher classes of society, including the nobility; and it is even said of King James IV. of Scotland that he was "such a cunning chirurgeon that none in his realm who used that craft but would take his counsel in all their proceedings."†

In the early part of Queen Elizabeth's reign, Thomas Gale represented to her Majesty the very unsatisfactory position held by surgeons in the army, pointing out at the same time the description of persons who, in this capacity, sought military employment. For upwards of forty years, namely from 1559 to 1603, did the subject continue to attract attention. At the end of that time, it was resolved to increase their qualifications,‡ and a code of rules was accordingly laid down under which it was directed that "surgeons should be men of sobriety; of good conscience, and skilful in *that* science; able to heal all sores and wounds, specially to take out a pellet of the same." It was

* Fonblanque, p. 254.

† See "A Book about Doctors," p. 104.

‡ Grose, quoted by Fonblanque, p. 33.

further directed that all captains must have surgeons; in other words, that one medical officer should be appointed to each company, and that they ought to see them to have "all their oyles, balms, salves, instruments, and necessary stuffs to them belonging; allowing and sparing them carriage for the same." It was then directed that each soldier should "at the pay day give unto the surgeon, as in times past he hath been accustomed to, the augmentation of his wages;" and the surgeon, in consideration of this, was instructed "readily to employ his industry upon the sore and wounded soldiers, not intermeddling with any other cures to them *noysome*." What the expression means is now somewhat obscure. Perhaps it is that surgeons were to employ no other treatment than such as was agreeable to their patients.

To whatever cause attributable, the fact must be allowed that army surgery languished in the seventeenth century. Probably the circumstances just related had something to do with it; at all events, the name of only one military medical officer appears on the list of authors properly belonging to it. The surgeon in question was Richard Wiseman, who had served successively in the armies of James I. and Charles II., and was taken prisoner at Worcester. He moreover served in the navy during the Dutch war of 1665, in which he was severely wounded. In his various publications between 1672 and 1676, he advocated the performance of primary amputation in certain cases of gunshot wounds. His reputation as a surgeon stood high; yet here is one of his receipts for an application to those injuries:—"Boil in two pounds of oil of lilies, two new-whelped puppies till the flesh fall from their bones; add some earth-worms in wine. Then strain, and to the strained liquor add ʒij of turpentine, and an ounce of spirit of wine." In the treatment of syphilis he advocated the administration of mercury so as to cause profuse salivation.

Reverting for a little to the position of the army medical officers, the more important changes therein which occurred during this century may be very shortly glanced at. We find then that in the early part of the century, and during the reign of James I., a considerable advance was made towards giving to that staff some degree of organisation. There were then appointed to the forces two physicians, each with 6s. 8d. per day, two apothecaries, each with 3s. 4d., and to every regiment of 1,800 men one surgeon with the pay of 4s., and *twelve* assistants, each with 1s. In 1620 a surgeon-major to the camp was appointed with pay at the rate of 5s. per day, and two mates under him at 4s. per day each. At this time also surgeons were directed to wear their *Bauldricks* during action, "whereby they may be known in times of slaughter. It is

their charter in the field."* Still, however, a sufficient number of medical men did not take service in the army to meet its requirements, and when in 1641 the great rebellion in Ireland occurred, it had to be enacted that the justices, &c., were "to raise as many men by impress for soldiers, gunners, and *chirurgions* as might be approved by his Majesty and both Houses of Parliament."† No details are available as to the condition of army surgeons during the Commonwealth, although from the great care manifested by Cromwell for his troops when sick and wounded, it is fair to presume that he was disposed to appreciate at their worth the surgeons who attended them. In 1655, the surgeons of companies were abolished,‡ and by warrant dated 1st January, 1686, it was enacted that the pay of a *chirurgion* of an infantry regiment should be 4s. per day, and of his mate 2s. 6d.

Still, none but what may really be looked upon as the scum or dregs of the profession cared to enter the army, and it so happens that we have handed down to us in the pages of the *London Gazette* for 1689, not only a description of the personal appearance of the surgeon of what is now the 22nd Regiment, but a statement of the money value attached to him. The *Gazette* alluded to contains an advertisement to this effect:§ "Run away, out of Captain Soames' Company, in his Grace the Duke of Norfolk's Regiment of Infantry, Roger Curtis, a Barber-surgeon; a little man, with short, black hair, a little curled; round visage, fresh-coloured; in a light-coloured cloth coat, with gold and silver buttons, and the loops stitched up with gold and silver; red plush breeches, and white hat." The advertisement then proceeds—"Whoever will give notice to Francis Baker, the agent of the same regiment, in Hatton Gardens, so that he may be secured, shall have *two guineas* reward!"

Hospital establishments would seem to have been at as low an ebb as the surgeons at this time. The absence of suitable accommodation for sick soldiers was frequently commented upon by writers of the period. So great was the difficulty said to be, in most regiments, in procuring a hospital for their sick that a clause in the Mutiny Act for that purpose was said to be much wanted. For want of some such regulation the most exorbitant demands were often made for the most wretched

* Brose, quoted by Fonblanque, p. 33.

† *Military Miscellany*, p. 15.

‡ Royal Commission Report, 1858.

§ Chevers' "Moral and Social Condition of the British Soldier," p. 49; quoted from Grose.

hovels, though, as was stated, "the slender allowance to a regimental surgeon enables him to afford very little."*

The Duke of Marlborough, during his campaigns at the beginning of the eighteenth century, was careful to provide for the requirements of his sick and wounded as far as the means at his disposal permitted; these, however, were not on all occasions adequate to his requirements, as we shall presently see.

We read that on the occasion of the battle of Blenheim, 1704, the sick and wounded were duly provided for and placed under shelter; the tents that had been captured from the enemy being used for this purpose.† At Ramillies, however, fought in 1706, so imperfect was the hospital organisation that the wounded had to be left upon the field. On the occasion of Lille being taken, in 1708, the sick and wounded of his army were sent to Douay, those of the enemy being treated with as much consideration as were those of the allies themselves. At the battle of Malplaquet, 1709, the more trivially injured were attended to on the field by their surgeons; and we read that many were seen returning, "though pale and bleeding, to take again their places in the ranks and support their gallant comrades."‡ But of the French, 3,000 wounded were left on the field, whom Marlborough proposed to Villars to remove to the French quarters on condition of being considered prisoners of war.

Towards the middle of this century a material improvement had taken place in army hospital arrangements; yet so great were their defects that on the occasion of the battle of Dettingen, 1743, the English had to leave their wounded on the field to the care of the French surgeons.§

John Ranby, Sergeant-Surgeon to George II., was with his Royal master present on the field, and is recorded to have described the arrangements for the wounded as excellent. He introduced the practice of bleeding in cases of gunshot wounds, and the less injurious if not more beneficial one of administering *bark* to the subjects of those injuries. No doubt the fact above related, of the wounded having been without adequate provision, had attracted public attention, and improvements, as a consequence, were introduced; for we learn regarding the hospital established in the Low Countries in 1748, for the troops under the Duke of Cumberland, and directed by Mr. Middleton, that it was a model of medical administration. The patients in it had *separate* and clean beds, frequent changes

* Grose, "Milit. Antiquities," vol. ii., p. 77.

† "Memorable Battles," p. 218.

‡ "Memorable Battles," p. 290.

§ Sir John Pringle's "Observations," p. 19.

of linen, and were attended by well-trained female nurses ; while hospital storekeepers and clerks, acting *under the surgeons*, furnished every requisite with promptness and regularity.*

At this period, and for some time subsequently, our troops were actively engaged both in America and on the continent of Europe, and the contrast presented between the want of arrangements in the former, and their completeness in the latter, is striking. When, in 1759, Wolfe made his attack on Quebec, which for the time being was a failure, his means of transport for the wounded are described as having been insufficient, and the result was that many of the wounded were left behind, to be scalped or butchered by the Indians attached to the French army.†

Sixteen years afterwards, the battle of Lexington (Kentucky) was fought—namely, in 1775—and so little improvement had taken place in this very important point that our troops engaged were without transport of any kind for the wounded. The result is described as having been that all who were rendered unable to keep up with the retreating party were no more heard of ; they were believed to have fallen into the hands of the Indians. On the continent of Europe, matters were in a much more satisfactory condition, and measures were in progress to organise a regular system of transport for the sick and wounded of armies on service. Thus it is recorded that during the Seven Years' War, all transport was obtained by contract, and a Treasury minute, dated in 1762, refers to an offer by Mr. Dundas, then contractor for waggons in Germany, to transfer to the Government his 500 waggons, with horses and drivers, for the sum of £88 10s. each, the proposal having then for the first time been made to form a public transport establishment.‡

The name of Sir John Pringle, Bart., is perhaps one of the most extensively known among general readers, of all the many medical officers whom we have yet mentioned. It is true that he began his professional career under more than usually favourable circumstances ; but it is equally so that he rose to the eminence which he afterwards attained in the service, in the profession, and in general science, solely by his own great talents and merits. In 1734 he was appointed joint professor of moral philosophy in Edinburgh ; in 1742 as private physician to the Earl of Stair, then commander-in-chief of the British army in Flanders ; in 1744, through the influence of the Duke of Cumberland, who had succeeded the Earl of Stair, he received commissions as Physician-General to his Majesty's Forces in

* Fonblanque, p. 39.

† Wolfe's Despatches, quoted in "Memorable Battles," p. 361.

‡ Fonblanque, p. 384.

the Low Countries, and as Physician to the Royal Hospitals. In 1746 he accompanied the Duke of Cumberland to Scotland, and was present at the battle of Culloden; on the 30th November, 1772, was elected President of the Royal Society, and in 1774 Physician-Extraordinary to George III. In 1753 he published the second and much enlarged edition of his work on the "Diseases of the Army," a work in which are detailed the majority of measures that a century afterwards came to be reproduced as if new, and without the name of their real author being mentioned in connection with them.*

He alluded (page 8) to the circumstance since then so often observed in India, that cholera and dysentery often prevail in the same season as, and simultaneously with, fevers;† to the dependence of scurvy among troops (*id.*) on their exposure to a moist and *corrupted* atmosphere; to the advantages of removal of sick from a marshy district to the sea shore (page 9), and to the superior health enjoyed by troops who were quartered in upper floors of barracks, compared to that of those in the lower or ground floors (page 12). His remarks on these subjects had especial reference to the troops who in 1742 occupied *Ghent*; and it may be here noticed that on this occasion we for the first time meet with the word *Return* (page 12) as applied to statistical statements of sickness and mortality in the army.

When, after *Culloden*, the Duke of Cumberland's army occupied Inverness, the sick and wounded occupied barns and private houses taken up for the purpose, the "sanitary" measures adopted by Sir John Pringle included the proper division of the sick, keeping the wards clean, cleaning the jails of the town, preventing overcrowding, and the immediate removal of the bodies of such as died (p. 46).

Among the causes of sickness in our army, he enumerates (p. 84) the air from marshes, from human excrements lying about camp in hot weather when dysentery is present; from straw rotting in tents, and from hospitals crowded with men ill of putrid distempers. To these he adds air of barracks not kept clear, and of crowded and ill-ventilated ships. He urged the necessity of the soldier being sufficiently clothed, of being provided with good shoes, bedding, and fuel (p. 96). He advo-

* Since these notes were written I have come across one exception to the remark here made. Mr. Edwin Chadwick, C.B., in a paper "On Sanitary Specifications for House Construction," observes that "it may be pronounced absolutely that land which is water-logged—land with water close to the surface, land which in Sir John Pringle's experience is "bad camping ground," is also bad building ground, and should be excluded as unfit by the sanitary law and specification, until by proper works it has been made fit."—See MEDICAL MIRROR, No. 55.

† His remarks had reference to the Netherlands, where he had served during the late war.

cated the frequent change of camp grounds (p. 100). He recommended the system of soldiers having messes instead of taking their meals apart (p. 112), and would allow them in moderation spirits or wine (p. 115). He would encourage them to indulge in *diversions* of various kinds (p. 117), and discusses at some length (p. 122) the question of *seasoned* as against *unseasoned* troops, regarding which he makes the remark that "such corps as have been rendered sickly by service will never afterwards be strong or fit for new labour until the infirm are dead or dismissed;" and thus winds up: "The whole amounts to this,—considering all the hardships and expositions to sickness attending the easiest service, those troops will be best seasoned to undergo the difficulties of a second campaign whose constitutions have been least weakened by fatigues and bad weather in the first" (p. 125).

His observations on army hospitals are specially deserving of attention even at the present day. He states that in 1742-3 there was for the British forces in Flanders, numbering 16,000, one general hospital at *Ghent*; but in the other provinces, namely, *Bruges*, *Courtray*, *Oudenarde*, *Alost*, and *Grammont*, the sick were under the care of their regimental surgeons. Of the condition of some of the wards we can form but a faint idea; but it must have been horrible, as a malignant fever which occurred in and was confined to them was traced to the *foul air* caused by overcrowding, and especially of one room *in which a man lay with a mortified limb* (p. 16). After the battle of Dettingen, the village of Feckenheim, about a league from camp, was taken up for a hospital, and about 1,500 sick, besides the wounded from the field, were sent to it. Of the former many were affected with dysentery, and we learn that so vitiated did the air become in consequence, that not only the rest of the patients were seized with the disease, but also the apothecaries, nurses, attendants, and inhabitants of the village; and finally, that malignant *hospital* or *jail fever* supervened; the two diseases destroying vast numbers (p. 22).

Again, in 1744, the British had returned to the same garrisons that they some time previous had left. At Brussels a general hospital was kept up, but at Bruges and Ghent none were formed, the regimental surgeons getting barracks for their own sick, "which scheme of separate regimental infirmaries, although only intended to *save the expense* of one common and great one, answered another purpose, which was that of preventing infection, *the common and fatal consequence of one large and crowded hospital*" (p. 34).

During the advance into Scotland of the army under Marshal Wade in 1745, a general hospital was established at Newcastle. It soon became crowded with sick, and its air so "corrupted

and infectious," that nurses, medical attendants, apothecaries, and apprentices became ill, of whom several died (p. 40). And two years afterwards, namely, in 1747, during the campaign in Dutch Brabant, we read (p. 56) that the sick were more dispersed (than on previous occasions), and the regimental surgeons having learned by experience, either perfectly cured the men in their field hospitals, or made some necessary examinations, before they sent them to Maestricht, at which place a large church had been converted into a general hospital. Again, in 1748, when the British forces were encamped at Nistelroy, the small cottages which could alone be obtained for hospital purposes became much crowded, and bred a malignant fever, which was carried to the general hospital then at Ravenstein. This is probably the only occasion on which such an establishment had advantages of its own, and probably now they were accidental, as "the wards being spacious and well aired," the infection did not spread in them (p. 62), and it was doubtless this circumstance which led him to direct (p. 106) that when troops are in a fixed camp, the regimental hospitals should be scattered, and that should a "sudden influx of sick take place in a general hospital, it will be proper to disperse them in several villages rather than keep them in one, adding that the danger from foul air can never be compensated for by diet or medicine. In fact, he lays repeated stress on the necessity for fresh air for hospitals, urging that the more fresh air we let into hospitals, the less danger there is of nursing a distemper." (*id.*)

Writing of regimental hospitals, he says (p. 107) that "they are of the greatest consequence." Nor are they to be maintained in the field only, but also in winter quarters; and he adds regarding them (p. 108) that "there is this advantage accruing from regimental hospitals, which is, that the several surgeons are best acquainted with the constitution and disposition of the patients, as well as with the whole circumstances of their distempers;" and adds with regard to the treatment of the sick in them, that "as often as it has been tried I have observed it to be more successful than that of one large and general hospital" (*id.*), remarks which I commend to the attention of advocates of a system under which regimental hospitals and regimental medical officers would alike be swept away.

Adverting to his manner of employing Ipecacuanha in the treatment of dysentery, a few extracts from his "Observations," must here suffice. "After bleeding" he says (p. 231), "the patient is to be vomited with ipecacuanha." "Fifteen grains given this way," that is, in divided doses two or three times on the same day, "would generally evacuate more than thirty grains taken at once" (p. 232). In some instances, however, he found that its use had to be abandoned, for he observes in

the same place, "yet I laid it aside on account of the great sickness that generally followed the operation." He elsewhere (p. 234) mentions that one or two grains of tartar emetic should be added to each scruple of the ipecacuanha. It is not now easily determined whether he or Dr. Cleghorn was the first to employ the Ipecacuanha in the treatment of dysentery, but in all probability, neither of those medical officers considered that any special credit was due to them for employing the drug in the treatment of the disease, and after the manner in which in its native country it had been used for generations.

Dr. George Cleghorn, surgeon of the 22nd foot, on retiring from the army, settled in Dublin, and became lecturer on anatomy, in the University of that city. In 1751, he published a work on the "Epidemical Diseases of Minorca," in which island he had served with his regiment from 1744 to 1749; giving a long and scientific account of the place, and elaborate lists of the plants and animals found there, together with a catalogue of the fishes and crustaceans that frequent the coasts. Among the diseases that prevail in epidemic form he enumerates *rash*, or prickly heat, *essere*, which would appear to have been a form of nettle rash, *cholera*, intermittent fever, dysentery, and small-pox. "As to the *cholera morbus*," he observes (p. 242), "it must be managed according to the method first hinted by Hippocrates, and of late described more fully by Sydenham;" and he makes another remark with reference to this disease, which has a peculiar importance at the present time when the simultaneous prevalence of it and intermittent fever has attracted the attention of our brethren in India. "When the *cholera morbus*," he says (p. 243), "returns periodically like a tertian, it must be cured as these fevers are," but he adds, "it denounces much more danger when it attends the fits about the third or fourth period than it does in the beginning of the disease."

On the use of Ipecacuanha in dysentery it is also of importance that we turn to his pages, an idea having obtained belief that this remedy has only been of very recent years employed in the treatment of the disease in question, notwithstanding the fact that the root, when first introduced into this country, was so under the name of the *radix dysenterica*. Dr. Cleghorn writing on the cure of dysenteries (p. 249), observes that "when they begin like a simple diarrhoea, without fever or fixed pains in the belly, the first thing to be done is to empty the intestines of their acrimonious contents as soon as possible, and the most efficacious remedies for this purpose, as far as I know, are the *Radix Ipecacuanæ*, and *vitrum antimonii ceratum*. The latter I used to give from five to ten grains early in the morning; of the former I directed ten or fifteen grains in powder to be divided into three doses, and to be taken in the forenoon at the interval of

two hours, or an hour and a half between each dose. The most common effect of both was to procure a thorough evacuation upwards and downwards during the day ; and they often threw the patient into a sweat the following night." From this extract it is beyond question that Dr. Cleghorn employed the remedy carefully, and at the same time, extensively. The fact is also rendered apparent in the volume from which we have quoted, that whenever practicable, he, in fatal cases, performed *post-mortem* examinations, that also at a time when the method of investigating the actions of disease was seldom employed in civil practice.

The following year, namely, in 1759, we find the name of another army medical officer occupying a high position in the profession. Dr. Francis Home, who had served with the forces in Germany and the low countries in 1742, now occupied the chair of materia medica in the University of Edinburgh, and published a volume of "Tracts and Observations" in which he introduced a valuable chapter on gunshot wounds. His manner of treating these injuries was in some respects peculiar ; he freely scarified the neighbouring parts in all cases, and is said to "have cut all the wounds which he dressed at the battle of Dettingen." He, like Wiseman and Ranby, was in favour of primary amputation, and is believed to be the first medical man to practise inoculation for measles.

Dr. Brocklesby was in 1758 appointed physician in the army ; he served in Germany during the greater part of the seven years' war, and about 1760 was placed in charge of the hospitals of the British forces in that country. In 1764 he published his "Economical and Medical Observations," and stoutly protested against the description of barracks that had only so recently as 1730 been first erected in England. Not until upwards of twenty years after those buildings had been erected, were hospitals provided in connection with them. It was ordered, meantime, that "every regiment was allowed to have a hospital, provided a house for the purpose could be obtained ;" and of the houses so selected, we are informed that they consisted usually of two small rooms, "each of which was almost one continuous bed without spaces between." Nor were the hospitals provided about this time for purposes of field service on a better footing. These Dr. Brocklesby described as being of such a description "as would quickly destroy those who should be confined in them, even if sent there in perfect health."

Dr. Brocklesby set himself to remedy both these very glaring defects, and not only them, but to improve the condition of troops while being conveyed by sea in transports. He drew up a code of instructions for the preservation of health under such circumstances, and especially enforced the observance of clean-

liness, good ventilation, good diet, and proper exercise. To him the profession is indebted for the introduction of wine in liberal quantities in the treatment of fevers. This he prescribed in quantities of "a spoonful or more every half hour, or three pints in twenty-four hours," and as he himself said "with the most decided benefit." The late Dr. Todd scarcely exceeded that.

This army medical officer deserves to be mentioned on account of another innovation which he was instrumental in bringing about. In conjunction with Drs. Pringle and Home, he performed post-mortem examination of the bodies of his military patients before the practice had become general in civil hospitals.

Dr. Brocklesby, like many others who had the good of the service and the well-being of soldiers at heart, was most desirous to attract to the army an improved class of medical officers to those who in 1764 formed the great majority in it; and now, when with a somewhat similar object, the system of open competition is in full force, it may not be uninteresting to record the measures that were a century ago recommended by this officer. He proposed that medical commissions, which were then obtainable by purchase, should be raised in value, and fairly and avowedly sold for £600 and £700, and that candidates should, in addition, undergo a strict examination in regard to their professional attainments. It is, perhaps, unfortunate that the plan which he proposed had not a fair trial, for as all experience indicates, it is only what is difficult to obtain that is really esteemed, it is fair to presume that a position which required for its attainment not only patronage and money, but considerable qualifications, would have gained a degree of appreciation that has not yet been accorded to the position of the army surgeon. How far the interests of the public service would have gained by the arrangement must be left to individual views to determine.

We of the present day can scarcely realise a state of matters under which it was necessary to dwell upon the advantages of barracks, yet Dr. Brocklesby had to write thus:—"The general use of barracks is a subject of so great importance that it cannot be sufficiently enforced. How is it possible for the men of each company, scattered up and down the ale houses of a great town, ever to be regularly messed together? How is it possible without barracks to make a private soldier always wholesome and cleanly, further than at a stated hour on the parade for momentary show." But while he urges the establishment of barracks, he deprecated some of those that had already been erected, built, as he stated, with salt water bricks, fitted up with low ceilings, and without ventilation. Then, to show the great importance which he attached to hygiene, we find him writing that "the day of

battle is once or twice in a long campaign, when men must be used as they are wanted ; but our attention to the well-being of the men, and the preservation of their health, ought to be a constant business, and an increasing care of their officers as well as of the doctor."

In 1764 Dr. Donald Monro published his "Account of the Diseases most frequent in the British Military Hospitals in Germany, from January, 1761, to the Return of the Troops in 1763," to which is added an essay on the means of preserving the health of soldiers and conducting military hospitals. The limits within which I must confine myself render it impossible for me to give more than a very general sketch of the many excellent rules which this army surgeon laid down for the preservation of their health during the varying circumstances of service, rules which are wonderfully like some of those that have of late years been promulgated as if for the first time, and without the name of a medical officer being in any way associated with them.

The great importance attached by him to *hygiene* appears in the preface to the above-named work. "The preservation of the lives of soldiers," he observed, is "with us a matter of the highest importance," and he therefore set himself to work to point out the means most likely to keep men healthy when employed in different services. Among the general hygienic measures to which he alluded, I may mention the following, namely, the dependence of scurvy upon the men being encamped or quartered in low situations (p. 314); the advantages of wearing flannel ; the necessity of each soldier while on sentry being provided with a great coat ; the propriety of frequent inspections of the soldiers' quarters being made by their officers, and following the recommendations of Pringle, he would have soldiers quartered in upper stories (p. 317), and would curtail as far as possible the time during which each stood sentry (p. 353).

With regard to troops embarking, he recommended (p. 322) that in time of war, and when they were proceeding to hot climates, great care should be taken to embark such only as are in good health ; that transport ships should be well aired and purified ; that they should be well supplied with ventilators or windsails ; that a good supply of vinegar, molasses, sugar, and lemons be put on board ; that the ships be kept thoroughly clean ; the men's hammocks brought up every day, and that the men themselves freely use baths on board.

He urged the importance to the men of having fresh provisions as much as possible, and recommended (p. 314) that when placed under such circumstances that they had to live upon salt rations, they should be well supplied with fresh vegetables of different kinds, as well as with beer, cyder, or wine. He re-

commended that before our army went into winter quarters, a store should be provided of potatoes, onions, cabbages, sour crout, pickled cabbages, and other vegetables; of apples and other fruits; and that the men should as far as practicable have fresh meat and an allowance of beer (p. 322). He strongly recommended that soldiers should dine together in messes (p. 346), an arrangement which, however, as we shall see hereafter, was not generally introduced in the army at the latter end of the century.

He urged his objections against standing camps, pointing out (p. 311) the evils to men of exposure in them to putrid effluvia from dead animals, privies, &c. "In all countries and in all climates," he observes (p. 338), "great care ought to be taken in choosing the ground on which men are to encamp. Dry high grounds exposed to the winds where there is a free current of air, and which lie at a distance from marshes, stagnating water, or large woods, are generally healthful in different climates. "When necessity obliges commanders to encamp in wet or marshy ground, they should endeavour to make it as dry as possible, by ordering trenches to be cut for drains across the field and round the men's tents." He inculcated the necessity of cleanliness in camp, observing that *Portius, Ramazini*, and most other authors who treat of camp diseases, attribute those of the putrid effluvia arising from the excrements of men and beasts, and from the dead bodies of men, horses, and other animals lying unburied. On the subject of camp conservancy he first alludes to the regulations laid down by the great Jewish lawgiver,* and then continues:—"Dr. Pringle has very justly recommended the digging of deep pits for privies in camp, and covering the excrements with earth daily till the pits are full, and then to fill them up with earth and dig new ones" (p. 345). It is almost necessary to remind the reader that these recommendations were made before *sanitation* and *dry earth conservancy* had come to be written about by amateurs.

But there is another point in which this surgeon anticipated us of the present day. "When," said he, "the camp begins to turn unhealthy, the only means that will preserve the health of the men is to change the ground, and to leave behind all the filth and nastiness which gave rise to those putrid disorders." Another important recommendation made by him was, that when in camp, the tents of men should be provided with straw (p. 346).

He dwelt much upon the evil effects of bad water when used by troops on the line of march or encamped. "When," he says, "there are no rivers or rivulets near a camp, and the

* Deuteronomy xxiii., v. 12.

men are supplied from wells, if the water is not pure, very often the digging of deep pits and covering the bottom and sides with large stones, and over these a *lay* of sand or chalk will make the water pure in a few hours." Another contrivance of his for the same purpose, and one which would seem to have been not long ago appropriated without acknowledgment, is thus described by him (p. 348), he giving the credit of its invention to Dr. Lind. The method is "to get a broad cask with one end struck out, then put a longer cask with both ends struck out in the middle of it; fill the short cask one third with sand, and the inner longer cask above one half; fill the rest of the inner cask with water, which will filter through the sand, and rise above the sand in the outer cask." He recommends further that if there be no further conveniences for purifying water, it be boiled, and vinegar or cream of tartar added to it.

He was by no means an advocate for the absolute prohibition of spirits; but, on the contrary, recommended their use in moderation. "In winter, when the weather is very cold or wet, a glass of brandy, or of the spirituous tincture of bark given to the men as they went on duty, and especially in the night, has been found of great use" (p. 319). And finally, he was a firm believer in and advocate for the administration of bark as a prophylactic against malarial fever (p. 352).

In the same work Dr. Monro entered fully into details regarding the management of hospitals during times of active service; these establishments, in his opinion, being of such a nature that they should be considered *neutral*, and protected by both contending parties, as he observes they were by mutual consent of the Earl of Stair and the Duke de Noailles, who commanded the French in Germany in 1748. He fully saw the necessity of regimental hospitals, but had also general as well as convalescent ones, both the latter being under a military commandant.

In the selection of buildings for the purpose of accommodating the sick, he recommended that they should be lofty, dry, and airy; he pointed out the evils to be feared from the want of sufficient and suitable water closets; he urged the propriety of freely bathing and washing each patient on being admitted; he pointed out how necessary was free ventilation both lateral and vertical, and recommended that infectious cases should be carefully separated from others, and that the bodies of those who died should be immediately removed to the dead house (p. 316).

Adverting to the space per man in the various descriptions of buildings likely to be used for hospital purposes, he observed that "in churches or such places thirty-six square feet" may be allowed for each man; but in common wards we must allow

him forty-two to sixty-four square feet, according to the height of the ceiling and nature of the diseases of the patients.

At this time and for long after there needed no authorised scale of hospital diets. Dr. Monro introduced one into the hospitals in Germany of which he had charge; and inasmuch as tea had not yet formed a part of the soldier's diet, it may be interesting to us of the present day to know what constituted the beverage at breakfast and evening meal under such circumstances. He would have three scales of diet—namely, full, middle, and low; and would have the various ingredients comprising them distributed as under—namely:—

	<i>Breakfast.</i>	<i>Dinner.</i>	<i>Supper.</i>
Full diet	{ One pint of water or rice gruel.* }	{ One pound of boiled fresh meat. }	{ As breakfast. }
Middle...	{ Ditto. }	{ One pint of broth, half a pound of boiled meat. }	{ Ditto. }
Low.....	{ Ditto, or accord- ing to the pa- tient's palate. }	{ One pint of broth, or half a pint of panada, with two spoonfuls of wine & quarter ounce sugar. }	{ Ditto. }

We further learn that the daily allowance of bread was one pound per man; that as drinks the patients were allowed by this medical officer barley water, with two spoonfuls of brandy per pint, and a little sugar; light beer or wine with water and sugar.

To him (p. 380) we are indebted for the idea of sending ships for hospital purposes with expeditions; but he would have them as well as the hospitals on shore under the entire control, as regards medical administration, of medical officers. It was he who first inculcated the registry of the cases in books for the purpose (p. 397), for which he gave a form to the *mates* under him for them to follow.

Extensive as have been the extracts already made from the works of this eminent medical officer, I am reluctant to pass on without alluding to the fact that he was particular in recommending that soldiers affected with the malignant fever which during his time and long afterwards was so prevalent among our troops, should be "laid in airy places, separate as much as possible from the other men, and to be kept extremely clean" (p. 12). On the disease appearing in crowded wards, he directed that they should be thinned at once (p. 34), that the men should have free circulation of air; and observes that both in the treatment of that disease and of dysentery, "nothing contributed

* Water gruel made of three or four ozs. of oatmeal, a little salt, with or without a little sweet oil, and two spoonfuls of wine. Rice gruel to consist of two ozs. of rice, one spoonful of fine flour, a little salt and sugar. See page 377.

more to the cure than keeping the sick as clean as possible, and in large airy wards" (p. 67). Following the plan recommended by Dr. Cleghorn, he employed ipecacuanha in the treatment of dysentery (p. 71), but not with invariable good results, and he was therefore in some cases "obliged to have recourse to other remedies" (p. 84). On the subject of cholera, he describes that disease as occurring in the army at *Munster* in July and August, 1761, and quotes many authorities as to the prevalence of the affection among the ancients (p. 97).

Dr. Monro does not say much on the subject of pay, position, and prospects of army medical officers of his day; yet we readily gather from his remarks that they were not satisfactory. Adverting to some persons who had shortly before been appointed to administrative positions, he thus expressed himself:—"No person ought to be appointed a physician to the army or military hospitals without first undergoing the same examination at the College of Physicians as those do who enter Fellows and Licentiates of the College, *that none but proper persons may be employed*" (p. 393). As to the young men employed as *mates*, what would the assistant-surgeons of the present day think of the following regulation?—"A joint of meat roasted or boiled for dinner, and a bottle of wine, was allowed to the orderly *mates* by Lord Granby's order, *that they might not absent themselves from their duty*" (p. 399). It was therefore to improve the position of such that he wrote (p. 402):—"It would be right to establish some military rank for every commissioned officer of the hospital on service, and to settle the same subordination in the *physical* as in the military department." "By these means," he continued, "the service would be carried on with greater order and more advantage to the sick."

On the subject of scurvy as affecting bodies of troops, he made a number of valuable remarks. He pointed out that among its more common causes were the continued use of salted provisions and want of fresh vegetables, together with exposure of the men to cold and damp. He described the prevalence of the disease at Quebec and Bremen, and fully detailed the remedies which are still, as then, found most successful in its treatment (p. 250, *et seq.*) In 1780 he published in two volumes a second edition of his work, in which, in addition to his own views, he gave at length those of other military surgeons of his day, in regard to the various questions which he discussed.

In 1787 Dr. Thomas Girdlestone published his "Essays on Hepatitis and Spasmodic Affections of India," founded on observations made whilst serving with his Majesty's troops in different parts of that country. Among the latter class of diseases he describes Asiatic cholera, although not under that name, as having occurred in epidemic form at Madras in 1782.

Contemporaneous with the work of Dr. Girdlestone was the more important and now better known one on the "Duties of a Regimental Surgeon," by Dr. Robert Hamilton, who had himself served in the army, and was at the time he wrote in the militia. In the preface to that work he alludes to the different classes of medical men who were to be found in the army in these terms:—"Although several eminent men have been and are in the service," among whom he named Professor Home, of Edinburgh, Dr. Steedman, and Dr. Warburton, "who, previous to their engaging in army practice," had been a credit to the universities to which they belonged. "Yet it is a truth too well known to be denied, that many more have and do daily find their way into it," "whose opportunities of qualifying themselves to undertake so important an office have been almost none, or at best extremely limited." And, as illustrative of the qualifications of the generality of medical officers of his time, he begins the first chapter of his work with the observation that "it is an old remark, and I fear not less true for its antiquity, that more men perish in regimental practice for the want of proper care than by the sword."

With regard to the manner of conducting the duties of the hospital, Dr. Hamilton states that a house was procured for that purpose wherever a regiment was quartered. To defray the expense of this, Government allowed £30 per annum. Any overplus of this sum was applied to the purchase of wine for the sick, and utensils for the house. Sixpence per day was also allowed to the female servant employed under the name of nurse. To supply medicines each private paid a penny a month; each non-commissioned officer a penny three farthings. That houses for hospitals were not always obtainable, or those that were so had none of the conveniences required, is evident: "for surely," he observes (vol. i., p. 11), "it is a matter of great concern to see a poor unhappy patient destitute frequently of almost everything fit for his situation; destitute of proper bed to lie on; destitute of lodgings properly suited to his present distress; destitute of proper food or cordials to support nature in its languishing state; and, in a word, destitute of almost everything which he ought to have, which his present distress loudly calls for, and which are often absolutely and indispensably necessary for his recovery." Under such circumstances the sick had not seldom to be treated in their billets, and Dr. Hamilton may well say that he pointed out the frequent inconvenience of the practice to men in health, and that as for the sick, "what can the surgeon do? Alas! but little."

He then goes on to give a description of the place usually occupied as a hospital. "I have seen it (vol. ii., p. 35) consist only of two small rooms, one above another, with the kitchen,

which made the ground floor ; and in each of these no fewer than twelve men, though the room did not measure more than twelve feet by fifteen, the place being almost one continued bed without spaces between, instead of distinct beds. Into this crowded spot the worst cases only were put. Some chronic cases, some acute fevers, punished men with their backs suppurating, and emitting a smell intolerable even to people in health." As if to complete the horrible picture, he states (p. 36) that "the ceiling was so low that a man little above six feet high could but just stand upright under it ; this made it still worse from the greater confinement of the air. It is only necessary to observe that the superficial and cubic space per man thus shown were fifteen and ninety feet respectively, to indicate how completely justified was Sir John Pringle in writing as he did that "among the causes of sickness and death in the army, the reader will little expect that I should rank what is intended for its health and preservation, the hospitals themselves" (Hamilton, vol. i., p. 36).

Few if any articles of what are now called "comforts" were given to the sick, and when they were he had to pay for them. This even extended to oatmeal, milk, vinegar, and beer (vol. ii., pp. 17, 170, 203). The surgeon purchased the greater part of the medicines used, an allowance of £60 per annum being made to him by Government on this account ; but one of the results of this system was that the soldiers preferred to purchase medicines in towns than swallow what he prepared for them. When, however, regiments were encamped, a chest of medicines was supplied to each by Government in addition to the ordinary pecuniary allowance given to the surgeon.

At the time when he wrote it is evident that what we now call a *case book* was seldom, if ever, kept. He recommended (vol. ii., p. 13) that such a record should be carefully prepared, a history of the symptoms and the prescriptions being carefully entered in it.

On the subject of general medicine and hygiene some of his remarks may even now be studied with advantage. "Where," he observes (vol. i., pp. 51, 231, 237), "the appointment of field officers has been happy, and where a judicious regard has been paid to the medical appointment, almost every disease, except such as arise from contagion, may be obviated in the regiment." He urged the benefit to be obtained from ablution of the person ; he deprecated the extensive depletions commonly employed at the time he wrote. His manner of administering aerated drinks must read strangely now. "A certain quantity of alkali," he observed, "is first dissolved in some water, then drank, and as much acid either of lemons or distilled vinegar is immediately to be swallowed. The extrication of the fixible air must take

place in the stomach and unite with the contents of it, and otherwise be absorbed in greater quantity and more effectually in the same space of time. On the subject of scurvy he was well aware of the existence of that disease among the troops both at Minorca and at Winchester, and makes allusion to the works of Lind, Pringle, Monro, and Trotter regarding it (pp. 267, 298, 312). He recommended that medical officers should study the properties of various mineral waters; that they investigate the degree of healthiness of the district where they are stationed, and its prevailing diseases; and that "the next thing a regimental surgeon should have in view is the nature of the water in his new quarters; a great deal may depend in preserving health on the quality of this necessary article of life" (vol. i., p. 322). He recommended (vol. ii. pp. 174, 203) that where the hospital was bad, the sick, and especially those affected with contagious diseases, were best accommodated in tents; and pointed out that when troops were encamped, the ground well chosen with due regard to situation, soil, and water, the men ought to enjoy as good health as in quarters.

On the subject of barrack construction, he indicated (vol. ii., p. 204) that several which had just been erected were ill-contrived, giving as examples those at Chatham, Hilsea, and Tynemouth. He remarked that such buildings, if built of brick, should be of sufficient thickness; that the bricks should be of good quality, and not made with salt water.

He frequently commented (vol. ii., p. 346) severely upon the indiscriminate use of venesection, and the extent to which blood was withdrawn. He wrote regarding the change of type which he considered had taken place in disease in much the same terms that are still employed in discussing the same theory. "I am apt to think," so he wrote, "our constitutions considerably changed within this last century in Great Britain. Luxury and its enervating effects render the diseases of this island less inflammatory than perhaps they formerly were." "Carriages are more frequent, delicacy greater." "Our amusements are of a less active nature, our articles of diet in like manner changed, and infusions of tea, a debilitating liquor injurious to the nervous system, are in such common use that even paupers live upon them." "Many poor drink it three times a day."

This army medical officer repeatedly expresses his horror at the barbarous extent to which corporal punishment was carried, referring especially to the custom of taking men sentenced to very large numbers of lashes under treatment after receiving a part, and then, while their backs were yet imperfectly healed, tying them up to receive the balance. "What a pity," so he wrote (vol. ii. pp. 42, 74, 81), "there should be, if there really is, a necessity for such horrid punishment." That discipline

could be carried on without it was proved in the case of the Enniskillen Dragoons to which he alluded. For eleven years and upwards prior to 1787 there had been no punishment of this nature in the regiment, and no offence to deserve it, and he therefore asks—"Is this not proof that flogging might be struck out of the list of military punishments." "I wish after all the military laws knew no such thing as flogging, and that in place thereof some other modes of punishment could be devised;" "but," he continues, "though I wish it with all my soul abolished as an inhuman thing more suiting the nature of savages than civilised and polished nations, yet as I have nothing better at present to offer in its place, I must leave it as it rests, and refer it to the wisdom of a wise Legislature." Eighty years had to elapse, however, before that *wise Legislature* was by the force of public opinion driven to adopt the measure which this surgeon so earnestly urged.

Adverting to the wives and children of soldiers, he observed (vol. i., p. 294) that the former "should be looked on as the useful poor of the regiment, and ought to be considered in this society as other poor are in other societies. They should be assisted, and their usefulness promoted." "They bring up many useful soldiers for his Majesty's service, which is still a further reason not to allow them to be neglected." "I am persuaded that some attention" "would be the means of more marriages and less uncleanness in the ranks." And he then goes on to point out the various ways in which officers should interest themselves in their well-being.

In 1759 we first find the name of John Hunter borne on the list of the Army Medical Department. In that year he was selected from civil life, and appointed, as the custom was, a staff surgeon, over the heads of those who as surgeons and mates had spent years in the service; yet it would have been well had all the men selected to fill the higher ranks been even in a faint degree of his stamp. The first military service he saw was at the siege of Belleisle in the very year that he joined the army, and where his position, as described by himself in a letter to his brother, was that of "surgeon-general, deputy purveyor, and inspector and director of regimental hospitals."* In 1762 he again accompanied the troops employed in the war with Spain, from which he returned the following year and settled in London. In 1767 he was deservedly elected a member of the Royal Society; in 1786 succeeded Mr. Middleton as surgeon-general; in 1790 received in addition the appointment of inspector-general of regimental infirmaries; and in 1792, on the death of Mr. Adair, was appointed in conjunction with Sir Clif-

* *Lancet* for 1830, p. 38; also p. 693.

ton Witheringham to the superintendence of the department. The following year, namely, 1793, his coadjutor having become unfit for duty, the whole business of the Army Medical Department devolved upon Hunter, who had to organise the whole of the arrangements connected with that branch of the service for the army then being assembled on the Continent.

Perhaps there is no name so intimately associated with the improvements that have tended to elevate surgery to the rank of a science as that of this army medical officer. Mr. Lawrence* speaks of his merits as *transcendant*, of his reputation as brilliant, of himself as "the greatest man in the medical profession, either in ancient or in modern times, without excepting even the immortal discoverer of the circulation." Among the great obligations which the profession owes to him, the Museum of the Royal College of Surgeons is alone a monument. Others include the operation for aneurism which bears his name; he seems to have advocated the performance of delayed amputation in cases of gunshot wounds, but was the first to recommend excision of joints as a substitute for removal of the whole limb; he reduced the treatment of injuries of the skull to more definite principles than had prior to his time been acknowledged; he advanced the treatment of hernia, diseases of the spine and joints, and published a work on venereal which still holds its place among the most important treatises ever written on that disease.

In 1794 was published his work on "The Blood, Inflammation, and Gunshot Wounds," in which were observations drawn from his experience while serving as staff-surgeon; and in 1810 his work on Venereal Disease appeared under the editorship of Dr. Adams, who in the preface wrote of him that "he reduced to order a series of parts supposed to be reducible to no laws; showed the source of former errors, the cause of every apparent irregularity, and in fixing the true characters of one disease, introduced us to others never before suspected." It is only necessary to allude to the circumstance that in one or two respects his theories regarding venereal diseases have not withstood the advances that have taken place in the investigation of that class of maladies. In other respects, however, his views have only been confirmed by such investigations, and even yet his name is associated with what is commonly believed to be the true or infecting chancre.

It now reads strangely that in 1762, that is, three years after he had begun to fulfil his important duties with the forces, this great surgeon should in a letter written to his brother have to tell the latter that he wished he could obtain a commission,

* *Medical Times and Gazette*, 1867.

as by so doing his pay would be raised to £1 per day, and he become entitled to half-pay at the rate of 10s. He expressed a hope that these circumstances should be brought to the notice of Mr. Adair, and then entered into some particulars in reference to a scientific discussion in which he was engaged with Dr. Donald Monro. After he had attained the highest position open to him in the medical department, he effected many changes in the condition and prospects of the officers under him. He was, to quote from Dr. Jackson,* whose remarks on men and things were in general somewhat cynical, "of an original mind and considerable discernment." "He saw the points that demanded alteration in the condition of the regimental medical officer, and although from his own early training unacquainted with the routine of regimental duty, yet appears to have had the happy and rare faculty of receiving information from others." His death took place suddenly in 1793, in St. George's Hospital, of which he was surgeon.

In 1788 Dr. John Hunter, Physician to the Army, and a Fellow of the Royal Society, published his "Observations on the Diseases of the Army in Jamaica," and gave the results of his experience while serving in that island in 1781 to 1783. In 1796 a second edition of that work appeared, and in 1808 a third.

The fearful death-rate which at the time he served in the West Indies prevailed among our troops in those islands is now almost forgotten, save by the few who care to refer to the older authors. According to this writer, however, the following summary represents the loss in Jamaica annually from 1779 to 1783, deaths and invaliding being reckoned together, namely: In the 1st battalion of the 40th Regiment two-fifths of the whole were lost in one year; in the 79th four-ninths; in the 88th about one-third; 85th one-half; 92nd eleven twenty-fifths; 93rd nine-elevenths; 94th six-sevenths; and so on with other corps which he enumerates. It may well be supposed that rates of mortality such as these would command the serious attention of medical officers. Dr. Hunter studied the combination of circumstances that was calculated to give rise to so terrible a loss of life, and in the work under notice laid down a series of rules for the preservation of health, from which the following are taken, namely:—†

1. The troops sent to the West Indies should consist of well-disciplined, and not newly-raised soldiers.

2. They should arrive in the West Indies during the coolest part of the year.

3. They should be sent out from England in roomy transports,

* See his work on the Medical Department, page 14.

† See page 22, *et seq.*

and the rules for preserving health laid down by Captain Cook, Sir John Pringle, and others should be observed.

4. When troops land in the West Indies they should be quartered in barracks erected in healthy situations, namely, on dry sandy peninsulas, or islands, near the shore, and elevated situations in the mountains. Where barracks have not been already built, wooden huts should be erected for them on healthy spots.

5. There should be a certain number of negroes attached to each regiment, to do whatever work was required during the heat of the day.

6. The soldiers should be supplied by Government with provisions;* they should be divided into messes, and they inspected by an officer daily.

7. The men should parade in the morning, and their drills should not be long. It is not advisable to have parades in the evening, as then their shirts become soaked with perspiration, and in drying give rise to colds, rheumatisms, and other complaints.

Some of his views regarding the endemic diseases of the West Indies deserve now to be reproduced, if for no other purpose than to indicate the fact that questions of hygiene were well understood by this army medical officer, as we have shown that they were by several others to whose works allusion has in these notes been made. Thus, while it is tolerably apparent that Dr. Hunter had not a very decided opinion on the difference which existed between the ordinary remittent fever and epidemic yellow fever, it is distinctly laid down (p. 113) by him that should the latter occur on board ship, "there is but one thing that remains to be done, which is, to go to a colder climate either in Europe or North America." With regard to the probable dependence of one or other, or both, these diseases upon an organic cause, his opinions really seem to have anticipated some of the theories that are now adduced. "Marshy ground," he says (p. 147), "is known to produce inflammable air." "Were inflammable air the cause of fevers, they would be frequent in mines, which is not the case. Though the cause of fevers is not found in the inflammable air, yet the offensive smell of marshes is in a great measure owing to it. Experiments made upon mixtures of mould and small proportions of decaying vegetable and animal matter kept moist, and in a certain temperature, might throw some light on the subject. The different kinds of elastic vapour arising from such mixtures should be carefully examined, and the various kinds of *mucores* that come upon their surface, and the insects that breed in them, should be noted."

* It must be remembered that when Dr. Hunter published these instructions, *messes* had not been instituted.

This poison, he observes (p. 151), "appears to be strongest as it rises from the ground, and becomes weaker as it is more diffused, and mixed with a larger proportion of air. Houses on the ground are more unhealthy than those that are elevated." On the subject of what is commonly called "seasoning," some of his views are peculiar, but worthy of attention (pp. 151, 287, 153). The poison having been admitted into the body, its violence would appear to depend upon its quantity and virulence, and on the body having been more or less habituated to it. "The power of habit," he observes, "in counteracting the effects of poison is universally acknowledged. New comers are not only more subject to the disease, but in them it is of the worst kind. Its first attack is called in common language a *seasoning*. In this respect it is like many other poisons to which the human body gradually accommodates itself;" and he then gives as examples opium and spirits.

On the subject of dysentery he observed (pp. 174—192) that there was an intimate connection between that disease and fever observable in Jamaica, and in its treatment used opium and ipecacuanha largely, especially in the form of Dover's powder.

He it was who detected in the affection termed "dry belly-ache" the *Colica Pictonum*, and traced its cause to the lead derived from the tubes through which rum passed in its process of distillation, and introduced into the system by means of that spirit (p. 209). Having detected the nature of the complaint and its cause, the means of prevention were simple, they being merely the substitution of another metal than lead for tubing in the distilling apparatus, such, indeed, as had in 1723 been laid down by public act (Act 10 Geo. I., c. 2), and for years previous adopted in Massachusetts (p. 211).

He offered brief remarks on various affections caused by attacks or presence of insects, such as that commonly known in the West Indies as the *Chiger* or *Gigger* (*Pulex penetrans*), mosquitoes (*Culex pipien*), and the itch insect (*Acarus siro*), as well as the painful and horrible disease produced by the deposition by a large fly of its ova in the mouth and nostrils, especially of negroes when sleeping in the open air. He also alludes to that discomfort of new arrivals, the *prickly heat* (*Lichen tropicus*), which, he observes, "requires no treatment," and gives short descriptions of some affections peculiar to the natives, among which are *yaws*, *cacabay*, and *dirt-eating*.

With reference to matters of general hygiene, he observed "that the general fact that elevation greatly diminishes the effects of noxious exhalations from the ground is commonly known and admitted; but the subject has not yet received such particular investigation as it seems to merit" (pp. 266, 269, 285). As an effectual means of protecting Europeans against

the causes of disease, he proposed that regiments of negroes should be raised, as they indeed were some time afterwards, and still exist as West India corps. He believed that troops might remain upon the same camp ground for a long time without injury to health, "if care were taken from the beginning of the encampment to bury at a good depth all excrementitious matter, and to have proper receptacles underground for the water used in cooking, and also all remains of victuals."

He rightly considers (pp. 253, 257, 304) that fifty sick in hospital, considering that fifteen or twenty of them are convalescent, are as many as one medical officer can well attend; that in the West Indies not only have general hospitals been found very expensive; that they are not only unnecessary, but injurious. He proposed that a book or register should be kept in all hospitals, in which should be "entered the name of each patient, his age, the time of his admission, the disease under which he laboured, and the medicines daily given to him." Finally, he alludes to the comparative rarity of hepatitis in the West Indies as compared with localities of the same latitude in the East.

Four years only elapse before we find the name of another army surgeon associated with improvements that were being introduced in the condition of the soldier. In 1791 Dr. John Bell, who had served successively in the 94th and 5th Regiments, published a valuable work on "The Causes which Produce, and Means of Preventing Diseases in the West Indies." I give the title at length, as it clearly indicates that this medical officer had a perfect knowledge of the importance to the public service of preventive medicine or hygiene. Dr. Bell, following the example that had been set him by Dr. Rollo, protested against the system then and for some time after in force, of giving to sick soldiers their ordinary allowance of salted meat and rum, as if they were still at duty. Regarding the importance in a military point of view of efficient medical superintendence, and the maintenance of the health of soldiers, he drew a lesson from the condition into which those stationed in Jamaica had in 1780 and '81 been reduced. Had that island been attacked, he observed (p. xiii), "the enfeebled state of the greatest part of the troops" "must too fatally have pointed out the importance of exerting every faculty to preserve the health and vigour of our army, and the danger of inattention to the manner of living of soldiers newly arrived in that country." With reference to the fact that officers had been sent to examine and report upon the condition of the fortifications of that island, he expresses a hope that "it may have been a part of their instructions to examine also the state of the barracks and hospitals there and in the other West Indian islands;" and

he further suggests "to take the advice of some sensible medical man with regard to the most proper situation for and mode of constructing both hospitals and barracks," for, he observes, "too little attention has been paid to these circumstances, and much mischief has arisen to the troops which might easily have been prevented. Fortifications can be of little use if the means are neglected of preserving the health and lives of those who are to defend them" (p. xv). He time after time reverts to and dwells upon the pernicious effects of the half pint of rum with which the soldier was daily provided by Government, and advocates the substitution of beer to them, whether on board ship or on shore (p. 13), instancing one transport in which the men had no spirits, but a free allowance of water and beer, and in which they enjoyed a remarkable degree of health. "If," said he (p. 58), malt liquor had "been more generally used by the army in the late war in the West Indies, we should not at that time have had so much reason to lament our inability to act offensively in that quarter, nor should we have had such cause of apprehension for the safety of our own islands from the equal inability of the troops to defend them." Adverting to the use of salted provisions, he remarked that with them the use of malt liquor was doubly necessary; that it is a powerful preventative of scurvy, and that the nutritive matter which it contains affords to the system a degree of support which it cannot obtain from that description of food (p. 60).

He recommended the moderate use of wine, considering it in the West Indies one of the best preservatives of health, and recommended that it should be distributed among the healthy troops on different occasions (p. 75). He would appoint an agent on the part of Government to purchase good and sound wine for the troops (p. 78). He would have in every regiment a committee of officers for the same purpose, and to purchase at the cheapest rate fresh provisions, wholesome vegetables, and various other articles (p. 78). What is this but the canteen system, as afterwards introduced in the East Indies, and recently adopted in the United Kingdom? Yet who has ever heard the name of this army surgeon mentioned in connection with it?

He, as already mentioned, condemned the continued issue to the troops of salted rations. He recommended more nutritious food, and greater variety, pointing out the fact (p. 34) that where the latter advantages were obtainable, the persons who enjoyed them were remarkably healthy, even in the West Indies. He pointed out that meat prepared as that for our troops then was with unrefined sea salt, had combined with it the "nauseous, bitter, and cathartic salts," and advocated the substitution as a preservative of the purified salt, then but recently prepared by the Earl of Dundonald (p. 41). He urged upon

commanding officers and surgeons the importance of frequently examining the soldiers' provisions (p. 45). He would diminish the allowance of the salted ration, and allow the men to be liberally supplied with tea, cocoa, coffee, or chocolate (p. 72); and recommended that men should have a good breakfast before proceeding on duty (p. 75).

Some of his remarks on the administration of spirits in cases of disease, and on the employment medicinally of jelly, deserve here to be noted. Alluding to the circumstance that rum, when mixed with mucilage of gum arabic, could be taken in large quantities without injury, he goes on to observe, that "It is perhaps owing to the same reasons that mixing ardent spirits with milk deprives them in a great measure of their noxious power. In this form I have exhibited them in many cases with temporary benefit, and often with permanent advantage. This," he adds, "has happened chiefly in cases where it was necessary to support the strength of the system, not by the use of tonics," "but by throwing in a quantity of nutritive matter (milk or animal jelly), which would have been rejected by the stomach unless accompanied by a moderate stimulus" (p. 26). Let me recommend the passage to the attention of some who even yet faintly comprehend the necessity for administering such articles of hospital "extras" as jelly in certain cases. He guards also against the too free administration of spirits or wine, when ordered medicinally, especially in typhus fever, the fashion of his day having evidently been to stimulate too indiscriminately (p. 30). Perhaps so it has in more recent times.

Dr. Bell protested against the system of recruiting then in force for the newly-raised regiments. "Every art," he observed, "is employed by the lowest and most despicable wretches to entrap the intoxicated, the ignorant, and those who, from some silly cause of discontent, have deserted a business to which they embrace the very first opportunity of returning" (p. 94). Another point against which he raised his voice was the system then in force, by which men professing to be Roman Catholics were not admissible as soldiers. The result was, that many persons who by circumstances were forced to enlist had to falsify their oaths in doing so (p. 175). This circumstance is alluded to in this place chiefly to indicate the care with which this able surgeon considered every matter that was calculated, directly or indirectly, to affect the condition of the soldiers with whom he was associated.

The monotony of a soldier's life naturally attracted his attention, as did also the numerous evils arising from this cause. "We cannot too strongly inculcate the necessity for employment, either of body or mind, especially for newly-raised troops, as a powerful means of preserving health, provided that bodily

exercise be not carried the length of occasioning fatigue" (p. 108). Nor is this all. He indicated the advantages to their health and military efficiency that would accrue from moral teaching. "I conclude by observing"—so he wrote (p. 166)—"that some attention to the morals of soldiers, if we expect them to be really useful to their country, is as necessary as to the means of preserving health, and that the assistance of the chaplain may very frequently render the advice of the surgeon unnecessary."

On the now favourite subject of change of climate for sickly regiments, Dr. Bell was far in advance of his time. "It may be proper," he observed, "instead of cooping up our soldiers in a West India island which, from their numbers, they are unable to defend, and where they are daily falling victims to disease, to adopt the policy of France, and to order several regiments to take alternately a routine of duty on board ships of war" (p. 100)—a suggestion which may with advantage be borne in mind when next fever occurs among our soldiers stationed at the Mauritius or Hong Kong. But even this measure was not, in the eyes of Dr. Bell, sufficient. He would cede Gibraltar to Spain in exchange for the Canary Islands (p. 129); and who that has seen the latter does not envy them as Sanatoria for our soldiers now?

To him also we are really indebted for the first idea of an institution in which candidates for the service should undergo special training. Let us be particular on this point, as it is one of considerable importance. It is recorded that in 1798, after experience gained in the Naval Hospital at Yarmouth, subsequent to "Camperdown," John Bell urged, in a letter to Earl Spencer, who at that time was First Lord of the Admiralty, the necessity which existed for *one great school of Military Surgery*. His scheme was not acted upon. It was, probably, soon lost sight of; and half a century elapsed before a similar one took shape, and was put in execution. Let the originators of the more recent plan have every credit; but in the advocacy of "my order," let me claim the idea, according to priority of dates, as that of this army medical officer and eminent member of the medical profession.

Among the subjects which he proposed should be taught in this institution, he enumerated—first, anatomy; secondly, military surgery; thirdly, military medicine; fourthly, medical geography, climates, seasons, coasts of various countries, the manner of conducting soldiers on foreign expeditions, the general care of their health, the choice of encampments, the forming of hospitals on shore; how to convert churches, garrisons, and public buildings into hospitals; how to attend an army in the field; how to lay wounded in besieged towns, and how to carry them off the field in a retreating army; fifthly, military economics,

diet, clothing, exercises, general medicine, and all methods of preventing disease ; and, sixthly, a future plan of study.

It is surely needless to observe that *Hygiene* as now understood was in all but name appreciated then at its highest value, and would have been systematically taught long ago had the views of this medical officer been acted on.

The next army medical officer to whom I propose to allude is Dr. Rollo, who between 1780 and 1794 effected various improvements in the administration and economics of army hospitals. In a work on the means of preserving health in the West Indies, published by him in the former year, he attributes the frequency of relapses in cases of fever and dysentery to the circumstance that men affected with those diseases had no special hospital diet adapted to their condition, and had therefore to make use of the ordinary salt beef rations as issued to those in health. It is important also at the present day, when so much is said and written on the subject of removing troops from infected localities, to note that in the work referred to he mentions as among other causes of relapse the necessity of sending men to duty before convalescence was complete, and the inability to send them to healthy localities during the process of recovery. It was he also who introduced into the Ordnance department the system already in force in the Line of rendering stated "returns" of sickness and mortality. In 1801, after having served as Surgeon-General of the Ordnance between six and seven years, he published an account of the Royal Artillery Hospital at Woolwich, with some observations on the means of preserving the health of soldiers. In that work (pp. 6, 24, 32, 37, 51, 66), he pointed out that the surgeon's duty must be very limited in its operation, unless he be supported by the officers, and that from co-operation every advantage may be expected. Regarding the arrangement of the hospital, he remarked that the building was divided into an hospital and a convalescent barrack, a plan that was extremely favourable to the restoration of health, and to the prevention of relapses. He expressed an objection against wooden huts for hospital purposes in the West Indies, on the ground that the sun penetrated their sides and roofs. This objection could, however, as he pointed out, be obviated by the hut being surrounded by a gallery, and the roof being constructed of wood.

On the subject of hospital construction his views were to the effect that three principal subjects should be considered, namely—situation, water, and ventilation ; but that three other points ought to be attended to, namely—the temperature of the air, the size of the wards, and the distinct separation of them. In the management of hospitals three points should be attended to, namely—cleanliness, decency, and regularity ; and he points

out the very great difference that exists between the purposes of civil and military hospitals. In the former, founded as they are in charity and for charitable purposes, they receive patients who solicit admission into them, and know that a breach of regulations would be followed by dismissal: in the latter the admission and detention in them are often compulsory; hence special regulations are necessary. He observes that commanding officers ought to give surgeons their confidence, and attach all confidence to them in the management of their hospitals, and considered that *nurses* and servants ought to be entirely under the orders of the surgeon.

To all those who are well acquainted with the steps by which the condition of the soldier has been improved, the name of Robert Jackson is familiar, for to him, even more than to the great men whose names have been already mentioned, is due the merit of having effected the most radical and complete improvement in that condition. Of his personal history it is only necessary to mention the facts that he served successively in the 60th, the 71st, and the 3rd regiments of the line.

In 1791 his first noticeable work appeared. In it he entered into the consideration of the different means of preserving the health of troops, and offered some observations as to the measures which he thought were calculated to advance the position of army medical officers, whose claims to improved social status were then being brought forward. Some of his labours, as they bear upon the improvement of the condition of the soldier, and upon the advancement of the interests of the medical officers, may be here given from that work with which his name is still associated.

The subject of medical establishments, especially for armies, he always considered as of very high importance. "It was," he observed, "confessedly complex, for it comprehends a wide range of general and practical knowledge of military service, as well as a correct acquaintance with the history, causes, and consequences of the diseases to which troops are most liable in the field or in quarters."* But while he entertained just and liberal views as to the importance of the duties of army medical officers, he had on many occasions to deplore, as his successors have many a time done since his day, that the opinions of medical officers in regard to matters which peculiarly belonged to their province, did not obtain that degree of weight to which they were justly entitled. "To these persons" (army surgeons), he says, "who are supposed to be well acquainted with the nature of things, and with the laws of organic life, reasonably appear to be assigned the duties of investigating the nature of

* "Organisation of Armies," p. 28.

deranging causes, of ascertaining their presence, and pointing out the means of obviating their effects; in short, of keeping the materials in order, and fit for their arrangement in their proper places in the great arrangement; or of making suitable provision for disembarrassing the military movement by the removal of inefficient parts." "The office," he continues, "in its full latitude, is of high importance; but it is scarcely ever exercised by officers of the health department. In the arrangements preventive of sickness, army doctors have but a feeble voice; they are rarely permitted to prescribe a rule for obviating the recurrence of disease; their labours are chiefly confined to the treatment of those who are actually sick—that is, to the repair of ineffective parts." It is to his advocacy that the soldier in the West Indies is indebted for the boon of being stationed in the elevated regions, a measure which he advocated at the latter end of last century.

It behoves our brethren of the present day to consider well the anticipations he entertained regarding their position as members of the medical profession. He declared that "if ever medicine emerged from its (then) low condition, raising its head so as to fix its station among the sciences, it is more than probable that it will owe its good fortune to the medical officers of armies, and more so to the medical officers of the British army than to others." How far the anticipations of Dr. Jackson have in this respect been fulfilled may, I think, be learned by a careful examination of the works of Guthrie, Hennen, Bancroft, Ballingall, and other authors to whose published works reference will more particularly be made as we proceed, as well as by the importance of the measures for the promotion of health of the soldier that owe their introduction to the exertions of our earlier administrative medical officers in India.*

He it was who first urged the advisability of instructing the soldier in ball firing. He suggested "that during the period of military training, and after six months of previous education, three days in the week be set apart for the practice of firing ball cartridge." He, moreover, suggested that seven rounds should be the number to be fired on each occasion (p. 260).

No man, perhaps, before or since his time, held so just an appreciation of the functions of the army medical officer as did Dr. Jackson. "It is the imperious duty of humanity," he observes,† "to endeavour to preserve the human race from destruction; and as it is the duty of a military physician to maintain the military in a state of calculable efficiency, the

* See my remarks on the Early Progress of Army Sanitation in India, *Medical Times and Gazette*, 1868.

† "Organisation of Armies," p. 336.

truth is now spoken freely at all risk of penalty." The truth here alluded to is explained in a previous paragraph. "It is an ungracious task," he wrote, "and may, perhaps, be a dangerous duty, to bring measures under the public notice which are sanctioned by the authority of the State, but which cannot be sanctioned by the reason of the philosopher."

"The preservation of the health of the soldier," he observed, "is indispensable to the preservation of the conquests which fortune or courage achieves. . . . If genius conquer, prudence preserves. The health of the army, as a preserving instrument, ought, therefore, to be a primary consideration of the State." He goes on to observe that "No one who is acquainted with the subject will venture to say that the British nation was niggardly in the provision of medical means for the use of its armies in the late war. (He was now writing in 1824.) No one will venture to maintain that the lights of science were not generally employed to give effect to their application" (p. 402).

Let us see, also, how he further urges the importance of an efficient medical staff. "The medical history of armies," he observes (p. 414), "holds out a dismal picture of human misery. Armies were crippled, almost annihilated, by artificial diseases in the late war; that is, by contagious fevers proceeding from corrupted sources of recruiting, and gaining strength from ignorance of the principles which conduce to the preservation of health, or from indifference and negligence in applying them to the occasion."

In another part of the same work Dr. Jackson advocated the appointment of sanitary officers, a suggestion which has of late years been acted upon; but the credit of the suggestion is not accorded to him. Yet to him it is due, nevertheless. "As the health of troops," he observes, "is a matter of the greatest importance to the success of war, health officers may be justly considered to be an important part of an army."* He was well aware of the little encouragement which was then held out for members of the medical profession to enter the army; and looking back, as we now do, we cannot but wonder that men of such talents and acquirements as were unquestionably possessed by some whose names appear in these pages, were led to remain in that service. Dr. Jackson, however, was well aware that although they were the rare exceptions, it was not the less necessary for the interests of the public that men possessing at least an approach to their acquirements should be attracted; and accordingly we find him in 1803 advocating an improvement in the social position and in the pay of the medical officer as being necessary in order to bring about the much desired change.

* Edition, 1824, p. 420.

When in charge of the Depôt Hospital, Isle of Wight, he instituted a scale of diet for the sick, which being somewhat different from that laid down by Dr. Monro, as already detailed, may here be further alluded to. In 1801 the scale in question was as follows, namely :—

	<i>Breakfast.</i>	<i>Dinner.</i>	<i>Supper.</i>
Full diet	{ Rice milk, with 2 oz. rice, $\frac{1}{4}$ oz. sugar, $\frac{1}{2}$ pint milk.*	{ 1 pint broth, $\frac{1}{2}$ lb. beef, $\frac{1}{2}$ lb. bread, $\frac{3}{4}$ lb. potatoes, 1 pint small beer.	As breakfast.
Half	Ditto.	{ 1 pint broth, 6 oz. beef, $\frac{1}{2}$ lb. bread, $\frac{1}{2}$ lb. potatoes, 1 pint small beer.	Ditto.
Low	{ Tea— $\frac{1}{4}$ oz. tea, 1 oz. sugar, $\frac{1}{4}$ oz. milk.	{ 1 pint bouillon, or beef tea, with bread— <i>i.e.</i> , 4 oz. beef, and 4 oz. bread.	Ditto.

It must be owned that the insufficiency of these diets became the subject of official inquiry :—whether this was just, or otherwise, we need not now inquire ; suffice it that the scale was established ; yet when we consider how extensive was the list of extras allowed to the patients,† it does seem that there was every desire to meet the requirements of the soldier. This list included arrow-root, wine, brandy, rum, gin, Dorchester ale, cyder, porter, small beer, lemons, apples, and eggs ; thus giving a variety that contrasts favourably with the scale of those articles now permitted. The reader will not fail to contrast the diet scale itself with the more liberal one of Dr. Monro already given ; nor will he omit to observe that during the interval that had separated the public career of these able officers, tea, as a beverage, had come into use in hospital diets.

Continuing our remarks on the condition of the army medical department, we find that even in the eighteenth century its members were considered to hold but a very subordinate position in the military fabric. This is to be gathered from the nature of the provision made for their widows as compared with that for those of what I suppose we must call executive officers. In 1737, the authorised scale of pension for the widow of a surgeon was £16 per annum ; that is, the amount granted to the widow of an ensign. In 1798 a new scale was drawn up, according to which the widow of a surgeon received £26 ; that is, the amount granted to the widow of a lieutenant ; the widow of a captain, physician, or purveyor, receiving £30.

About this time two innovations were made regarding the medical department that have by cotemporary writers been much commented on. The king, under royal warrant dated

* Or 4 oz. oatmeal in lieu of rice.

† Army Medical Department, Table 11.

1747, appointed an Apothecary-General to the Forces, "perpetual furnisher, with remainder to his heirs, of all medicines necessary for the services of the land forces of Great Britain ;" and the regulation continued in force till about half a century afterwards, when it and an equally objectionable one were simultaneously swept away, a medical board being appointed to administer the affairs of the department. The other innovation was a regulation under which regimental surgeons were permitted to purchase medicines for the use of their sick, receiving a pecuniary allowance for the purpose ; a practice which was retained in India long after it had been abolished in the imperial forces.

In 1756* a distinct administrative organisation was for the first time introduced in the army medical department. Lord Barrington, who was then Secretary at War, was directed to establish a hospital board for the medical service of the army intended to take the field, that under their constant direction this part of military service (relating alike to medicines, hospital stores, and every other requirement for the sick) might be carried into execution with ability, regularity, and dispatch.

This board was composed of physicians belonging to the hospitals of his Majesty's forces, the surgeon-general, the principal surgeon, and the purveyor to the hospitals.† Subsequently the constitution of the board was altered. It then consisted of two members only, the physician-general and the surgeon-general, who was also inspector of regimental infirmaries. In 1758, the grades of inspector and deputy-inspector of hospitals were instituted,‡ and it would appear that those appointments in some degree, if not entirely, became substituted for the board just mentioned.

Dr. Hamilton writing of the position of regimental medical officers in 1787, gives much information that we may now profitably avail ourselves of. He informs us § that each regiment, militia or regulars, was allowed a surgeon and surgeon's mate ; the pay of the former being four shillings per day, and of the latter three-and-sixpence. From the pay of a surgeon, however, a deduction of one shilling per day was made, from that of a mate sixpence, so that, in reality, the subsistence of each was one guinea per week, but then they were sometimes two and three years kept in arrears as regards pay. The surgeon received a commission signed by the Secretary of State for War, but the mate only a warrant signed by the colonel of the regiment into which he was about to enter. We are also informed (p. 125) that he messed with the corps ; that his temptations and

* Hennen's "Military Surgery," p. 14.

† Sanitary Commissioners' Report, 1858.

‡ Sir J. M'Grigor's Autobiography, Preface.

§ "Duties of a Regimental Surgeon," vol. i., p. 3.

expenses were thus greater than was desirable; and that his remuneration as relates to pay was "neither adequate to the trouble of the office, the expenses of a liberal education, or what is of equal consequence, is not such as to encourage men of any professional abilities to enter into it" (p. 121—122). "Till," he adds, "regimental practitioners are placed on a more honourable footing, and their rank promoted as well as their pay increased, few who deserve the name of medical practitioners will engage in it." How similar were the arguments used in 1787 to those that were employed some eighty years afterwards!

In urging that increased pay should be given to medical officers to encourage an improved class to join the army, he enters into some details regarding that of hospital mates (vol. ii., pp. 156—159), which we may here transcribe:—

Their full pay at 3s. 6d. per day for 365 days was £63 17s. 6d.

Subsistence issued at 3s. per day	...	...	...	£54	15	0
Poundage stopped by Government, 1s. per £	...	...	...	3	3	10½
Chelsea Hospital, one day's full pay	...	...	...	0	3	6
Warrants and contingencies, two days' pay...	...	...	...	0	7	0
Agency, 2d. per £	...	...	...	0	10	7½
Remains of one year's arrears at 6d. per day	...	...	...	4	17	6
Total	...	...	...	£63	17	6

As to those deductions, "he loses of his full pay every year £4 5s. 6d., while the annual arrears, namely, £4 17s. 6d., are so irregularly paid, that it may be said likewise to be lost. The warrant and contingencies are an imposition of the agents." Such being the state of remuneration, we are not surprised to learn that, although in 1783, "several of promising abilities," and regularly educated physicians and surgeons, entered the army, of whom some were appointed regimental surgeons and physicians, yet others "finding themselves mistaken in the choice they had made, soon retired from a service they could not remain in with credit to themselves."

In those days "promotion by selection" was carried to a greater extent than probably would now be practicable, and here are some of the results recorded (p. 162). Instances have occurred of surgeons' mates remaining in that rank fifteen years, and even then, when vacancies occurred, have found novices in years and knowledge set over their heads. Not until they became surgeons did they become entitled to half pay on retirement; and while they remained unpromoted, "were liable to imprisonment in the same ignominious manner as a private, at the pleasure and caprice of the youngest ensign of his corps." Nay, he was liable to be tried by court-martial, and flogged like one of the soldiers.

The social position of the surgeon, if better than that of the mate, was described by Dr. Hamilton (vol. ii. p. 187) as *less honourable* than that of the combatant ranks. "The surgeon," so he wrote with evident bitterness, "is held in an inferior light to the youngest ensign, and the king himself considers him so," knowing that, "in the year 1778, when his majesty reviewed the camps, no surgeon was allowed to kiss his hand," a permission granted to every officer down to the chaplain.

It would appear that in some regiments, the pay of the surgeon was increased by donations from officers and men; a subaltern giving him a guinea a year, a captain two, major three, lieutenant-colonel five, and colonel ten. He, moreover, received from Government one guinea for every soldier inoculated for the small-pox (vol. ii. p. 177); so that really, in such circumstances, the recipient must not have been so ill off after all. That he drew horse allowance, at any rate when encamped, would appear from a remark of Dr. Hamilton (vol. ii. p. 213), to the effect that this item amounted to £43 in three years, and that it was desirable that forage allowance should be increased to a sum equal to that given to captains, namely, for the maintenance of three horses. But probably this referred to the cavalry.

Shortly before the time of which we now write, the measure seems to have, as an experiment, been introduced in the army, of giving to medical officers double commissions. Under that system, however, difficulties were not slow in arising, and of a nature which speedily led to its abandonment. "The surgeon, in common with the other subaltern officers, if he enjoys an officer's commission, must take his share of duty;"* and as Dr. Hamilton further adds: "the duties of a surgeon, which in general we may call of far greater magnitude, he must also perform." This medical officer was perfectly aware how incompatible were the two. "No two professions whatever (p. 119) are more opposite in their natures than that of a military and medical gentleman." "The engagements of an officer," he rather quaintly observed, "require not much reflection; the medical man's duty requires it almost constantly"—an argument which, by the way, may be recommended to the attention of some writers of the present day, together with his views in regard to the position which a regimental surgeon ought to occupy. "Every officer," he observed,† "will respect a surgeon of good behaviour and diligence in his profession. Every officer either does or ought to treat with contempt the contrary conduct." With such palpable objections as these against this

* "Regimental Surgeons," vol. i., p. 117.

† *Ibid.* p. 112.

system, we need not wonder that it was speedily abandoned. It was so in the line some years before it fell into disuse in the militia; and yet, if report is to be relied on, it is within the memory of officers still serving, that one who entered under these circumstances died a general officer. But Dr. Hamilton favours us with some particulars in regard to the manner in which the government of that day treated the officers who held the double commissions alluded to. Let them be described in his own words. The medical officer was "forbid to sell, notwithstanding he may have purchased; and what is still worse, when he is superannuated and so infirm as to be incapable of duty" (*ibid.* vol. ii. p. 180). In both these respects he was at a great disadvantage as compared with the captain, as the latter, if he had purchased his commission, had, as he still has, the right to sell it. We are not to suppose, however, that the purchase of medical commissions had ceased at the time of which we now write. We shall see, as we proceed, that such was not the case. With all these drawbacks against the prospects and status of the army medical officer, the fact is beyond a doubt that the importance of his position as regards the good of the service, was fully recognised; and that this circumstance was adduced as a reason why, in the appointment of regimental surgeons, interest should be as far as possible excluded; that "merit only should meet with encouragement" (vol. ii. p. 187). Medical and other writers contrasted the discouragements under which medical officers in our army then were expected to bestow their labours, as compared with those of ancient nations. "However the present age may boast of literature and refinement"—so wrote Dr. Hamilton (vol. ii. p. 269)—"however we may hold ourselves in high estimation above the ancients, both in respect of knowledge in war and philosophy, yet they seem to have taken a greater advantage of the science they possessed, and, no doubt, reaped as the fruits thereof a proportionable success. Xenophon, in his history of Cyrus,* mentions that among his other great qualifications for a general, was that previous to a war he wisely chose able physicians for the management of the sick, and dismissed them afterwards with honours and rewards earned by their services." May we not with equal propriety now recommend this part of the policy of the Persian monarch to the serious consideration of the British Government?

In 1793 a further change took place in the constitution of the Army Medical Board. The offices of surgeon-general and inspector of regimental infirmaries were separated, an inspector being added to the Board as a third member. In the Board so

* De Instit. Cyr. Hist., lib. 8, p. 167.

constituted was vested the general superintendence of the department, and the right of recommending medical officers for appointments and promotion. In 1796 the rank of surgeon's mate was replaced by that of hospital assistant. In 1797 the pay of the surgeon and of his mate, now called hospital assistant, was raised, the former to 10s., the latter to 5s. per day. These rates, however, included a personal allowance of 1s. for the surgeon; for by a schedule of pay for the army of that date we find that the actual pay, or subsistence, as it was designated, was in the Life Guards for a surgeon 9s.; in the Royal Horse Guards also 9s.; the assistant-surgeon receiving 5s. In the Dragoon Guards and Dragoons the pay *and allowances* of a surgeon amounted to 11s. 4d.; but in the Fencible Cavalry to only 6s., the pay of an assistant-surgeon being 5s., and of surgeon's mate, which rank was till 1813 confined to the fencibles and staff, only 3s. 6d. It is noted with regard to them, however, that "the surgeon and surgeon's mate of Fencible Cavalry, if not holding double commissions, have an allowance of 1s. a day in addition to the rate of pay above mentioned." In the Foot Guards at the same time the surgeon received as pay and allowances 12s. 6d. per day; the assistant-surgeon 5s. In regiments of the line the pay and allowances of the surgeon are given as 9s. 5d.; of the assistant-surgeon 5s.

In 1798 the constitution of the Army Medical Board was again changed. Distinct duties were now assigned to each of the members, who was responsible for his own acts. The physician-general recommended physicians for appointments; the surgeon-general recommended the deputies-inspectors, regimental and staff surgeons, and assistant-surgeons; and the inspector-general had the nomination of apothecaries and hospital mates.* In the following year among the staff of the army are noted one inspector of hospitals, one physician, one surgeon, and two assistant-surgeons for Scotland; two physicians-general and one staff physician for Ireland; and for England a physician-general, surgeon-general, and inspector of hospitals, who formed the Medical Board of that day. At this time the succession of ranks in the medical department were, regimental mate, hospital mate, regimental surgeon, apothecary to a general hospital, surgeon to a hospital, and surgeon-general. A surgeon to a hospital was chosen, not from among the regimental surgeons, but from the apothecaries, and while the pay of the surgeon was only four shillings per day, that of the apothecary was ten.†

Prior to the year 1794 a surgeon in the army could not rise

* Sanitary Commissioners' Report, p. 253.

† Regimental Surgeons, vol. ii., p. 214.

to the higher positions. His talents and efficiency in that position, be they however great, could not raise him to the administrative ranks, all the appointments in which were filled by men selected from civil life, and consequently ignorant of army duties. The numerous and obvious evils of such a state of things had, indeed, become notorious, and a regulation was introduced under which surgeons of regiments should be declared eligible for promotion to the rank of physician, provided they obtained the licence of the College. This, however, was defeated by a counter rule of the College of London, which positively refused a licence to any person bearing his Majesty's commission of surgeon or apothecary.* Doubtless the great fault lay in the fact of a person without a diploma being admitted into the service in the first place; yet, considering the manner in which those who had served in the army during many years were often superseded by persons directly from civil life, the rule must have indeed been looked upon as telling severely against them. Dr. Hamilton† gives an example in point. It is that of a mate who had served upwards of seventeen years in a regiment, of which he had held charge during eight of that time; yet on presenting himself at Surgeons' Hall for examination, was rejected as unqualified. It may well be asked, If unqualified, why so long trusted?

The subject of rank was then discussed with quite as much energy as it has been in more recent times, and among the advocates of the medical officer there was none who more steadily exerted himself in their cause than Robert Jackson. On this ever-vexed question he wrote ‡ as follows:—"In order to give effect to the execution of medical duty, it is evident that a fixed rank ought to be assigned to the different officers of the medical staff, and that such officers ought, on all occasions, to meet with the military respect which is due to the rank which they respectively hold." The rank here proposed, he adds, "has no connection with the rank of military officers."

With regard to the acquirements of the junior grades of medical officers at the end of the century, Mr. Keate thus expressed himself §:—"It is notorious that regimental surgery was then, generally speaking, as it had ever been during the American war, in a very defective state, the surgeons having been either appointed by purchase, or taken from the mates who had been recommended by the colonels of regiments, without giving any proofs of medical qualification." "It was to

* Jackson on the Army Medical Department, p. 18.

† Regimental Surgeons, vol. ii., p. 191, foot note.

‡ Army Medical Department, p. 34.

§ Observations on the Fifth Report, p. 18.

remedy these defects," he observed, "that Mr. Gunning and myself determined on appointing staff-surgeons, who are mostly wanted for the more important and difficult operations, to pay less regard to seniority than our predecessors had done, by selecting for those appointments active and well-educated, although younger men."

Regarding tests of the knowledge of candidates,—they were required to pass the usual surgical examination at the London College of Surgeons, where the surgeon-general was present; and subsequently a medical examination before the Army Medical Board, previous to obtaining appointments as hospital mates.* The great John Hunter had interfered to obtain a removal of the obnoxious and very unfair regulation of the College of Surgeons to which allusion has just been made.

Up to the year 1799, although, as we have seen, the department was administered by a board, there was no regular office establishment; but an allowance of one hundred pounds per annum, and ten shillings per day, was given to the inspector of regimental hospitals to cover all expenses. After the board had been discontinued, the office establishment at first consisted of one clerk, who was also acting secretary, and two junior clerks,† and to show the press of work that devolved upon the director-general, it may be mentioned that at the time considerable armaments were being despatched, such as those for Flanders under the Duke of York and Earl of Moira; for Toulon, Corsica, Minorca, Portugal; for the West Indies under Sir Charles Grey, Sir Adam Williamson, and afterwards Sir Ralph Abercrombie, for the Cape of Good Hope, the Coast of France, &c. The whole of the financial work connected with general hospitals and depôts of medicines, was then transacted by the Board (p. 137, 64, 150); there having been apparently little notice taken of professional details. Nor did matters, in this respect, much change, until after Sir James M'Grigor had received the appointment of Director-General. In 1798 the regimental hospitals were declared to be under the immediate direction of their respective surgeons, subject, nevertheless, to the general superintendence of the Inspector of Regimental Hospitals. In the same warrant it was directed that assistant-surgeons should be taken from the hospital assistants, and surgeons from assistant-surgeons.

We have already seen that among other improvements effected by Dr. Rollo in connection with Army Hospital administration was the adoption in the Ordnance Department of a system of preserving statistics of disease, which had been shortly before

* Keate's Observations, p. 149.

† Observations on the Fifth Report, pp. 3—5.

introduced in the line. To Dr. Reid the credit is due of having first instituted documents of this nature. He served successively in the 29th and 60th Regiments, and in 1793 published a work, in which he gave a series of monthly and annual returns of sickness and mortality in those corps, the "forms" according to which his information was drawn up being thereafter adopted by Mr. Adair, Director-General of the Medical Department.

Dr. Summerville was at the same time occupied in preparing a work, which now-a-days would be designated one on Army Hygiene. That work was published in 1796, and contained remarks on the means of providing clothing for the troops; for preserving their health; prevention of disease of an infectious nature; and for improving rations.

Dr. William Lempriere served in the West Indies successively as Surgeon of the 20th Light Dragoons and as Apothecary to the Forces. In 1799 he published in two volumes his "Practical Observations on the Diseases of Jamaica," reviewing in that work the various causes which combined to produce the great mortality which at that time prevailed among the troops stationed there. Among those causes, the sites and construction of barracks were, in his view, of the greatest importance. "The choice of situation for erecting barracks for the accommodation of troops in the West Indies, has" (so he wrote, pp. 60, 77, 79, 141) "by no means received the attention it merits." Adverting to the accommodation at Spanish Town, he writes:—"The situation and construction of the barracks, and the proportion of men quartered in them, the interior regulation of a regiment, and the mode in which the men are exercised, make also a material difference in the health of the troops." He pointed out that the barracks at St. Ann's were badly built, in a situation which cannot be ventilated by the sea breeze, while they were flanked at the distance of two miles by a morass, which rendered them unhealthy.

That Dr. Lempriere was well acquainted with the importance of moving troops away from an unhealthy or infected locality we have many proofs given in the course of his work. Alluding to the circumstance of his own corps and the 62nd Regiment having been quartered in Spanish Town in 1793-95, he states that they suffered so severely from remittent fever that the former lost one-third of its officers and men in eighteen months; but that on the troops being removed to some barracks built upon arches, and with the apartments "admirably calculated to be kept clean," that had shortly before been erected on an elevated site within half-a-mile from that place, the troops speedily became more healthy. He then records a case the converse of this (pp. 111—121), namely, that of the 10th Foot, which regiment, after a long residence in the island, and having

been quartered between two and three years at Stoney Hill, was removed down to Kingston in 1794. In the preceding year it had lost seven men only, while during the first six months the regiment was quartered in Kingston it experienced a mortality of twenty-one, and was afterwards sickly in proportion: a striking proof of the difference of health in the two points.

He would send young and newly-arrived troops to the hill stations, and especially those who had suffered in health during the voyage from England in the crowded and badly fitted up transports of those days. Of this he gave an example in the 130th Regiment (p. 203), which consisted of newly-raised recruits, and on arrival at Port Royal was there placed in small and ill-situated barracks. "A fever of the typhus kind" soon occurred among the men, a number of whom were speedily carried off by it, and the whole regiment was in a few days thrown into a state of despondency. The healthy were immediately moved to Stoney Hill, and not only did they escape, with three exceptions, but those who were left ill at Port Royal speedily recovered. Many other similar examples are related, but which would add needlessly to the bulk of these notes were they repeated here.

He makes repeated allusion to the prevailing intemperance among all classes at the time he wrote, and to the many evils to health and morals that were thereby induced. He saw with regret that the means of checking the vice were imperfect (pp. 136, 166, 184). The commanding officer of the 20th Dragoons, with a view to this end, confined his men to barracks as much as possible; but a plan was fallen upon which for a time defeated his intentions. The women, on the plea of bringing in water or milk for their families, contrived to introduce a cork at the bottom of the spout of the tea-kettle, and filled up the spout with water or milk, while the body of the kettle was the vehicle for rum. Upon being questioned by the sentry respecting the contents of their kettle, as a proof of their innocence they poured out the contents of the spout. Their ruse was, however, after a time discovered.

Adverting to measures of general sanitation, he remarks on the general neglect of cleanliness prevalent in Kingston at the time he wrote (pages 92, 113, 169, 188), no means having been taken by the police to check irregularities; and the influence of intemperance in the introduction of disease. Streets were repaired by filling them up with trash and filth of all kinds. He was well aware of the influence exerted on health by strict military discipline, and alludes to the good results which in the 13th Foot followed, even in so unhealthy a station as Kingston. He made representations regarding the hours most

proper for parade, and the dress that he deemed suitable for the men with reference to climate. He protested against the system of over drilling the men then followed in some regiments, as being often destructive to health.

Dr. Gordon joined the 13th Foot at Kingston, Jamaica, in 1792. The high state of efficiency in which the men continued, while other regiments suffered from severe sickness, induced Dr. Lempriere to request information from this medical officer as to the discipline and routine followed in the corps. A few of the remarks by Dr. Gordon may here be extracted, in order to show how very carefully he and Colonel Whitelock then attended to the hygiene of the soldiers under their charge.

In barracks the men were provided with hammocks instead of *platforms*, which, as Dr. Gordon remarked, were uncomfortable and militate against cleanliness. The rooms were frequently visited by the officers; packs, arms, accoutrements, and hammocks were properly and neatly arranged.

Diet.—Breakfast consisted of cocoa or coffee, with bread, and occasionally fruit. Fresh meat was issued on two days per week. “By abstracting part of the quarter-master’s profits upon baking and the other provisions and allowances of the men, and the value of the articles sold as improper, two extra days’ fresh provisions were furnished generally without any, and always with the most trifling deduction from the pay of the men. A regular sum from the pay of each soldier was appropriated to the purchase of vegetables, vinegar, and pepper.” “When the funds of the regiment were good, the commanding officer would give occasional allowance of good bottled porter,” &c. Care was taken that the allowance of rum was duly mixed with water, and that the men did not drink their quota at once before sitting down to dinner. All unmarried men sat down to meals regularly at tables, and the dinners of all, married and single, were inspected by the captain of the day.

Parades.—The men were not unnecessarily exposed to the sun; they were confined to barracks from 8 A.M. to 5 P.M. Fatigue duties out of barracks were performed by black men; the soldiers being employed indoors. There was daily a parade before sunrise, and one from 5 to 6 P.M., besides two, sometimes three field days per week. A medical officer attended all parades, and any man taken ill was immediately removed to hospital. Breakfast was served to the men immediately they came off morning parade.

Clothing.—Inspection of necessaries took place weekly. The men wore round hats, uniform cloth jackets and white linen trousers; they had in addition the usual kit of a soldier. The men changed their flannel shirts twice a week, and care was taken that they were put on dry.

Canteen.—There was one for the regiment under the charge of a steady non-commissioned officer. Rum, wine, and porter were sold, under the superintendence of the quarter-master. He was allowed to brew spruce beer, which he sold at one penny per bottle. The accounts were settled monthly. The canteen was never opened till after evening parade, and no strangers were admitted to it, except under a *pass* by the responsible officer.

Hospital.—All men unfit for duty were in hospital; a non-commissioned officer visited the barrack rooms several times a day, and conducted such as were sick to hospital. The surgeon twice a week examined the faces of every man on parade; and also their legs for ulcers. The permanent hospital servants were a sergeant and two orderlies; additional orderlies were engaged when necessary in the proportion of one to ten sick, and two negroes were employed as cooks. The medical officer visited the hospital three times a day or oftener, and much attention was given to nursing, to the administration of medicines, drink, and nourishment. Two shillings per week was deducted from each man as hospital stoppages, the balance of the cost of food, &c., being made up from regimental funds. All purchases for the sick were made by the quarter-master on the recommendation of the surgeon; a regular diet table was in use. It may be observed that to this as to all other regimental hospitals in the island at the time, there was one woman employed, whose duty was to prepare the slops and comforts for the sick, and to occasionally assist in administering medicines, &c.

In 1794 the corps then known as De Burgh's Regiment, but soon afterwards numbered the 88th, or Connaught Rangers, was raised, the men and officers drafted into or appointed to it joining its head-quarters at Chatham. Into this regiment Sir James McGrigor, having completed his medical education, purchased* a commission as surgeon, and proceeded in that capacity with it to Guernsey, at which place he formed an acquaintance with Robert Jackson, at that time surgeon of the Buffs.

The French Revolution was then at its height, and Dr. McGrigor had to accompany his corps to the Scheldt, where he shared in all the trials and misfortunes that then befell the troops under command of the Duke of York, and on the embarkation of the 88th for England was put on board a transport in what was considered to have been a dying state from an attack of typhus fever, contracted at Nimeguen. Having landed at Yarmouth,

* According to Mr. Keate, "Observations on the Fifth Report of the Commissioners of Military Inquiry," page 22, Dr. McGrigor purchased his commission from the Earl of Clanricarde, colonel of the regiment, for 150*l*.

the regiment for a time occupied barracks in Norwich, at which place he, as senior regimental surgeon, acted as principal medical officer; but the appointment was of short duration, as the 88th were moved to Chelmsford with a view to prepare for active service. The expedition against the French West India Islands was being prepared; a new commanding officer, who afterwards became Field Marshal Beresford, was appointed to the 88th, and the regiment was recruited to full strength as rapidly as was possible. Dr. McGrigor feared that the constant arrival of troops, many not in the cleanest state, accompanied by their families, as well as the habitual drunkenness, and other irregularities of the soldiers, might lead to a speedy degeneration of the fever that had already appeared among them into typhus, which was then the scourge of the army. He began his career by keeping the hospital sweet and well ventilated, by which he not only averted the dreaded malady, but gave the building so clean and cheery an appearance that it attracted the notice of the officers.*

The 88th having proceeded to the West Indies, and taken its part in the suppression of the rebellion at the Island of Grenada, the whole of the troops were on the termination of the operations crowded into insufficient buildings, which circumstance, together with their inactivity, want of the excitement of actual service, and consequent irregularities into which they fell, induced disease, chiefly yellow fever, in overwhelming force and with hideous mortality; the epidemic being, in the opinion of Dr. McGrigor, communicated by contagion, although not in its origin a contagious disease (p. 71). During the continuance of this state of matters a portion of the corps was ordered to embark. Dr. McGrigor inspected every man before permitting him to proceed on board ship, and withdrew every one who had the least appearance of disease or debility; yet, with all the care he bestowed on this important duty, infection was taken on board, and we read that during the few days occupied in the passage thence to Barbadoes, nearly one fourth of those on board were ill with yellow fever; the mortality among them running very high (p. 76).

He having in 1798 proceeded to India, his name next appears in connection with the expedition under Sir David Baird, with which, as principal medical officer, he went to Egypt; and of which, in 1804, he published an account. On that occasion, when the army was encamped in Rodda and Ghizeh, he was called upon to direct measures against the powerful existing causes of disease at those places; at Alexandria, and elsewhere, the measures adopted by him had the effect of checking the

* Autobiography, page 43.

progress of the plague,* and a reference to them, as given by himself, would furnish profitable occupation to *sanitarians* of the present day, although their enumeration would add too much to the limits within which these remarks must be confined.

On returning to England he was appointed surgeon in the Horse Guards Blue. When stationed with that regiment at Canterbury, hospital gangrene made its appearance among the sick. Dr. McGrigor immediately saw in the smallness of the wards and their imperfect ventilation the circumstances that induced this malady, and immediately took steps to vacate the building. Soon after, the regiment moved to Windsor, where, although the hospital wards were large and airy, the disease nevertheless seemed to linger among the men; he had the sick frequently moved from one ward to another, and in this way got rid of it. In 1808 and 1809 he was stationed at Portsmouth as principal medical officer of the South-Western district, and there, in the early part of the latter year, his powers of administration and arrangement were displayed in providing accommodation and medical attendance for the remnants of Sir John Moore's army that arrived in crowded transports from Corunna. Among the evils which attended the retreat to that place was typhus fever. This disease, having once attacked the force, rapidly spread; and when the shattered remains of the troops landed at Portsmouth the number of persons sick was overwhelming. Sir James McGrigor was called upon to extemporise accommodation, medical attendants, nurses, and purveying staff for them. The naval authorities of that day readily placed at his disposal the greater portion of their magnificent hospital at Haslar; the military hospitals in garrison were speedily filled; and every available private establishment was taken advantage of.

The dangers to be apprehended from extension of this terrible disease to the healthy troops and civil population were early recognised by him, and every possible precaution adopted against such contingency. These precautions, however, were ineffectual; for, as we read, the virulence of the disease was such that it soon began to spread, and before long had extended itself to the military at Horsham and to the civil population of Sussex (p. 220).

We next meet with him associated with Sir Gilbert Blane, at Walcheren, labouring to protect the troops from the numerous influences which, by their nature, and other circumstances which need not now be detailed at length, were beyond the power of

* See his "Sketches," page 43, and Autobiography, page 116, &c.

medical men. Sir Eyre Coote and Sir George Don repeatedly mentioned these two medical officers—the one military, the other naval, in his despatches; and we have it recorded in *Hansard* that evidence was given before the Commission which sat in 1810 to inquire into the miscarriage of that expedition, that had Lord Castlereagh been guided by the views of these medical officers, and had seen fit to adopt the rules that Sir John Pringle had years before laid down for the preservation of the health of armies, the lives of thousands of men might have been saved.

In addition to the eminent naval medical officer whose name has just been mentioned, Sir James had the able co-operation of Drs. Borland and Lempriere, of his own service. A code of rules for the preservation of the health of the troops was drawn up by them, a perusal of which even at the present day will serve to show that sanitation was then perfectly understood by those officers. Some of its principal points have been reproduced by Sir George Ballingall,* and may be here given, viz:—

The troops should not be oppressed with duty, or enjoy less than four nights in bed. On the evenings of the nights on which they mount guard, an extra allowance of spirits to each man would be essentially beneficial; and when relieved next morning, a comfortable warm breakfast of strong coffee should be in readiness. The barracks ought to be of the best description, well guarded from cold and damp, with boarded floors; stoves and flues suitably directed to convey an equal temperature to the remotest corners, to be placed in each room. On no account should ground floors be used as sleeping apartments. The more lofty the buildings the better, for the tenants of the upper storeys not only enjoy the best health, but when taken ill have the disease (namely, the prevailing fever) in the mildest form, an instance of which came under observation and the same is confirmed by the experience of the natives. The clothing of the soldier should be of warm quality, and in the best repair. He should be equipped with woollen stockings and flannel waistcoats, the frequent changes of which merit particular attention from his officer. The shoes should be strong, and of the best waterproof leather, to guard against the peculiar damp of the country. The pantaloons should be of a spongy warm texture, blue or grey in preference to white, that there may be no temptation to adopt the pernicious custom of cleaning them with wetted pipeclay. The diet, especially in the sickly period, should be nutritive, and the broths well spiced with pepper; during which season a small portion of unmixed spirits might be usefully allowed, early every morning.

* *Military Surgery*, page 539.

There may at the present time, perhaps, exist some difference of opinion as to the good effects attributed to the extra allowance of spirits recommended to our troops in Walcheren, but, with this exception, the code of rules for the protection of the health of the troops not only embodies what are now the views of the most advanced sanitarians, but give clear evidence that the very able men who were then in medical charge of the army were perfectly well aware of the nature of the measures to be employed. It was their duty to suggest, as their successors have over and over again suggested since their time; but if those suggestions have not been acted upon, the blame rests not with the army medical officers. Let us, however, preserve to them the credit of having made the recommendations.

In January, 1812, Dr. McGrigor arrived at Lisbon, and immediately assumed charge of Lord Wellington's army; nor was it long before that great commander discovered the high qualifications of his principal medical officer, to whom he gave his entire confidence, communicating with him daily, and informing him beforehand of all his intended operations, thus enabling him to make ample preparations for each succeeding emergency. Thus, when Lord Wellington announced to him his intended movement on Badajos, Sir James McGrigor made arrangements whereby every regiment and division was at once supplied with every kind of stores, medicine, instruments, and appliances that were likely to be necessary, and in addition to these measures established a depôt at Elvas for such further supply as might be required. Another great quality of this army medical officer was the accuracy of the estimates he was wont to form of the numbers of men who, from time to time, might be expected to return to the ranks after treatment in hospital on account of wounds or disease; and we have numerous proofs that in his manner of conducting duties with the medical officers under him, he secured their personal good-feeling and hearty co-operation. And what were the results that arose from the confidence with which he was treated by his commanding officer, and the heartiness with which good feeling towards him personally induced the other surgeons throughout that army to second his exertions? It was in consequence of such sentiments for their chief that his subordinates of all ranks exerted themselves under some of the most trying circumstances in such a manner as to obtain the special notice of the Duke of Wellington, as, for example, during the retreat from Bruges, on which occasion His Grace forcibly remarked that "the medical department is the only one that will obey orders; on them I can rely for doing their duty" (p. 314).

We also read, at page 331 of his Autobiography:—"It was said with much truth by an eminent individual that he thought

the extraordinary exertions of the medical officers of the army might be said to have decided the day at Vittoria, for their exertions had undoubtedly added a full division to the strength of Lord Wellington's army, and without these 4,000 or 5,000 men it is more than doubtful if his lordship, with all his unrivalled talents, could have carried the day." The eminent individual here alluded to is Napier, the Historian of the Peninsular War.

In 1814 he was, on the retirement of Mr. Weir, appointed Director General of the Army Medical Department, the duties of which for thirty-six years afterwards he continued to administer, his attention during that very long period being occupied with improvements to be effected in the condition of the soldier, and with the best means to elevate the department over which he presided.

No man understood better than he the true position of the army medical officer; and his views may with profit be transferred to these pages:—"In the proper execution of their duties," he remarks, p. 333, "medical officers are frequently under fire; and during the late war the cases of wounded medical officers were numerous. Some had been killed; and not a few lost limbs in sieges or in battles. Yet it has been ignorantly advanced by some military men that the medical men have no business in exposed situations; and in this professed opinion they would deny the medical officer a pension for the loss of a limb. Yet it is well known that the cases are numerous wherein the lives of officers and soldiers have been saved by the zealous medical officers of their regiments being at hand to repress hæmorrhage."

To his early exertions the soldier is indebted for the luxury of a bed to himself. Before Sir James McGrigor brought about an improved state of matters, bunks for soldiers to sleep in were arranged in double tiers along the sides of the barrack-room, in a manner similar to what is observed on board ship; several men being at times in the same berth, or the place just vacated by a man going on guard being taken by the one relieved, on his return to barracks. He also it was, when stationed at Beverley, in medical charge of the troops in the York district, who protested against the system of discharging men from hospital to duty before recovery had so far advanced as to render them fit for it. He had observed how frequent were relapses amongst those who had suffered from typhus fever, which was then, as already observed, *the disease* of the army, and that great mortality took place by secondary attacks of that affection. To him, also, after he had attained the highest rank in the department, is due the credit of establishing systematic statistics of disease throughout the army. These

were collected and arranged in his office, and formed the basis of the tables and reports of sickness and mortality that were some time afterwards arranged by Dr. Balfour for Colonel Tulloch, and published by order of the Houses of Parliament.

With regard to hospitals, we learn from his Autobiography that whenever, during the Peninsular War, he found it necessary to establish a general hospital, separate wards were invariably appropriated for particular diseases; surgical cases were treated in buildings by themselves; each hospital had its wards for convalescents, and men tolerably advanced towards recovery were removed to a convalescent hospital, which for the most part was situated at a considerable distance in the country. He was a decided advocate for regimental field hospitals in times of active service, instead of those on the general system. When he joined the army of Lord Wellington near Ciudad Rodrigo, the hospitals in the Peninsula were all conducted in that way, all sick and wounded being sent to the rear. Of the condition of the general hospitals at Lisbon and Celerico Sir James gives lively descriptions in his Autobiography (p. 324). In the latter, fever of a low type was the prevailing disease, for arresting the progress of which disease in the army "nothing could have been better devised than the establishment of regimental hospitals in the cantonments of each corps, instead of sending the sick to a large general hospital;" and in the former the social conditions were apparently such, that to completely break up the establishment was the only remedy that was calculated to bring about improvement.* Instead of hospitals such as those, he established regimental ones everywhere, placing them upon a complete footing with regard to establishments and equipment, supplementing them by field hospitals; but his various objections against the general, and arguments in favour of the regimental hospitals, had best be studied in his own work here quoted.

In the course of that volume he states† that in the progress of the war against revolutionary France it was found expedient to establish general hospitals at home and abroad, for the reason apparently that the ranks of medical officers in the army furnished very few indeed who from education and talent were fit for the appointment of physicians to large hospitals. The regimental surgeons, he observes, although a respectable body of men, *from their being appointed by the colonels of regiments, of whom they frequently purchased their commissions*, were by no means possessed of high professional

* See also Gordon's Army Hygiene, pp. 141, 142, 145, 212, 310.

† Autobiography, page 175.

knowledge, much less of general scientific acquirements or university education.

From these considerations, the system had to be introduced of appointing as medical officers to large hospitals men who had no practical knowledge of soldiers, but who were good medical practitioners, and here are some of the results (p. 176) :—" Most of them found that they practised with great disadvantage in a military hospital, in total ignorance of the usages of the service, and of the diseases peculiar to soldiers. Of these not a few malingered, played all manner of tricks in feigning diseases which they had not, and exposed the physician to the ridicule of the commanding officer of the regiment as well as of its surgeon." "In consequence, complaints came from the officers commanding regiments, which were ultimately brought before the Duke of York ; and on this representation being made, Mr. Knight intimated that he would appoint no physician or staff surgeon to the rank of inspector or deputy-inspector of hospitals who had not previously served as assistant-surgeon and surgeon of a regiment." At various parts of his Biography he mentions his desire that regimental hospitals could be substituted for those in use, and his disappointment at having been overruled by the Duke of Wellington. At last his opportunity arrived. During the retreat from Burgos the number of men missing was prodigious (p. 319). They were said to be sick, but he could give no account of them, having received no reports of their having reached any hospital. On going into winter quarters at Grenada, not only was hospital accommodation found to be very inadequate, but medical officers were so few in numbers that Spanish practitioners had to be temporarily employed with the army. "Then," to use his own words (p. 322), "I had an excellent opportunity of putting in full execution my long-cherished plan of regimental hospitals which I had quietly introduced." "Every corps, therefore, had orders from me to construct its own hospital, under the superintendence of the staff-surgeon of the brigade or division of the army to which the corps belonged. This was done in general in a most efficient manner, and everywhere was to be seen a comfortable hospital for the sick, surgeon and commanding officer vieing with each other who would construct the best and most comfortable hospital for his own corps." The result of the measure is especially deserving of attention. "In a short time the march of sick from regiments to the established hospitals in the rear was stopped." Some time afterwards Sir James reported to the Duke of Wellington his "great satisfaction with the regimental hospitals, which were by that time established in every corps of the army."

So much has of late years been said and written on the supe-

riority of the French system of conducting army hospitals over ours that I may be pardoned for quoting still further from the works of this very eminent man. "I think," said he (p. 253), "I have seen every edition of the Regulations for conducting the French hospitals, from the commencement of the revolution to the present time"—meaning the period when he wrote his Autobiography—"and I am free to confess that I see very little to copy from them as an improvement on our own. But one part would certainly be an improvement: I mean the ambulances for the transport of the wounded and sick, particularly of the former." He proposed its adoption in Spain, but Lord Wellington would not hear of it.

Another circumstance recorded, and which at the time I write has a special significance, is thus described by him (p. 369):—"For a long time there had existed a difference of opinion respecting the value of general and of regimental hospitals. The members of the Medical Board had themselves differed much on this subject; and the officers of the department, ranging themselves under one or other of the members of the Board, advocated and adopted their opinion, so that in fact the whole of the officers of the medical department of the army enlisted themselves in time under the two opposing factions." "This conflict of opinion, and these divisions in the Board, had dated from far back, and it is generally understood that an altercation with one of his colleagues was the immediate cause of the death of the celebrated John Hunter."

Cotemporary with Sir James McGrigor in the British army was Baron Larrey in the French, regarding whom a few particulars may with profit be given in this place. In the early part of his public career this eminent surgeon served in the Imperial Navy.* On the 1st of April, 1792, he joined the army at Strasbourg, and soon afterwards was appointed chief of Kellermann's division. His attention being directed to the ambulances then in use, the construction of which required that they should, during an action, remain at the distance of a league from the field, while the wounded had to remain unattended to while the conflict lasted, he set himself to consider how they might best be improved, and soon afterwards introduced the *ambulances volantes*, the invention of which was subsequently alluded to by Napoleon as among "one of the happiest conceptions of the age." When at Milan, with the advanced guard commanded by Bernadotte, he established a school of surgery; and soon afterwards he accompanied the expedition to Egypt, where, by his exertions, he gained the confidence and approba-

* See a "Memoir of Baron Larrey," by Sir C. McGrigor, Bart., pp. 4, 6, 13, 15, 22, 29.

tion of all ; thus, we read that General Figuières, whom he had successfully treated when very severely wounded, having made a present to Napoleon of a valuable Damascus sword in gratitude for the preservation of his life, that illustrious general accepted it, in order that he might present it to Larrey, to whom the credit was really due, and to whom, after having had engraved upon it the words "Aboukir and Larrey," he gave it. But this, as we shall see, was not the only instance of a well-earned compliment being gracefully paid to his medical officer by that great commander.

We next read of Larrey combating the ophthalmia, which, in the form of an epidemic, had attacked the French troops, and adopting in its treatment the means that Sir James McGrigor used among the British. We next find him at El Arish, at which place, there having been a want of butchers' meat, he directed camels' flesh to be used by the sick as a substitute. At Eylau his intrepidity and coolness in the performance of professional duties under the fire of the enemy, again attracted the notice of Napoleon, who rewarded him with promotion in the Legion of Honour, to which he had previously been appointed, directing, at the same time, that the word "Eylau"* should be embroidered on the ribbon. But it was not alone the sick of his own army that he attended and bestowed his attention upon. He felt that it is the duty of a medical man to afford aid to all alike—foe as well as friend. We accordingly read, that when with the army under Soult, engaged in the pursuit of Sir John Moore towards Corunna, he and the officers under his orders treated with every kindness our sick and wounded who during that terrible retreat fell into their hands.

But it is, perhaps, in connection with his behaviour towards the numbers of wounded who, in April, 1808, he had under his charge in the Island of Lobau, in the Danube, that his humanity towards them and the determination of his character shone out most distinctly. His patients were starving, and he found it impossible to import provisions. He therefore, on his own responsibility, ordered a sufficient number of horses to be killed, to make soup for those who required it, an act which—let the fact be recorded for the benefit of his brother medical officers in the British army—earned for him at the hands of Napoleon his elevation to the rank of Baron of the Empire. On the occasion of the battle of Wagram, still so prominent were his services that he was further rewarded with a pension of five thousand francs per annum, and throughout the whole of the operations connected with Napoleon's advance to and disastrous flight from Moscow, the services of Larrey were ever prominent.

* Pages 68, 87, 93, 99, 159, 229.

At the Beresina, for example, he crossed and re-crossed the stream several times in his heroic attempts to provide for the safety of the sick; and when, at last, the perils of that passage were at their height, each man looking only to his own safety, no sooner was this brave medical officer recognized by the soldiers than they raised and carried him across with astonishing rapidity, repeating on all sides as they did so, "Let us save him who saved us."

One other incident in the official career of this surgeon, and I pass on, premising that in these notes I have only selected such as are of a nature calculated to illustrate the duties that fall to the share of the army medical officer, and the various results that follow the steady and unflinching performance of those duties. The incident to which I allude occurred during the pursuit of the French by Blucher and his Prussians after the day had been lost at Waterloo. Larrey, while attending to the wounded, was fallen upon by a body of Prussian Lancers, by whom he was severely wounded, and taken prisoner. He was robbed by them, treated with much indignity, and finally brought before a superior officer, by whom, wounded and bleeding as he was, he was sentenced to be shot. Shortly before the time appointed for the execution of the sentence, he was recognized by a surgeon-major who had previously known him. Larrey was accordingly conducted before Bulow, and finally presented to Blucher himself, whose son, it so happened, he had attended when badly wounded during the campaign in Austria. Blucher accordingly, in grateful recollection of his kindness on that occasion, not only cancelled the sentence of death against Larrey, but granted him an escort to Brussels, where his wounds were speedily healed. Let me commend the career of Larrey to the medical officer of the British army. Let me also repeat, that for his services to his country he was created a Baron of the Empire. What army surgeon has been similarly honoured by the Government of this country?

In 1811, Dr. Thomas Wright had already served thirty years in the army, and held the position of physician to the General Hospital established at Harwich for the reception of the troops sent home sick from Flushing. He published a book on the Walcheren fever; in which he proposed that to restore convalescents to health, they should be sent to colonies where the climate was steady and temperate, as, for example, to Malta, a proposal which was adopted by Government, and with such good results as to have restored many of the best soldiers to health and to the service.* It is still proper that Dr. Wright should have the credit he so well deserves for such a recom-

* *Edinburgh Medical and Surgical Journal*, No. 163.

mendation, made, as it was, before the advantages of change of climate as a means of cure had been fully accepted by the profession in civil life, although, as we have had occasion in these notes to remark, they had already been fully recognized by army medical officers.

Dr. John Thomson, who in 1816 was Regius Professor of Military Surgery in the University of Edinburgh, published his Report of Observations made in the British military hospitals in Belgium, after the Battle of Waterloo, at which he had served as a staff surgeon. After his retirement from army life he continued to hold the position of Professor in that University till his death.

The name of Dr. John Hennen is intimately associated with the numerous advances which surgery owes to the medical officers who served in the Peninsular War. In March, 1800, he was appointed by warrant a hospital mate, and the following month to an assistant surgeoncy in the 40th Foot. He rapidly rose, and having, at the battle of Fuentes d'Onor, in 1811, acted as staff-surgeon to Major-General Dunlop, was by that officer publicly thanked on the field for his services on that occasion. In 1815, he was placed in charge of the Jesuits Hospital at Brussels, and in 1816, being promoted to the rank of deputy inspector-general, was ordered to Portsmouth, as principal medical officer of the south-western district. In 1819 he was removed to Edinburgh, where he published his work on military surgery, a work which in the ten succeeding years ran through three editions. We next read of him as stationed at Gibraltar in 1828, where he enjoyed the unbounded confidence of Sir George Don, who was then Lieutenant-Governor. Yellow fever threatened an invasion; he was labouring assiduously devising the measures to be taken, and with so great a sense of his responsibility that he wrote to the Governor, "Our present situation will be a matter of history, and every measure which may have spread or checked contagion will be rigidly inquired into by the public." There was no want of hygienic knowledge there; on the contrary, on this as on many other occasions, this army medical officer showed how important in his view was the prevention of sickness among the troops. Unhappily he was among the victims of that outburst of the disease.

In his work alluded to, he entered into very full details regarding the preparation, arrangements, and selection of hospitals, whether fixed or moveable, during active service, from which a few extracts may with advantage be taken (p. 51, 2nd ed.) The building should be high, dry, and detached, with sufficient doors and windows to admit of cross-ventilation. The wards should each contain twelve patients; and there should be smaller

rooms for special cases. Long suites of rooms communicating with each other by a common entrance are objectionable. Ground floors should be avoided. On the subject of space, he gives precise directions, which, although perhaps somewhat behind the present views on the subject, are, nevertheless, of importance as indicating that the subject had been carefully considered by him. He would, for example, allow 800 cubic feet of space per patient, and 80 superficial; he observes moreover, that "whatever the height or cubic contents of a room may be, each bed should have a space of at least six feet by six, or thirty-six superficial feet; in rooms with low ceilings, eight by eight, or sixty-four feet, *and as much more as possible*. He repeatedly guards his readers against overcrowding sick, and gives minute directions on the subject of ventilation.

He enters into details on the subjects of recruiting, and of feigned diseases, which at the time he wrote were commonly assumed by soldiers, although now seldom met with. On the subject of invaliding, however, his remarks bear so much upon the important question of medical officers being permitted to remain so long in regiments as to become intimately acquainted with the soldiers that they may be quoted with propriety. In forming a judgment with regard to the alleged disability, he observes (p. 453, 2nd ed.), "the medical officer must be greatly influenced in his decision by their previous habits, character, constitution, and complaints, and by the ostensible reasons which they may have for feigning either." This is by no means the only advantage to be gained from a continuance of the system of having medical officers *belonging to* regiments, but it is a very important one.

Connected with the many improvements for which surgery is indebted to the great revolutionary war the name of Guthrie appears cotemporary with that of Hennen, and in some instances even more prominently. The entire career of this surgeon, both in the army and in civil life, was more than usually busy, and furnishes in many respects an example to be aimed at by his successors. With regard to his military career, we learn from his biographer that in the year 1800 he obtained the appointment of assistant-surgeon in the 29th Foot; in 1806 was promoted to the surgeoncy of that regiment; and in 1807 served with General Spencer at the siege of Ceuta. In 1808 he landed in Mondego Bay, and was present at the battles of Roleiça, Vimeira, Oporto, and Talavera. At Vimeira he received a severe gun-shot wound, and subsequently, when cantoned in the plains of the Guadiana, between Badajos and Merida, was the subject of so severe an attack of remittent fever that he was sent to Lisbon for the restoration of his health, and had to remain at that place several months before

he was able to rejoin the army. When he did join, the army was actively engaged in the pursuit of Massina, and soon afterwards engaged against Soult, at Albuera. He was present on that occasion; at the three sieges of Badajos; those of Ciudad Rodrigo, and Olivenca; at the different affairs that preceded the action of Salamanca, and at that battle itself, where, under Sir James McGrigor, he had charge of the wounded. On the departure of the forces under Lord Hill from Madrid, Guthrie proceeded in charge of the sick and wounded to Lisbon, where, for a time, he performed the duties of principal medical officer, and acquired an immensity of practical experience in actual surgery.

The next service of importance in which we find him engaged was the attendance on three hundred French sick and wounded who had been abandoned to their fate by the Duke of Ragusa.* These, crowded in the convent of San Carlos in Salamanca, were horribly neglected by the Spanish authorities, until by the determination and resolution of this army surgeon they were threatened into a more liberal treatment of them; his conduct on this occasion being acknowledged by the Duke of Wellington. While employed at this place a circumstance happened which may be here recorded. A French officer during a charge of cavalry was severely wounded. He was taken under Guthrie's care, and after a time recovered sufficiently to be restored to his own government on one of the usual occasions when prisoners were exchanged. At the precise time when the exchange took place Guthrie happened to be absent, and he thought no more of the matter. In the following year, when in the neighbourhood of Oporto, he on one occasion was suddenly surrounded and taken prisoner by a body of French cavalry, in command of which he recognized his former patient. The recognition was mutual, and Guthrie was not only set free on the spot, but received the grateful acknowledgment of the Frenchman, whose name has not, unfortunately, descended to us. The circumstance here related, however, is in some respects similar to what happened some time afterwards to Baron Larrey at Waterloo, and which has already been mentioned.

With the battle of Toulouse the military career of Guthrie ended. He was placed upon half-pay in September, 1814, and returning to London, endeavoured to establish himself in private practice; but no sooner did he hear of Waterloo having been fought than he proceeded direct to Brussels, where, although without official position, he was received with the greatest good feeling on the part of his former comrades. There he zealously pursued his investigations, and there in one case performed am-

* Eloge de G. J. Guthrie, par M. Legouest.

putation at the hip joint.* On his return to England he obtained, through the influence of Sir James McGrigor, the appointment to the Royal Hospital of Chelsea, and then began to lecture on surgery, courses of which he continued for thirty years afterwards to deliver. In 1816 he proposed the erection of an hospital for the reception of ophthalmic cases alone, and soon afterwards succeeded in opening that at Westminster. From this time honours came steadily to him. Thus, in 1824, he was admitted member of the College of Surgeons; in 1827 was elected a member of the Royal Society; in 1828 was President of the College and one of the Examiners; and it is said was soon afterwards offered a baronetcy, which for some reason not stated he did not accept.

Among the improvements for which surgery is indebted to this army surgeon, we reckon the method of treating wounded arteries. After the battle of Albuera Guthrie's experience led him to direct opposite conclusions regarding the management of these injuries than those derivable from the writings of Hunter, but the correctness of which have since been acknowledged (pp. 7, 182, 187, 189, 210, 215, 216, 223, 244), namely, the necessity of securing both extremities in case of the vessel being opened. It was to the experience during the Peninsular war that we owe our knowledge of the extent to which collateral circulation may support the life of a limb, the main vessel of which has been destroyed. To the battle of Albuera we owe a knowledge of the fact that wounds of the diaphragm remain unhealed; and to Salamanca the advantage of free incisions in the treatment of phlegmonous erysipelas (pp. 11, 13, 481). Mr. Guthrie was an advocate for the performance of primary amputation in cases of gunshot wounds of the extremities, instead of the delayed operation as proposed by Hunter (pp. 9, 17, 71, 73), attributing the views expressed by the latter to insufficient experience gained only at Belleisle. He advocated excision of the joints as a substitute for removal of a limb wounded by gunshot; and after Waterloo demonstrated the advantages of the straight splint in the treatment of fracture of the femur from those injuries. After that battle he amputated the lower limb of a French soldier at the hip-joint, as already mentioned, without any other pressure being made upon the main artery than that effected by fingers. The case was successful, and was afterwards exhibited in London to demonstrate the fact that the employment of a tourniquet was not indispensable. He considered that amputation at the shoulder joint as a primary operation after a gunshot wound was reduced to its simplicity by the experience of the Peninsular war (pp. 118, 134, 156).

* Commentaries, page 73.

He accounted for the circumstance observed by him, that secondary operations are less successful in military than in civil hospitals. With regard to hospital gangrene, after quoting the views of Brugmans and Blackadder, he gave the results of his own experience after the battle of Santander in 1813, when he destroyed the diseased parts by mineral acids, and formed the opinion that want of sufficient ventilation was among the most potent causes of the malady. Adverting to the still controverted point as to the precise nature of injury of the skull and period after its receipt in which it is proper to employ the trephine, he observes that when by examination the inner table is found to be depressed and broken, "there can be no hesitation in answering that in all such cases the trephine should be employed, although no symptoms should exist, with the view of anticipating them" (pp. 336, 439, 504). He laid down briefly and explicitly the rules according to which penetrating wounds of the chest should be treated, and entered more fully than any of his predecessors had yet done into the treatment of wounds of the abdomen, involving the different viscera of that cavity.

Well, indeed, might he apply the term Amazonian to military surgery as seen by him. A few examples will suffice to indicate how applicable was the expression. After the battle of Toulouse (pp. 139, 153), the sick and wounded amounted to 117 officers and 1,242 soldiers, and were under the charge of two deputy inspectors-general, ten staff surgeons, six apothecaries, and fifty-one assistant-surgeons. Then again, regarding the labours of surgeons of the army, he observes they may be judged of by the fact, that during the last three months of 1813 the number of sick and wounded amounted to 37,144, a number nearly equal to that of the whole army; and the remark is of great importance, as indicating the immense scale upon which arrangements had to be made for their transport, accommodation, attendance, and supplies. Mr. Guthrie took full advantage of the great opportunities he thus enjoyed, as did also many other army surgeons who laboured with him on that occasion, and with what degree of success is best learned from himself, when, in his "Commentaries" (p. 234), written many years after he had retired from military life, he remarked that "the surgery of the Peninsular war was, in consequence of its great opportunities, several years in advance of the surgery of civil life."

No man was more alive than Mr. Guthrie to the disadvantage under which medicine and surgery, whether in or out of the service, laboured, as compared with the other professions. "There is hardly a great functionary, a member of Parliament, nor even a clerk in any of the public offices which may have directly or indirectly to do with doctoring, who does not con-

sider himself by virtue of his office or station better qualified to judge of all matters of physic and surgery than any doctor in the empire" (p. 2). He then contrasts the medical department of the army in these respects with the professions in civil life, and adds truly that the department will never afford to the public that quantum of good it ought to give until this is altered, and until the Director-General shall be placed in relation to the Secretary-at-War in the same confidential situation as the deputy in his immediate departments. He also by his great experience in the profession, out of the service as well as in it, judged rightly of surgery under the two conditions, when he expressed how much that of domestic life was indebted to its sister of military warfare (pp. 163-140) for improvements introduced by the latter; nor was he less correct regarding the value of an efficient medical staff to an army when he wrote that "doctors are not the most ornamental part of an army perhaps, but there are times when many poor fellows find them to be most useful." Nevertheless, he carried with him a lively recollection of the tendency he had witnessed during his military career, to ignore the services of medical officers even by persons who had directly benefited by them, and he looked forward to the time when medical men should be more freely returned to serve in Parliament than they were in his day. It is not only interesting, but important, at the present time, to note these points, and the opinion expressed by this experienced medical officer in regard to them. He felt strongly the truth of what he wrote, and we cannot doubt, that if ever the department of which he was an eminent member becomes the efficient branch of the public service it is capable of becoming, its position and that of its representative officers must be such as he indicated.

In connection with the question of general *versus* regimental hospitals, he entertained very decided opinions, these being in favour of the latter. It is well known that the sympathies of the Duke of Wellington were with those on the *general* system, adverting to which, Guthrie remarks that His Grace's good opinion was gained by his having acted whenever it was practicable in disobedience to the letter, but not to the spirit of the Duke's orders on the subject—that is, by retaining with their regiments all men who were likely to be speedily cured.

His contributions to professional literature were numerous, including, among many others, "Observations on the Diseases and Injuries of Arteries;" "A Treatise on Gunshot Wounds;" "Commentaries on the Surgery of the War in Portugal, Spain, France, and the Netherlands;" "Lectures on Operative Surgery of the Eye;" "Clinical Lectures on Compound Fractures of the Extremities." In fact, his labours were inde-

fatigable ; and while he has been described as the Larrey of England, it has been said of him that no army medical officer since the time of Wiseman had done so much as he to advance the science and practice of surgery.

Among the improvements effected by him at the College of Surgeons was the suppression of certain rules which had for more than twenty years stood in the way of improvements. He raised the position of members, and took steps to ensure a higher standard of general education in candidates than had up to his time been demanded. He advocated the more perfect teaching of anatomy, comparative anatomy, and surgery, and himself delivered, during four successive years, lectures on the various improvements and advances effected in the latter science. He advocated the opening of the library to all members of the College, and was the means of instituting the regulation by which assistant-surgeons in the army and navy were subject to examination prior to promotion from those grades.

The name of Dr. Bancroft is most especially known in connection with a standard work on "Yellow Fever," of which he was the author. In 1795 he was appointed Physician to the Forces, and in that capacity served in the West Indies, Portugal, the Mediterranean, Egypt, and England. In 1807 he published the work in question, some of the opinions expressed in which he is stated subsequently to have abandoned.* This is not the place to discuss his views regarding the origin and manner of propagation of that disease. That has been done in a special work by Sir William Pym ; I cannot, however, resist an allusion to his views in reference to some questions of general hygiene. He considers that fever or other disease of an infectious nature is neither produced by emanations from masses of decomposing dead (p. 117), nor by combined overcrowding and filth (pp. 123, 306, &c.). It is true that the history of the "Black Hole" of Calcutta, the *Black Assize* at Oxford, in July, 1577, and the great gaol experience of John Howard, are all opposed to the latter part of his theory ; yet he disposes of them by the simple conjecture that the infection was introduced from without—that is, from the less crowded to the more crowded (p. 144). He is aware that the diseases classed as *malarious* often prevail in localities that are free from marshes, but in which water is to be found at an inconsiderable distance below the sandy surface (pp. 91, &c.). He gave instances (pp. 222, 186, &c.), illustrating the small distance from shore that is sufficient to render the crew of a vessel exempt from disease having a paludal origin, and pointed out (p. 229) the greater measure of health enjoyed in the West Indies by

* *Edinburgh Medical and Surgical Journal*, No. 163.

troops occupying upper, as compared with those on lower, floors. He repeated the fact, already well known in Italy, that exposure to malaria during night was especially dangerous (p. 23), and expressed a belief (p. 239) that malaria may lie dormant in the system several weeks, and then exert its baneful effects for the first time, it may be, after persons have left the unhealthy locality. In the case of Walcheren, men were for the first time seized with intermittent fever, seven, eight, and even nine months after having left that island (p. 241).

In these days of sanitary commissions, it is satisfactory to learn (p. 394) that when yellow fever occurred in the City of New York in 1804, a *Board of Health* was formed; and to note that even much earlier than that time public interest was, in some instances at least, directed to the best means of preventing disease. Thus (p. 479) in the year 1766, "orders from His Majesty were sent to Gibraltar, Grenada, Antigua, Jamaica, Senegal, and North America, for reports to be furnished as to the best time for troops to arrive at each of those places.

Although it is not my intention to summarise all the views expressed by Dr. Bancroft on the subject of yellow fever, there are some points noted by this author to which it may be profitable to turn attention; these points having an apparent similarity to some of the phenomena connected with cholera in India. How far the similarity is, or is not, more than accidental, it will be for army medical officers to decide.

1. A person may, according to him, be repeatedly attacked by yellow fever (p. 245). So he may be by cholera.

2. Yellow fever chiefly attacked the more recently arrived (p. 262). It has been clearly shown by Dr. Hugh Macpherson, of the Bengal Medical Service, that seventy-five per cent. of the mortality by cholera in Calcutta takes place among what he terms "the floating population," that is non-residents.

3. He several times, but especially at pages 282, 357, 364, 374, and 410, alludes to the connection which he believed to exist between yellow fever with intermittents and remittents. The existence of fevers and cholera, or the supervention of the one disease upon the other in epidemic fever in India has been noticed by various writers, as also the circumstance that the first onset of intermittent fever and cholera in individuals is often so much alike that the diagnosis is, for a time, a matter of difficulty.

4. Yellow fever often made its attack after hard drinking, violent exercise, and sleeping in the open air,—in other words, after a debauch. Strong men are most liable to it (p. 346). So it also is with cholera; the distinction being drawn between a debauch and the strong hard drinker.

5. Yellow fever, after extending along one side of a street,

"has been seen to stop, as it were, and even to retrograde" (p. 459). How often cholera doubles back upon itself in its track is well known to Medical officers in India.

I have endeavoured to quote the views as expressed by this army medical officer in regard to the very serious disease of which he wrote. In fairness, however, I must observe that some of these views have been more or less successfully combated by subsequent authors. Among those more especially that have been so, is the opinion that yellow fever attacks a person more than once, in regard to which it has been asserted, and apparently not without reason, that Dr. Bancroft failed to draw sufficient distinction between the ordinary remittent fever of the country, and the pestilential form of disease known as yellow fever, and which must be looked upon as a disease *sui generis*. This is not the proper place to discuss at length such questions, but the references I have made to his work are sufficient, I trust, to indicate the extent to which the profession is indebted to him for a description of this scourge of the West Indian Islands.

The name of Sir William Pym, like that of Dr. Bancroft, is to be recorded chiefly in connection with his work on yellow fever, and investigations regarding the nature and mode of propagation of that disease. In 1815 he published his observations on the bulam fever, which had shortly before prevailed in the West Indies, on the coast of America, at Gibraltar, Cadiz, and other parts of Spain. In 1848 he produced his "Observations upon Bulam, Vomito-negro, or Yellow Fever," adding to the views expressed in the earlier work, his observations on the disease as it occurred in Her Majesty's ships *Bann*, *Eclair*, and others. It is only necessary in this place to state generally that his views, in regard to yellow fever, were diametrically opposed to those held by Dr. Bancroft. He held that the yellow fever, instead of being a modification of the ordinary epidemic fever of West Africa, was specific in its nature, that it was highly contagious, and that it only attacked the same person once. He believed (pp. 37, 51, 65, 66, 265) that, after prevailing in epidemic form one year, the disease may, under certain circumstances, become dormant during winter, to be raised again into action by the summer's heat; and he took every opportunity to impress upon his readers the extreme healthiness of the West India Islands, except on the occasions when they are visited by outbursts of that disease. Thus, he extracts the views of Mr. Weir, formerly Director-General, whose experience dates from 1785; between that year and 1792, only one officer died out of four regiments quartered in Jamaica; that the troops were generally healthy, and, although fevers were frequent, they were not fatal, the

10th and 19th Regiments having lost only one man each in twelve months. He further states, and the assertion is an important one, that he never knew fever of a bad type prevail there before 1793 ; that, although cases of yellow fever occurred, they were solitary instances, confined chiefly to those who committed irregularities, and exposed themselves to the sun. In that year an uncommonly destructive fever made its appearance, and committed most dreadful devastation among the troops.

He was of opinion that the poison remained in the system only a few days before developing its effects, and that, therefore, a short quarantine only was necessary against the disease, but considered that the poison became intensified under certain circumstances,—as, for example, in a low locality, crowded and unventilated houses, such as existed in some parts of the town at Gibraltar. He points out that much of the difference of opinion that has been expressed on the subject of this disease has arisen in consequence of two distant and separate affections having been confounded together, one being the ordinary malarial fever which is not infectious, and which usually ends in ague ; the other, a *specific* fever, which has no connection with malaria, is attended by black vomit, is highly infectious, and does not end in intermittent fever.

With regard to the measures taken by this medical officer when yellow fever broke out in epidemic form, it may be well to note the following, as they have a direct bearing upon questions of hygiene that have comparatively recently been proposed as new. When in 1794 the disease had appeared with virulence in the 70th Regiment, then stationed at Martinique (“Observations” of 1848, pages 7, 22, 24), the first measure he had recourse to was to have the men “encamped upon an airy, elevated spot of ground, Point Negro, close to the sea, about two miles and a-half distant from the town, where they experienced an almost instantaneous change for the better.” When in 1804 the disease prevailed at Gibraltar, communication with the ships was interdicted ; the troops were encamped outside the town, and the beds on which men who died had lain were burnt. Here, however, the barbarous system was in force of two men sleeping in one bed, and the consequence was, as may readily be believed, that when one of them became affected with the malady, the other was so soon afterwards. He proposed that all the men who had suffered from the disease in the West Indies should be employed on hospital duties, burying the dead, &c. ; that a camp should be established into which convalescents from the disease should be sent ; that the regiment should be encamped ; when a man was taken ill, he should be conveyed to hospital by persons who had had the

disease ; his bedding and tent washed, and the other men in the same tent placed for a time in quarantine of observation. The advantages of similar isolation in the case of officers is dwelt upon, and instances recorded in which a breach of the measure was followed in families by fatal consequences.

Adverting to the comparison of the general laws of yellow fever and those of cholera, to which I have endeavoured to draw attention, I would observe that this writer saw only one point in which they assimilated. This was the liability of hospital attendants to be attacked, but with this modification, that while he considered that one attack of pure yellow fever protects against recurrence, such is by no means the case in cholera.

The points in which it differed from cholera were, according to him—

1. In immunity of its subjects from a second attack. (Pages 23, 24, 34, 43, 46, 59, 60, 95, 265.)

2. It seldom attacks natives of Africa and West Indies when prevailing in those countries ; and when it does so, in a mild form. Cholera, as is well known, is often equally, and in some instances more, fatal among natives than among foreigners.

3. It is confined to West Africa, West Indies, South America, coast of Spain, and Mediterranean. Cholera has travelled over the world.

4. Cold weather, or a latitude beyond 48° N. or S. destroys it. Not so with cholera, which extends to all latitudes and climates.

5. It affects children and young persons in a comparatively mild form. Cholera, on the other hand, is equally fatal in children and the young as in elder persons.

In 1821, Dr. E. T. Luscombe published his practical observations on the means of preserving the health of soldiers. He had served as Surgeon of the 2nd Battalion of the 34th Regiment in Lord Hill's division in the Peninsula ; and in the work in question pays willing testimony (pages 5, 11, 91) to the great care which the Duke of Wellington bestowed upon his sick when cantoned near Guadiana in 1812. Among the rules which he laid down for protecting troops on service from miasmatic diseases, the following may with propriety be noted, namely :— That they should be well clothed ; have liberal animal diet ; a moderate daily allowance of beer, wine, or spirits ; regular exercise and cheerful occupation ; but avoiding intemperance and fatigue. That they should occupy upper storeys ; that they should have breakfast before exposing themselves in the morning ; that the number of sentries at night be diminished to the utmost ; and that they should use in moderation tobacco, bark, or *any other* stimulant.

His general hygienic rules for troops may thus be briefly epitomised, viz. :—

Recruits should not be taken until they have reached manhood; height alone is no criterion of efficiency; those from agricultural employment are most to be desired.

Diet.—The materials should be of the best; soups are preferable to and easier prepared than broils. The best breakfast is oatmeal porridge with milk; the next best, coffee or cocoa.

Clothing should be given at the end of summer instead of at its commencement. Much attention should be bestowed upon the shoes with which the men are fitted. He found the flannel issued to the men was so badly washed that he recommended that rather than use it in such a state the men should dispense with it altogether.

Foreign Service.—That men should before embarking be trained in cooking, packing necessaries, constructing huts, repairing and washing their linen. That they should arrive at foreign stations at the most healthy seasons.

Camps.—To be on dry ground, rising soil, well supplied with good running water and fuel, and away from marshes. That the men be well supplied with tents and blankets.

Barracks should be erected only in situations which have been found by experience to be healthy; the rooms to hold eight to twelve men; to be well ventilated, and kept clean by scrubbing; washing them with soap and water to take place *once* a week in favourable weather.

Bedding.—To be aired two or three times a week; washing and drying to take place in proper sheds.

Personal Cleanliness.—Highly inculcated.

Pay.—The system of monthly pay was condemned as injurious, and the establishment of savings' banks inculcated.

Religious Instruction also urged.

Sir James Fellows served as Inspector General of Hospitals in the Peninsula. He deserves to be mentioned in this place, however, principally on account of his work on the "Fevers of Andalusia," including the epidemics of yellow fever by which Cadiz and Gibraltar were visited on various occasions from 1800 to 1813. Like Sir W. Pym, he was convinced from experience that true yellow fever only attacks a person once (his Reports, pages 67, 102, 127, 198); and he quotes Spanish authors in support of that view. He is equally convinced as to the communicability of the disease by contagion or human agency; and it was on this theory that the measures against the disease were proposed by him. Thus, when in 1804 the malady ravaged

Gibraltar, officers were directed frequently to inspect the married men's rooms ; soldiers were prohibited from going into the town, the disease having first showed itself there ; men of one regiment were not to enter a canteen of another ; fatigue parties were not allowed to straggle, nor were the men, from idle curiosity, to join in funerals or look at the dead. On this occasion, also, habitual drunkards and persons enervated by debauchery, as well as those committing excesses, were very liable to attack, and seldom recovered ; new-comers were especially liable to the disease ; and he wrote strongly (page 199) against the depressing influence exerted on the sick by the ceremony and pomp of the Romish Church. "Nothing," said he, "can be conceived more alarming to a sick person than to see so many solemn faces and strange people in his apartment, with a profusion of torches, &c. ; whilst the sound of the little bell which announces the arrival of the procession must tend rather to depress than to animate the patient."

Among the measures adopted when the disease again appeared at Cadiz in 1810 (page 212), the troops were encamped, great care was bestowed upon their food ; a comfortable hot breakfast, with cocoa, coffee, and sugar, was issued to all before mounting guard or picquet in the morning, and no man was permitted to go out in the morning without *something warm upon their stomachs*, the want of which in South Beveland contributed in a considerable degree to the great sickness that there prevailed. Each man was permitted to have a pint and a half of porter daily, and to those employed on night picquets or on duty near the marshes the usual ration of spirits was allowed. All communication was cut off between the city and the Isle de Leon, where the troops were located (pages 217, 226, 240), the result of which measure was that no case of the disease appeared among them.

Adverting to the outbreak of 1813 at the same place, he animadverts strongly on the evil results of crowded transports, and urges the necessity of allowing to patients sufficient space and ventilation in hospital, and that those labouring under yellow fever should be carefully separated from all others. He adverts to the indifference (pages 250, 306) shown by the Spanish authorities on that occasion, and to the melancholy consequences of that indifference ; he points out the importance of paying early attention to the trifling complaints of soldiers, and of meeting the first symptoms of this disease by preventive measures, so as to *interrupt* the formation of the malady ; by which many valuable lives may be preserved, which by neglect or inattention might be lost.

Continuing the analysis of the points in which the characters of epidemics of yellow fever resemble and are different from

those of cholera, I would record those noted by Sir James Fellows regarding the former disease. Among the points of similarity he mentions the following, namely:—

1. On the authority of *Salvaresa* (foot-note to pages 27-45), a Spaniard, he states that, when in 1764 yellow fever occurred at Cadiz, the animals were first affected, insects appeared in great numbers. (He also alludes to the circumstance of deaths among dogs and mules as a forerunner of pestilence in the Grecian camp before Troy, as related in the *Iliad*, i. 69.) A similar occurrence took place there during the outbreak of fever in 1800, when domestic animals died with the same symptoms as the persons who had the disease; dogs, cats, horses, poultry, and canary birds were similarly affected, the latter having died voiding blood from the mouth.

2. Although persons were attacked at all hours, the most common period of seizure was 4 to 5 a.m. (Page 52.)

In the latter part of 1809 this medical officer was placed in charge of the General Hospital established at Colchester for the reception and treatment of the sick from Walcheren, and a section of his work is devoted to a consideration of that disease. Like Sir James McGrigor, he pointed out (page 339) the evils of the practice then often followed of discharging men from hospital before they were perfectly fit for duty. He alluded to the evil results that occurred to the 43rd Regiment from the system of taking the troops in South Beveland out to exercise before sunrise, quoting Sir John Pringle in support of his views.*

Dr. Millingen,† about this time, was labouring to advance the profession of which he was a member, and to improve the condition of the soldier. He served in the 31st Regiment as surgeon; and in 1819 published a manual for the use of army medical officers. He advocated the establishment of a large school where young medical officers should undergo a course of training for their special duties—a project which, although, as we have already seen, was mooted before the time of Dr. Millingen, nevertheless deserves to be mentioned in connection with his name. He suggested that professors should be selected from among the most able medical officers, for the purpose of teaching the theory and practice of medicine, theory and practice of surgery, military hygiene, and morbid anatomy.

The plan first recommended by Jackson of assembling a board of health on the arrival of troops in a new or unknown country, was strenuously advocated by Dr. Millingen, who, among the points to be considered, enumerates the soil, nature of productions, the usual diseases of the country, the districts or provinces

* See Sir John Pringle's "Observations," page 179.

† See Balingall's "Military Surgery," page 53.

in which they most prevail, the seasons of the year and prevailing winds that are reckoned most unwholesome, the particulars as to their mode of living and temperance of the inhabitants, and the modes of practice followed by the resident physicians.

Henry Marshall served in Ceylon from 1808 to 1820, part of the time being in the 1st Ceylon Regiment. In 1821 he had attained the rank of staff-surgeon, and then published his "Notes on the Medical Topography of the Interior" of that island. That work contains many interesting details with reference to the natives and their usages, but is of value to the army medical officer chiefly as it applies to troops. At the time he wrote the troops employed in Ceylon consisted of Europeans, Kaffirs, Malays, and Indians (pages 74, 78, 80). Malays were liable to consumption, asthma, and other diseases of the chest; to intermittent fever and to "pocky itch." The Kaffirs, who were principally natives of the Eastern coast of Africa, were very liable to chest affections and to cachectic diseases; their susceptibility to the cause of endemic fever was noted by the author; yet so unfavourable was the effect of the climate of Ceylon said to be upon them, that of many thousands who had been brought to the island by the Portuguese, not a trace of them was then to be found, and the same may be said of a colony of Africans who were imported about the year 1782 by Governor Van de Graaf. It would appear that a colony of African women was also about the same time imported along with the males, the females being allowed a daily ration at the Government expense. These prudential measures, however, availed nothing; all the children of African parents, although in early infancy plump and healthy, began to droop after five or six years of age, and expired before they reached ten or twelve.

The Indian troops were chiefly natives of the northern part of the peninsula. Their diseases were usually very simple, consisting of intermittent fever and "Malabar itch." When attacked by maladies in a severe form, they showed little fortitude, and often complained without an adequate cause. Their minds wanted fortitude, while their frames possessed little of the power of resistance or power of renovation (page 82).

He informs his readers that the daily ration of the European soldier in that island consisted at the time he wrote of 1lb. of beef, 1 $\frac{3}{4}$ lb. of rice, about 5oz. of arrack, and a small quantity of salt. Part of the rice was made into meal, which was afterwards made into a kind of bread. The meat was, for the most part, cut into small pieces and curried; it was then eaten with rice. In well-regulated corps, the breakfast consisted of rice cakes and coffee; dinner of curried beef and rice; supper of rice cakes and coffee (page 75). The extent to which intemperance prevailed among them, and the many evils that arose therefrom, were

commented upon and deplored. Of the interior economy of their hospitals, he informs us that they were conducted *nearly* in conformity with his Majesty's regulations for regimental hospitals (pages 87, 145, 152, and 176).

Adverting to diseases, he observed that the Europeans were more liable than the other classes of troops to be attacked with hepatitis; that the liver often attained a size of $2\frac{1}{2}$ lbs. to 5 lbs. without any other morbid appearance being apparent in the viscus. With regard to dysentery, he observed that the same causes which excite fever will also occasion that disease. Of cholera he gives details from the date of its first appearance at Jafna in December, 1818, and extension to the troops in the Kandy provinces in February, 1819. On both these occasions the European constitution did not yield so rapidly to the disease as did the Kaffirs, Malays, and Indians (pages 190 and 195); yet the mortality among them is stated to have been 7 out of 22 admitted; among Kaffirs it was 9 in 12; among Malays 3 in 5; and among Indians 31 in 51.

Mr. Marshall entered somewhat at length into the consideration of the disease known as *Beri Beri*,* as it arises in Ceylon, quoting from Bontius, Lind, and Christie in regard to it. This disease was said to have been very prevalent among the troops of all classes at Trincomalee at the commencement of this century, as well as among the Madras troops at Colombo; the chief causes of the affection being said to have been want of stimulating and nourishing diet, moisture, impure air, despondency, dirtiness, and such other circumstances as tend to debilitate. In 1839† he published a second and enlarged edition of a work on the "Enlisting, Discharging, and Pensioning of Soldiers." Regarding the two latter points, the conditions are now so completely altered from what they were in Mr. Marshall's day, that it is unnecessary to further allude to his remarks. With reference to the recruiting, however, the instructions laid down by him were taken as a guide throughout the service for years, and have not yet been superseded. "Upon entering the inspection-room the recruit is to walk a few times pretty smartly across the apartment, for the purpose of showing that he has the perfect use of his lower extremities. He is then to be halted, and set up in the position of a soldier under arms, with the knees about one inch apart, and examined both in front and rear from head to foot. Should no material defect be discovered during the survey, the examination may go on. The recruit is then to perform, in imitation of the hospital sergeant, the

* Doubtless so called from *Beri*, Hindostanee for sheep, the gait being like that of that animal. (Pages 164—202.)

† He had meantime obtained the rank of Deputy Inspector-General.

following evolutions:—To extend the arms to right angles with the trunk of the body; then to touch the shoulders with the fingers; next to place the backs of the hands together over the head. In this position let him cough, while at the same time the examiner's hand is applied to the rings of the external oblique muscles. Let the inspecting officer examine the spermatic cord and testes; then pass his hands over the bones of his legs. The recruit next stands upon one foot, and moves the ankle-joint of each extremity alternately; when any doubt is entertained respecting the efficiency of this joint, or any part of the inferior extremity, he should be made to test his strength by hopping upon the suspected limb for a short period, and the size and aspect of the corresponding part of the opposite limb should also be accurately compared. He is next to kneel on one knee, then on the other, and subsequently on both knees; let him then stoop forwards and place his hands on the ground, and while in this position it ought to be ascertained whether he be affected with hæmorrhoids. He is then to extend the superior extremities forwards for the purpose of having his arms and hands examined, and with this instruction he is to perform flexion and extension of the fingers, and to rotate the forearm. The head is next to be examined, including the scalp, ears, eyes, nose, and mouth. The surgeon is then to ascertain that he possesses the function of hearing and the faculty of distinct enunciation. In regard to the mental faculties, the inspecting medical officer should invariably ask a recruit a few short questions, as to what corps he belongs to, or what occupation he had previously followed, &c., &c., or adopt any other means which he may deem necessary to ascertain the condition of the intellect (page 38). It would be difficult to devise a more complete code of instructions than is here given.

Mr. Marshall was a somewhat voluminous writer, and a not infrequent contributor to periodical literature. In an article in the "Edinburgh Review" he alludes to the sad mismanagement that had brought about the destruction of the army sent to Walcheren, and to the culpable ignorance of authorities who should have been better informed in regard to the climate and diseases of that locality. "The expedition to Walcheren," so he wrote,* "planned and conducted as it was, was the fruit of statistical ignorance in everyone; everywhere, from the Prime Minister to the Commander-in-Chief, and from him to the surgeon's mate. That ignorance, which every Middleburghian and Dutchman could have enlightened or dispelled, lost us 10,000 brave men, not a little money, and not a little credit."

Sir George Balingall served successively in the 33rd Regi-

* See Martin's "Tropical Climates," page 416.

ment and in the Royals. He was with the expedition to Rangoon in 1824 and 1826; served at Ceylon and Penang; and on retiring from the army succeeded Dr. Thompson as Professor of Military Surgery in the University of Edinburgh, where for many years he took a prominent and successful position. His publications were, "A Treatise on the Diseases of India," his "Introductory Lectures," and his "Military Surgery;" the latter and most important of his works running through four editions. In it he enters fully into a consideration of the diseases and injuries to which soldiers are liable at home and abroad, in peace and in war, and gives a series of valuable remarks on general subjects of hygiene, as, for example, recruiting, diet, clothing, exercise, accommodation, hospitals, and transport. He collected almost all that had previously been written on the subject of hospital gangrene, and pointed out that free ventilation and cleanliness were the most effectual remedies against that disease. On the subject of wounds by gunshot he discussed the various arguments made use of by the advocates of primary and secondary amputation, and entered into a somewhat lengthy argument as to whether the operation according to the circular method or flap is preferable. On the subject of military punishment he amassed much historical information from Hamilton and Marshall, and gave many particulars regarding some, the very names of which are now obsolete, such, for example, as the *wooden horse*, *picketing*, &c.

One point must be mentioned in this place, namely, that Sir George Balingall, even in the latest written of the works under notice, adhered to the opinion he had at an early period formed regarding yellow fever, namely, that it was but an aggravated form of marsh remittent (page 540), a circumstance which is the more extraordinary, considering that he had had time to consider the arguments against that view brought forward by Sir James Fellowes and Sir William Pym.

On the subject of military hospitals, he observes that they are divided into regimental and general; the latter sometimes characterised as *general but necessary evils* (pages 96-98). Amongst the objections which he urged against these were, that they aggravated and sometimes generated disease, that patients got into slovenly and irregular habits, and that although they are indispensable on service, the evils in question are inseparable from them. In favour of the regimental hospitals he quoted Sir James McGrigor's opinion, as also those of Dr. Millingen and Mr. Guthrie, all of whom were loud in praise of the latter establishments.

In resuming my remarks on the progress of the army medical department as a distinct branch of the service, I have now to consider the changes that have taken place in it during the

present century—a task which becomes somewhat invidious, from the risk I run of treading somewhat upon existing interests. This, however, I shall endeavour to the best of my ability to avoid, and shall adduce nothing except that for which I am able to quote authority.

We have already seen the condition of the department at the latter end of the 18th century. The first alteration—and it was a very small one—that was made during the period took place in 1802, in which year a new grade of medical officers, called *District Surgeons*, were employed in recruiting districts for the purpose of examining recruits. Twenty-six of these were employed in 1808; but by an order of the Horse Guards, dated February, 1810, staff surgeons superseded them.*

Adverting to the state of the administrative branches, immediately prior to the time when Sir James McGrigor attained its direction, he himself gives some account in his Biography. Mr. Knight, Inspector General of the Army Medical Board, and Mr. Keate, Surgeon General, had both been raised to their respective posts from being surgeons in regiments of the Guards, Sir Lucas Pepys, Bart., being at the time Physician General. The selection and promotion of individual officers seems at once to have become a source of misunderstanding between the three members of this trio;† but this was not the only inconvenience that arose from the board being constituted as it was. When the extent of the sickness and mortality which were fast destroying our army in Walcheren had attracted the attention of the public, one of the members of the Medical Board was directed to proceed to the spot and enquire into the state of the troops generally. The selection fell on Sir Lucas Pepys, the only one of the three who was without actual experience of troops; and, unfortunately for the credit of the position which he then held, he declined the mission on the ground that he was not acquainted with the diseases of soldiers, in camp or in quarters. Equally unfortunate it was, that neither of the other members of the Board volunteered their services, as the circumstance brought ridicule and contempt upon all (pages 242-372), and ultimately led to the dissolution of the Board and the appointment of another. The new Board consisted of Dr. Weir, Sir Charles Kerr, and Dr. Gordon, all of whom had seen much and varied service. The incumbency of Dr. Gordon, however, was short, and on his retirement he was succeeded by Sir William Franklin; and Dr. Kerr having, after a few months retired, his place was taken by Dr. William Somerville. In 1816, the two prin-

* Marshall on "Enlisting and Discharging," page 258.

† Sir James McGrigor's Autobiography, page 171.

principal inspectors were discontinued; but in 1818 one of them was restored as professional assistant to the Director-General, and so continued until very recently, when the appointment seems to have been permitted to subside.

In 1813 the grade of hospital mate was abolished on the staff, as it had previously been in regiments; it being replaced by that of hospital assistant, who, for the first time, attained the rank of commissioned officers.

In 1824 various changes connected with the department were made, of which I am able to record the following—namely, in the month of July it was directed that hospital sergeants should be appointed to battalions of Infantry at home and abroad, except India; and in October of the same year, the appointment of acting hospital assistant was discontinued, on the sergeants being nominated.

In 1826 a very important step was taken by the Medical Board; an order was issued, instituting the examination of all assistant-surgeons prior to their promotion, with a view, as it was expressed, “to ensuring to the army the regulated proportion of medical staff in the most efficient state.”

In 1830 considerable changes took place in the nomenclature of the different grades of medical officers. By warrant dated 27th July, the ranks of apothecary and hospital assistant were abolished, the latter officers receiving the designation of assistant surgeons; the title of physician to the forces was also discontinued, the following being the designations introduced—namely, assistant surgeon, regimental surgeon, staff surgeon, assistant inspector of hospitals, deputy inspector general of hospitals, and inspector general of hospitals.

In November, 1840, a warrant was published, dated the preceding month, abolishing the rank of assistant inspector, and substituting the title of staff surgeon; and in 1841 this was further modified, the latter rank being divided into 1st and 2nd class.

With regard to rates of pay, prices paid for stamps on commissions, &c., for the various grades of the medical department, I am able to give the following information, obtained from the Army List for September, 1818, namely:—

		£	s.	d.
Director-General	... .. per annum	2,000	0	0
Principal Inspector	... .. ”	1,200	0	0
Inspector of Hospitals	... .. per diem	1	17	11
Deputy-Inspector of Hospitals	... .. ”	1	3	9
Physician	... .. ”	0	19	0
Purveyor of Hospitals	... .. ”	0	19	0
Deputy-Purveyor of Hospitals	... .. ”	0	9	6
Surgeon	... .. ”	0	14	3
Ditto after 20 years' service...	... .. ”	0	18	10
Surgeon of a Recruiting District	... .. ”	0	10	0

	£	s.	d.
Assistant-Surgeon per diem	0	7	6
Apothecary "	0	9	6
Hospital Assistant "	0	6	6
Ditto abroad... .. "	0	7	6
Dispenser of Medicine and Purveyor's Clerk, each	0	5	0
Ditto ditto abroad	0	6	0

Stamp Duty on Commissions.

Director-General of Hospitals	21	9	6
Inspector-General of Hospitals	12	17	6
Ditto by brevet	12	17	6
Deputy-Inspectors	11	7	6
Ditto by brevet	11	7	6
Physician	10	17	6
Surgeon	10	2	6
Assistant-Surgeon	5	7	6
Surgeon of a Recruiting District	9	12	6
Purveyor	10	17	6
Deputy-Purveyor	9	12	6
Apothecary	9	12	6
Hospital Assistant	4	19	6

The late Sir James McGrigor, than whom no man has done more to raise the position of the army medical officer, informs us that soon after the commencement of the revolutionary war with France, the greatest difficulty was experienced in getting qualified men to enter the service; that advertisements were published in the newspapers, and placards posted on the college gates of Dublin, Edinburgh, and Glasgow, offering commissions to such as could pass some kind of examination, and that this state of matters continued until nearly the close of that war. Government having at last found it necessary to concede increase of pay and half-pay, and to hold out other inducements for a superior class of men to enter, many of finished education and great endowments did so.

Adverting to the necessity of employing medical officers of the very highest qualifications, he observed* that "it is not only in the cause of humanity, but that of a sound policy, that the State should provide all medical or surgical advice for the soldier when sick or wounded." "The soldier should not be consigned to the ignorant and uneducated of the profession; he is clearly entitled to the same quality of advice as when he was a citizen." Bearing these considerations in mind when he had become Director General, at the end of the war he caused the reduction to half-pay of many men who were then serving, he recommended those whose active services were thus for a time dispensed with, to betake themselves to colleges and schools, at home or abroad, intimating at the same time that only those whose qualifications were highest, should be deemed eligible for promotion to the higher grades. Several of those who had been

* Autobiography, page 94.

retained on full pay applied, on the strength of the new rule, for leave of absence for six and twelve months to prosecute their studies, and altogether the effect was marvellous; a new spirit of emulation appeared, which gained for the department much credit with our brethren in civil life; and, as Sir James with no little pride observes, "in the ranks of the medical officers of the army men are to be found upon a level at least with those in the Colleges of Physicians and Surgeons of London, Edinburgh, Dublin." At a subsequent part of his memoir, from which I quote, he recurs to the subject in these terms (p. 197):—"Taking the profession in civil life generally"—"there are comprised in the body of the medical officers of the Army, not fewer men of literary attainments and university education than in the ranks of civil life."

Prior to 1812 we read of no general acknowledgment in military despatches of services rendered in actual war by medical officers. In that year, on the occasion of Badajos being captured, after one of the most bloody assaults on record, 3,500 men having been struck down during that single operation, in addition to 1,500 in the preliminary operations, Lord Wellington expressed that he himself had witnessed the fact that the medical officers did their duty as well as their brethren. Sir James McGrigor took advantage of the opportunity to suggest that nothing would more gratify those officers, or be a greater incentive to their exertions on future occasions, than his lordship noticing them in his public despatches: a concession which, after a little hesitation, he granted. (Page 278.)

In the preceding remarks, far from exhausting my subject, I have, through circumstances that the reader cares not to know, been considerably restricted in my consideration of it. Many army medical officers, who have done good service and been instrumental in advancing the profession of which they were members, have not even been named, and I fear the summary given of the important services of those enumerated has, in some instances at least, not been so full as it should have been. I trust, however, that, imperfect as my sketches confessedly are, they may induce some of my professional brethren to follow up more ably and fully than it has been in my power to do the story of army surgeons and their works. I would desire to recapitulate a few of the principal, arranging my remarks, for the sake of convenience, into those bearing upon—1, Hygiene; 2, Medicine; 3, Surgery; and 4, General Subjects.

1. *Hygiene*.—It is not too much to assert that the writings of army surgeons contain all those principles of hygiene which have of late years been brought forward, as if so many recent improvements, but without the names of their real authors being so much as mentioned. To an army surgeon—namely, John

Woodall—in the first half of the seventeenth century, soldiers and sailors are indebted for the introduction of lime-juice as a preventive of scurvy. Sir John Pringle, when in charge of the army in Germany, in 1742, under the Duke of Cumberland, inculcated the removal of sick from low marshy localities, and pointed out the superior salubrity of upper as compared to lower storeys in buildings; in which views he was afterwards conjoined by Fergusson in Barbadoes, Sir George Balingall at Seringapatam and Java, and by many other army medical officers. He protested against the descriptions of buildings used as hospitals in his day, asserting that they were among the causes of sickness to which the troops were liable, and a large portion of his work is taken up by observations on the means of preserving health. When in 1746 he proceeded with the army to Scotland, he inculcated the necessity of making a proper distribution of the sick in hospitals, and of avoiding overcrowding; he described the various causes of sickness in armies, whether they affected individuals or soldiers in the mass. Dr. Brocklesby, about 1750, protested against the barracks then existing or being built. He described the hospitals of that day as being such “as would quickly destroy those who should be confined in them, even if sent to them in perfect health.” He objected to the arrangements then made on board ships employed in the transport of troops; and he issued a series of rules for the hygienic management of troops under those circumstances. In 1763 Donald Monro wrote an essay on the means of preserving the health of soldiers, describing therein the various circumstances in which troops may be placed, and giving minute instructions with reference to each of them. Among other services he laid down a plan of ventilation suited to hospitals. It was also Dr. Monro who first introduced a special diet for the use of the sick in hospital. Dr. Rollo, and after him Dr. John Bell, protested against the system in force in the West Indies of only giving sick men in hospital, whatever the nature of their complaints may have been, their ordinary barrack rations, including, as these did, salted pork and rum. He also strongly recommended the substitution of malt liquor or wine instead of spirits for those in health; and would have in each regiment an establishment such as subsequently was formed under the name of a canteen. Dr. Hamilton, following the example of Brocklesby, protested against the buildings used respectively as barracks and as hospitals; and he urged upon the authorities the propriety of issuing suitable food to the sick while under hospital treatment, in place of the ordinary rations with which they were then supplied. In 1788 Dr. John Hunter published his work on diseases of the troops in the West Indies. In that work he gave many valuable rules for preserving health;

and he was the first who discovered the danger to health occasioned by the conveyance of potable water through leaden pipes. Three years afterwards another army surgeon—namely, Dr. John Bell—published his work on the means of preventing disease in the West Indies. In 1792, Dr. Gordon, then Surgeon of the 13th Foot, published a series of rules for preserving the health of troops, many of which may still be consulted with profit. In 1796, Dr. Sommerville wrote on “The Means of Preserving the Health of the Troops, on Clothing and Feeding them, and on the Prevention of Infectious Diseases.” In 1801, Dr. Rollo published his remarks on the preservation of the health of soldiers. He gave reasons for objecting to the use of huts as hospitals in the West Indies, and he entered pretty fully into the entire question of site, construction, and administration of hospitals. Dr. Lempriere soon after him considered the same subjects, entering, moreover, into the various influences that affect the health of troops stationed in the West India Islands. Some years subsequently we meet with his name at Walcheren, issuing a series of rules, in conjunction with Borland and Sir James McGrigor, with a view to protect the health of the troops; rules of which it is narrated that, had they been followed, many lives and much money that were wasted would have been saved to this country.

But, of all writers on hygiene as applied to troops, Robert Jackson is, perhaps, now the best and most generally known. There is scarcely a point that bears upon the health, food, clothing, training, and exercises of the soldier on which, in his inestimable work, he did not touch. Dr. Luscombe, writing in 1821, gave expression to his views on the preservation of the health of the soldier; his remarks referring in turn to recruiting, clothing, diet, foreign service, camps, barracks, bedding, personal cleanliness, pay, and lastly, but not least, to religious instruction. Dr. Millingen, about the same time, published a series of rules having reference to camps and bivouacs, including their site, cleanliness, and general management. Dr. Hennen, in 1828, when yellow fever occurred at Gibraltar, not only suggested measures of a hygienic nature for the prevention of the disease, but urged upon the military authorities the necessity on their part of using every practicable measure for arresting the threatened epidemic. This medical officer, in his work, laid down rules for the appropriation of space in hospital. Lastly, Sir George Balingall, in his work on “Military Surgery,” enters fully into all subjects that bear upon the preservation of health of the soldier.

Boards of Health.—The formation of boards of health was strenuously urged by Robert Jackson, Sir James McGrigor, and Dr. Millingen. According to the former, they should be insti-

tuted in armies in times of war. Dr. Millingen suggested that the selection of sites for camps and barracks should be determined by bodies of this nature, and during the time Sir James McGrigor was in charge of the troops in Egypt, boards of health were appointed by his recommendation.

Change of Air.—The advantages to be obtained from change of climate in suitable cases have, for many years, been recognized by army surgeons. In 1794, Dr. Rollo enumerated as among the causes of relapse of fever the difficulty experienced at that time in sending patients to healthy localities during the process of convalescence. Dr. Lempriere gave many examples of the advantages obtainable from moving troops away from infected localities; and in 1811 Dr. Thomas Wright recommended the soldiers, who were still suffering from the fever of Walcheren, should be sent to Malta, or other warm climates. His proposals were adopted, and with the best results.

2. *Medicine.*—To an army medical officer, in the person of John Hunter, is due the credit of having, by his experimental researches and investigations, done more to advance the art of healing than was probably achieved by any other man. The Museum at the Royal College of Surgeons, founded by him, and since very extensively added to, contains specimens illustrative of all questions which bear upon medicine as a science, and attest the power of generalizing and arranging facts which characterised that ornament of the profession and great man.

Yellow Fever.—To army medical officers we are indebted for the greater part of the literature of this disease; and it may be said, to medical officers of the sister service, the Royal Navy, for the remainder. Among the earlier authors on the subject I would mention Cleghorn and Irvine; Bancroft wrote on the disease in 1807; Sir William Pym in 1815 and again in 1848; Sir James Fellowes published a valuable report of the malady as it prevailed in epidemic form in Spain in 1802; and of the other medical officers who have written on the disease I would enumerate Chisholm, Lempriere, Gilchrist, and Dr. Smith, formerly of the Welsh Fusiliers.

Remittent or Paludal Fever.—Among the authors on this form of disease I would notice Pringle, McGrigor, and Jackson; Dr. Henderson, formerly of the 3rd Light Dragoons, and Dr. Mouatt furnished much of the information regarding this disease which we meet with in the pages of Johnson and Martin.

Dysentery and Hepatitis.—Army medical officers have been chiefly instrumental in introducing improvements in the treatment of these diseases. Among those who have written on the former I would mention Pringle, Fergusson, Veitch, Forbes, and Somers, all medical officers of reputation. Ipecacuan,

although introduced from Mexico under its popular name of *radix dysenterica*, was taken into practice in this country first by Sir John Pringle, and after him by Dr. Cleghorn, about the middle of last century. Monro and Hunter also employed the remedy extensively in the form of Dover's Powder. Chisholm wrote of hepatitis as if it were a tractable disease; Marshall published statistics of its prevalence in India and elsewhere; Dr. Fergusson noticed the circumstance that in the West Indies there was a regular increase of the disease after the soldiers had received their monthly pay. The advantages of setons in the treatment of this class of affections have been demonstrated chiefly by army medical officers; and Dr. Murray, late at the head of the British service in India, was among the first, if not the very first, who tested the advantages of puncturing and exploring the viscus in actual or supposed cases of abscess.

Cholera was described by Dr. Thomas Girdlestone in 1787 as one of "the spasmodic diseases of India," and by Dr. Cleghorn as it appeared in the island of Minorca. It is quite true, however, that the malady was known and had been described prior to that date, records of its existence on the continent of Hindustan being still available from a date as far back as 1503. Among medical officers of the Indian service who wrote regarding it, we meet with the names of Fryer, Paisley, and Clarke; but of the members of the British service, Girdlestone and Lind (R.N.) would appear to have been the earliest authors who described the disease in that country.

The question of *Typhus Fever*, as it prevails in armies, has successively been discussed by Pringle, Monro, and McGrigor, as well as by various other medical officers. Sir James McGrigor wrote on the *Plague* in Egypt, and gives an account of the measures adopted by him to prevent its spread among the troops forming Sir David Baird's force. In 1797 Dr. Rollo published a work on Diabetes; and, with regard to *Beri-Beri*, this disease, at one time common in Ceylon, was first described in a scientific manner by Henry Marshall; Sir George Balingall followed; and, more recently, Dr. Malcolmson, of the Indian medical service, published a valuable dissertation upon the subject.

3. *Surgery*.—To the army, surgery is pre-eminently indebted for some of its greatest advances. In the preceding pages I have incidentally mentioned some of the more important improvements introduced by military medical officers, and would now recapitulate them with reference to particular injuries, diseases, and operations.

Wounds.—Clowes, if not the first, was among the earliest English authors on "wounds made with gunshot, sword, hal-

berde, pike, lance, or such other." Paré was the first surgeon who employed emollient applications; his "oyle of whelps," rude though it was, having been a great advance on the still more barbarous applications till then in use. Gale introduced a styptic powder, and Clowes in England adopted the method introduced by Paré in France. John Bell, in his "Principles of Surgery," described the barbarous system according to which external injuries had in early times been treated. He explained the recent date at which rational views began to be entertained regarding the healing of wounds, and gave illustrations of various kinds of sutures used with a view to induce adhesion of cut surfaces. On the subject of scarifying in cases of gunshot wounds, at one time commonly practised, he expressed his opinion that "a man should not of necessity be cut because he had the misfortune to be shot." He gave instructions regarding the manner of treating wounds of the intestines. Larrey, and his coadjutor, Percy, themselves used and advocated the employment of cold-water dressing to wounds. Mr. Boyle, surgeon of the 62nd Foot, published, in the eighth volume of the "Edinburgh Medical Journal," some illustrative cases of the same treatment. Dr. Thomson, with John Bell, advanced the method of treating gunshot wounds of the chest. He published an account of fourteen cases of gunshot wound of the bladder, and gave rules for treating such injuries. Wiseman discussed the question whether gunshot wounds were or were not poisonous. Hunter taught that, in certain cases, "balls when obliged to be left, seldom or ever did any harm when at rest, and not in a vital part;" and Guthrie pointed out that in such cases a membranous sac formed around the missile. Guthrie was the first to show that wounds of the diaphragm do not close, and to lay down definite rules regarding trephining in cases of injuries of the skull. He taught the principles to be followed in treating penetrating wounds of the chest. Hennen was an author on these subjects scarcely second to Guthrie; and Mr. Rose, of the Coldstream Guards, published an account of the injuries sustained by men of his regiment at the battle of Toulouse.

Inflammation.—Alan Thomson published a valuable work on this subject. John Hunter elucidated the process of adhesion, a doctrine described by John Bell as having done more for surgery than any other general observation, not excepting the circulation of the blood. Guthrie first treated erysipelas by means of free incisions.

Syphilis.—Clowes, in the sixteenth century, recommended mercury to be used in the treatment of this disease. Wiseman advocated the same views. Hunter instituted a theory and laid down a method of treatment for the disease, neither of which

has yet been superseded. Hennen believed that different forms of ulcer might follow from one infection—a question which attracted the attention of Sir William Franklin and Sir James McGrigor, by the order of whom a series of statistics were instituted to test its correctness or otherwise. The same surgeon laid down a series of rules with reference to the employment of mercury in the treatment of the disease. In 1819 Mr. Evans, surgeon of the 57th Regiment, wrote on “Ulcerations of the Genitals.” Dr. Mahoney, of the Royal Fusiliers, treated buboes by means of compresses, as did also Sir Thomas Logan, Director-General, when surgeon of the 53rd Regiment. Dr. Bacot, of the Grenadier Guards, and after him Dr. Pitcairn, of the 5th Dragoon Guards, laid down rules regarding the use of mercury; the latter advocating the *non-mercurial* system. I may further observe that army surgeons have been chiefly instrumental in changing the system of treatment in syphilis from that in which mercury was carried to an extent that rendered the remedy hardly less injurious than the disease: the officers to whom this credit is due being mainly Fergusson, Rose, and Thomson.

Ophthalmia.—For the history of this disease in Egypt we are indebted to Sir James McGrigor. In 1820 Dr. Veitch, surgeon of the 52nd Regiment, published a work on the disease as it appeared in that corps. He considered it contagious, a view in which he was supported by Mr. Peach, surgeon of the same battalion, by Sir Charles Forbes, surgeon of the Royals, and by Henry Marshall: Mr. Mahoney, Surgeon of the 62nd Regiment, had doubts in regard to its contagiousness. Hennen described the manner in which soldiers were wont to induce the disease, especially after the passing of Windham’s Act, according pensions to such as were disabled. Guthrie wrote extensively on this and all other species of ocular disease.

Aneurism.—To John Hunter surgery is indebted for the first real improvement in the manner of treating this disease—namely, the application of the ligature to the affected vessel at a healthy part and nearer to the centre of the circulation than the dilatation itself. Larrey and Hennen wrote on the manner of treating the affection; and of late years Tuffnell, also an army surgeon, has given the profession a work on the treatment of aneurism by compression.

Tetanus.—Baron Larrey published his experiences of this disease in Egypt; Dr. Badenoch, 59th Regiment, described it as seen in Java in 1811; and McLaggan, Guthrie, Hennen, and Sir James McGrigor have severally published works on the subject.

Ulcers.—Sir Everard Home was amongst the earliest authors who laid down principles according to which ulcers of various descriptions should be treated; this form of disease having, in his day, been of very frequent occurrence. Mr. Marshall wrote a description of the various forms occurring among troops in Ceylon; and Sir George Balingall has given accounts of them in Java and Rangoon.

Guinea Worm.—The literature of this disease is almost entirely due to army surgeons, among whom I may chiefly mention Chisholm, McGrigor, and Mr. Bruce, of the 88th Regiment.

Hospital Gangrene.—The remarks of Wiseman regarding what he termed “putrid ulcers” had reference to hospital gangrene, although the affection so named had not in his day come to be recognised. In 1797 Dr. Rollo described this disease as “a sore acted upon by a new and overlooked species of matter.” Subsequent to that date, Dr. Boggie, staff-surgeon, published a paper on this disease in the “Transactions of the Medico-Chirurgical Society of Edinburgh.” Dr. Thomson adverted to the affection in his “Lectures on Inflammation,” and his “Observations on Military Hospitals in Belgium,” expressing his opinion as to its contagiousness. Sir James McGrigor believed it to be intimately connected with unhealthy sites of hospitals; Guthrie, that it owed its origin to overcrowding, deficient ventilation, and want of cleanliness. Hennen and Bell entertained similar views, and were of opinion that breaking up the hospital in which it appeared was the most effectual means for checking its progress. Blackadder, in 1818, described this disease under the name of gangrenous phagedena; and Marshall, in a work published about the same time, described it as propagated by contagion; and, in corroboration of this view, stated that in 1806, when it appeared in the regimental hospital at Faversham, its progress was arrested by the destruction of all the sponges used in dressing wounds.

Amputation.—Thomas Gale, writing in 1563, deplored the horrible method then in use of performing amputations, observing that “the heated irons so feared the people with the horror of cauterization that many of them rather would die with the member on than abide the terrible fire by means whereof many people perished.”* The first improvement suggested seems to have been by Woodall, who recommended that the operation should be performed through a joint. Wiseman, and after him Hanby, advocated the primary operation after wounds, as against the delayed; views in which they were more lately

* “Certain Works of Chirurgerie,” 1586, p. 63, quoted by Sir J. Simpson.

supported by Dr. Francis Hume, Hennen, Thomson, Guthrie, and Sir George Balingall. Hunter advocated excision of the joints in certain cases as a substitute for the larger operation. Guthrie, while he proved the advantages as a rule of the primary operation in cases of gunshot wounds, advocated delay in certain cases for a few hours to enable a patient to rally from the shock of the first injury; and, adverting to the preference given by John Hunter to secondary operations generally, he expressed his belief that, had that very eminent army surgeon had more extensive experience on this point than he enjoyed, he would have entertained opinions more favourable to the early operation. Like him, however, Guthrie advocated the excision of joints as a substitute for amputation in suitable cases. Sir George Balingall, in his work on military surgery, fully discussed the relative merits of primary and secondary amputation, and entered into the question as to whether the circular or flap operation is the preferable.

Ligature of Arteries.—Paré was the first surgeon who systematically employed ligatures for the reclusion of arteries, and who gave definite instructions regarding their application. Early in the 17th century he was followed in this practice by Woodall, who recommended the use of the needle and ligature for the occlusion of vessels after amputation. "If," says he,* "the leg be taken off above the knee, there is the more danger; also there is great care to be had to the great vein and artery—namely, that thou take them up and pierce them throw and make strong ligature about them, which must be speedily done if thou canst do it; but at first I fear thou wilt miss, yet be not discouraged, nor stand too long to seek them, but go on with much hope." Lowe recommended† the use of the thread compress for the suppression of actual hæmorrhage; and Wiseman‡ advocated the same method of treatment. *Monro primus* urged the necessity of taking up the arteries with as few as possible of the surrounding tissues after amputation, and condemned the system in use at his time of placing a compress between one side of the vessel and the noose of the thread. John Bell demonstrated the possibility of the limb being nourished by anastomosing vessels after its largest arteries had been tied. To John Hunter we are indebted, as already observed, for deligation of the femoral artery in cases of popliteal aneurism. Hennen recommended the practice of cutting off both ends of the ligature. Guthrie demonstrated the necessity of ligature being applied above as well as below the seat of

* "Surgeon's Mate," 1655, p. 159.

† "A Discourse on the Whole Art of Chirurgerie," p. 93.

‡ "Several Surgical Matters," p. 453.

injury in a wounded artery; and he was among the first, if not the earliest, surgeon, to lay down clear instructions as to the manner in which these injuries should be treated.

4. *General Subjects.*—Under this head I would include such subjects as cannot be appropriately embraced under either of the preceding, observing, however, that as in the remarks already made, so in the few which follow, I pretend to nothing more than a slight glance at a few of the more important labours of my brethren in the medical department of the army. To enter fully into them would far exceed the limits now at my command.

Topography.—Dr. Cleghorn, as has already been recorded, published a topographical account of Minorca, together with a summary of the flora and the fauna of that island. Hennen's "Topography of the Mediterranean Islands" was a few years ago the standard work on the subject to which it referred. Marshall's work on Ceylon contained much valuable information, topographical and medical. Halliday's "West Indies" was also a standard work in reference to those islands; and, more recently, Dr. Kelaart published on the "Natural History of Ceylon and Gibraltar."

Medical Schools.—Among the army medical officers who have founded or embellished professional schools I shall now mention only a few. At the end of the sixteenth century, Peter Low, on retiring from the service, founded that of Glasgow; Dr. Cleghorn, about the middle of the eighteenth century, became a teacher of anatomy in the University of Dublin; and in 1759 Dr. Francis Home taught *materia medica* in that of Edinburgh. Larrey, while at Milan with the advanced guard commanded by Bernadotte, established a school of medicine there. In 1816, Dr. Thomson, having left the army, became Regius Professor of Military Surgery in Edinburgh, being at his death, some years afterwards, succeeded by Sir George Balingall; and Guthrie, as is well known, taught surgery most successfully in London.

To army medical officers, also, we are indebted for the first idea of a large public school for that branch of the service; such as Netley now is. In 1798, John Bell addressed Earl Spencer on the subject; and in 1819 Dr. Millingen submitted various suggestions with the same object.

Convalescents.—The system at one time in force of discharging partially-recovered men from hospital was protested against by Sir James McGrigor, and afterwards by Sir James Fellowes.

Recruits.—In 1791 Dr. John Bell protested against the system of recruiting then in use for regiments just raised for

service in the West Indies. Dr. Jackson soon afterwards, in order the more clearly to indicate the importance of the duty of examining recruits, wrote, "The selection of persons possessed of intellectual and physical capacity for the practice of war, may be regarded as an object of high national concern; it demands the deepest attention of patriotic statesmen, and the closest study of scientific soldiers." Sir James McGrigor pointed out the ineligibility as recruits of tradesmen and manufacturers, especially those of large towns. Dr. Liscombe condemned the system of enlisting lads and very young men. Dr. William Fergusson, another army surgeon, expressed a very decided opinion that the soldier would last longer if his required size and stature were not pitched at too high a standard. Staff-surgeon Lightbody recommended that no recruit whatever be taken the circumference of whose chest below the nipples and scapula is under thirty-two inches; and more recently Henry Marshall wrote a work which remains a text-book on this subject.

Statistics.—Army medical officers were the first to institute trustworthy records of diseases. In the "Observations" of Sir John Pringle we for the first time meet with the term "Return," when he was serving with the army at Ghent in 1742. Dr. John Hunter advocated the use of *Registers* of cases in hospital. Dr. Reid introduced regular records of disease in the line of the army. Dr. Rollo did a similar service for the artillery; and Sir James McGrigor organised a system of statistics for the entire army.

Post-mortem examinations were practised in the army by Cleghorn before they were so in civil practice. Brocklesby, Pringle, and Sir Everard Home all advocated this method of investigating the action of disease.

Transport of Sick.—Baron Percy introduced into the French army the system of ambulances, or movable hospitals, which Larrey perfected. In the British service the want of a similar organization was deplored by Jackson, Hennen, Guthrie, and Millingen. Sir James McGrigor states in his "Autobiography" that he endeavoured, but without success, to gain over the Duke of Wellington to the advantages of an efficient system of ambulances; and Sir Rutherford Alcock, when serving under Sir De Lacy Evans in Spain in 1838, had occasion to regret the want of these contrivances. Sir George Balingall, in his work on Military Surgery, enters fully into the subject of transport and ambulance, and still more recently Professor Longmore, of Netley, has brought the question down to the latest date in his valuable "Treatise on Ambulances."

Drunkenness.—The prevalence of this vice in the army has

frequently been deplored by medical officers, many of whom have submitted proposals with a view to check its occurrence. Lempriere and Dr. Gordon, of the 13th Foot, wrote on this painful subject towards the end of last century; so also did Robert Jackson, and more recently Henry Marshall. In fact, there has scarcely been a medical officer who has not urged the necessity of measures being taken for the repression of the vice; and to their advocacy the soldier is indebted for canteens.

Punishments.—Dr. Hamilton was perhaps the first writer who raised a voice against the severity of, and indiscriminate manner in which, previous to, and in, his time, military punishments were inflicted. He especially condemned corporal punishment, describing it as barbarous, and more suited to brute beasts than to men. Mr. Marshall, adopting the same views, pointed out various respects with reference to liability of punishments in which the condition of the soldier should be ameliorated; among others the advantages which would follow the observance of greater discrimination in its infliction than in many instances was then observed.

Soldiers' Wives and Children.—Finally, to an army medical officer is due the credit of having been the first to advocate the cause of soldiers' wives and children. Dr. Hamilton urged the necessity as well as the policy of treating them well; and since his day the subject has proved the theme of every medical officer whose writings have come down to us.

I have now finished my self-imposed task. I have indicated some of the respects in which the medical profession and the general interests of the army are indebted to, and have been advanced by, the labours of the army medical department. I trust I have also pointed out the great importance of the duties which fall to the share of the officers of that department.

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