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ON THE CAUSES OF SICKNESS IN THE ENGLISH WARS, AND
ON THE MEANS OF PREVENTION.

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It is quite a truism to say that the great losses in war are not owing to shot or steel, but, like many other truisms, it is more often repeated than comprehended. Even to the mind of the soldier, the strife and peril of the battle-field throw into shade the more secret yet deadlier foes by which oftentimes campaigns are really decided and victories are really won. And yet, if there be anything a soldier ought to study out of his immediate profession, it should be those conditions which, in so many wars, have caused such losses by disease, that plans the best considered have been abandoned, courage the most heroic has been baffled, and causes the most sacred have been lost.

Our own army does not, perhaps, offer so many examples of these disasters as the armies of other states, but even with us there is a long and sad catalogue of unfortunate and unhappy enterprises, and a terrible list of soldiers' lives which have not been taken on the battle-field. As it is manifestly a matter of greater interest to review our own history than to turn to the larger and darker experience of other nations, I shall venture to attempt the enumeration of the chief causes which have led to great losses by disease in some of our wars. The subject is, however, too vast to be treated in a single lecture, and all I can venture to do is to give a rapid summary, and to illustrate it by a few examples.

As far as diseases are concerned, the history of almost all our wars presents a remarkable sameness. The same results on a larger or smaller scale repeat themselves. We are taught with what a terrible precision the same causes have stamped their marks on successive generations of soldiers, and how the pitiable history of one campaign might almost be stereotyped for nearly all the rest. Nor are these causes in any way peculiar, recondite, or mysterious. We are astonished to find how simple they are, how obvious, how apparently inadequate to produce such large results.

A writer, in giving an account of the great loss on one occasion among British troops, when, out of 7,000 men, 5,000 men were sick at one time, after enumerating the very simple conditions which had led to this end, says,—

“And yet when anxiously asked by the officers in command, what extraordinary cause could be assigned for an amount of sickness and

mortality truly alarming, something of incredulity has stolen over the countenances of my hearers while the natural causes above described were detailed, so little are we disposed to believe that great effects can be produced by the action of common causes."

But so it has always been. That the causes are common is the secret of their strength; they are ever at hand; even waiting, so to speak, for opportunities; apparently weak, they are in reality all-powerful; they are like the *geni*, who, in the story in the "Arabian Nights," the fisherman let out of the vase. At first there was a little cloud, which he could enclose with his hand, but presently there appeared a gigantic shape, clothed with power and irresistible in strength.

Of the early English wars the record is so imperfect that it would be waste of time to refer to them. Even of the wars of Marlborough we have but scanty medical accounts. We know that Marlborough had the reputation of being very careful of his wounded men, and it is said that he made a point of paying frequent visits to his hospitals. Doubtless he brought his extraordinary administrative powers to bear upon the medical, as on all other parts of his army. But of the exact losses by disease in his campaigns I believe little or nothing is known. They are supposed to have been small, as he was always able to bring a large number of men into the field, and England, at that time so comparatively thinly peopled, seems to have easily supported the drain both of men and money.*

Of the wars in Flanders and Germany in 1742, and of all subsequent wars, we possess tolerably good accounts, although the exact statistical reports and tables of our own day were quite unknown, and it is only from chance passages that we can form a rude numerical idea of the amount of sickness and mortality. The description of the diseases however, and of their causes, is for the most part both full and accurate.

1. Of the earlier expeditions after the wars of Marlborough, perhaps none was attended with greater losses, or excited more strongly the public feeling, than the unfortunate attack on Carthage in 1741, under Vernon and Wentworth. It was not the first of the western tropical expeditions in which enormous losses had occurred, but the failure was so sudden and so overwhelming that it created an unprecedented sensation. To the military features of the campaign I need not refer; the dissensions between the commanders of the land and sea forces; the feeble movements of the general, and the vain courage of the troops, are sufficiently known.

Scarcely had the troops disembarked than sickness commenced. The diseases were malignant malarious fevers, scurvy, and bloody flux. The Spaniards looked down from their walls which they were scarcely called on to defend, watching curiously the dwindling away of their besiegers, till the rainy season of 1741 set in. The diseases then increased at a rate so fearful, that, to avoid complete annihilation, the force was hastily re-embarked. It is said that no less than 3,425 men perished in two days. In a few weeks, in fact, the army had been almost destroyed, and we are told that "its poor remains were afterwards almost totally cut up in the sickly season in the island of Cuba."

* The greatest losses appear to have occurred during the sieges, especially those of Tournay in 1709, and of Aire in 1710. In this latter siege the killed and wounded of the allies were said to be 7,000, and the sick double that number.

The causes of this tremendous catastrophe were matters of common talk and tradition among army surgeons for many years afterwards. Two grand errors were committed; errors which we must put in the first rank among those conditions from which British forces have largely suffered in war.

The first of these was that old error, a most imperfect commissariat. We are not acquainted with the exact rations issued at Carthagera, but the presence of scurvy, which prevailed both in the army and navy, but most in the former, proves at once that fresh meat and vegetables were entirely wanting. The scorbutic dysentery, which soon succeeded, shows us, as certainly as if the diet lists were before us, that hard salt beef and pork and biscuit formed the miserable allowance, scarcely deserving the name of food, which was issued to these men.

The effect of insufficient food of this kind is to cause some diseases; to predispose to many more. It is in this last circumstance that its great strength lies; malarious fevers are intensified by it; slight atmospheric vicissitudes, and other common agencies which fall harmless on the well-nourished body, tell with fatal effects on the enfeebled frame.

In a great number of the English wars an inefficient commissariat has been the bane of the army: I will select two or three other instances of the same fact. Perhaps the expeditions to Burmah, in 1824, and to China, in 1840, offer the best examples. In both cases the scene of operation was to some extent malarious, and in Burmah the worst time of the year, at the commencement of the south-west monsoon, was unfortunately chosen for the commencement of operations. But in both cases the cause of the immense mortality which ensued, or at least by far the most potent cause, was the food which was issued to the men. In both cases it was thought that men could be maintained not only in health, but in fighting condition, upon a diet so bad that no slave-owner in any part of the world or in any age of the world would have given it to his slaves. Wretched cattle hastily purchased and driven to Calcutta were there as hastily salted, and on this wretched meat and on almost as wretched biscuit the troops were kept, when within a few days' sail there was a land of wheat, of rice, and of fresh vegetables without end. To the immense mortality in the Burmese war I need scarcely refer. In three or four months some of the regiments lost half their strength; in eleven months 1,311 men died out of 2,716. The 13th Foot lost by disease 341 out of 608 men, or 56 per cent. So general was scurvy that the surgeons were in the habit of examining the gums of the men before a skirmish, to prevent any men having symptoms of the disease from advancing, as wounds received in that condition of body are most intractable. Malignant malarious fever, intensified by the state of the body, and scorbutic dysentery were the great agents of destruction.

Twenty-six years later, in the expedition to China, the same tragedy was repeated almost without variation. The history of the Cameronians may be taken perhaps as a type of the fate of the whole force, although the amount of sickness was greater than that which prevailed in some other regiments. The Cameronians landed at Chusan, a splendid body of men, 900 strong, on the 5th of July, 1840; in the first week in August 500 were in hospital; towards the end of August less than 100 mustered

on parade; later in the season the *débris* of the regiment, under 200 men, were sent to Manilla to recruit, and of these but a fraction ever saw their colours again. The bloodiest battle would have been mockery to this. Doubtless they were to a certain extent in a malarious country, but the malaria was not sufficiently intense to cause so great a loss. Again the simple cause is to be found in the diet. Nothing lives so long as a departmental tradition, and the errors of the last naval expedition from India were repeated in this case without variation. I have selected these two campaigns as the strongest examples of the paramount influence of diet, but many other instances also exist in our wars of the effect of an insufficient commissariat. Even in such comparatively slight operations as the first two Caffre wars a large proportion of the men became scorbutic; and in the first year of the Crimean war a diet so insufficient that any one accustomed to the subject would have been able at once, on being informed of the amount, to foresee the inevitable result, was deemed sufficient to support the strength of the men in the most trying and exhausting of wars.

In the wars of Marlborough, and in Flanders and Germany in 1742 and in 1760, the men were better fed than in many later campaigns; salt meat seems happily to have been little used. The colonels of the regiments appear to have been the chief purveyors: each colonel contracted with butchers, who drove with the army herds both of sheep and oxen for slaughter. Fresh meat, at any rate, was thus procured, and we know from the writings of Donald Munro that in 1760 the army surgeons strongly insisted on the issue of bread and fresh vegetables; fruits also were largely used, and in this way the ravages of scurvy appear to have been almost prevented.

In the wars towards the end of the century and up to the long peace the commissariat arrangements appear to have been inferior to those of eighty or sixty years before. Some of the mortality in the Peninsular war may be certainly ascribed to an inefficiency in this respect. It would seem unnecessary to allude to a point so self-evident as this of insufficiency of food, did not the repetition of the error prove that it is one which must be expected to recur. The first rule in war must be to provide a diet in the highest degree strengthening and nutritious; the diet of peace is quite unequal to maintain the forces of the body when exhausted by the mental and physical exertions of war. It may seem an expensive matter to provide a diet which is sufficiently varied and sufficiently strengthening, but it is not so really. A great army surgeon has said "Economy of lives is the truest economy of the state," and no saving can be more like waste than the saving which sacrifices men's lives.

2. The second great error committed at Carthagená was undertaking operations in an unhealthy site and with an unhealthy season impending. Of course one can understand that a military officer, for the purpose of accomplishing some military end, may deliberately occupy an unhealthy site and knowingly sacrifice a certain number of men. There are examples of this in our wars; for example, in the attack on Java in 1811, when a marshy site was occupied at the outset; but even here the military arrangements were obliged to be somewhat modified and hastened in consequence of the rapidly increasing diseases among the

troops. But unfortunately there are many instances in which unhealthy sites have been chosen without any forethought, without any deliberation, and apparently either in the belief that men were made of iron and could not be injured, or that the stories of diseases being produced by locality were mere foolish inventions and old wives' tales. Although Vegetius tells us that the Romans, the great masters of the art of war, took the extremest care to choose good encamping grounds, and even appear to have made the plans of their campaigns subsidiary to this prime necessity, the point has been too much neglected in all modern wars, and even in the English army. Of the many examples of this I will select one or two only. In 1796 a body of troops about 9,000 strong were ordered to San Domingo; some of the regiments were collected from the West Indies and others from Ireland. The Irish regiments had been rather hastily recruited and typhus prevailed among the men, but it was thought that if time were allowed this disease would be got rid of; time, however, could not be given, and the expedition was launched against San Domingo. Now in 1780 Donald Munro, an army surgeon of reputation, had described with some care the unhealthy and the healthy places of San Domingo, and in 1793 portions of the island had been occupied by our troops. It can therefore be scarcely credited that the most unhealthy spot in the whole island, Port-au-Prince, was chosen for the encamping ground. There were not wanting those who supposed that the general had been deceived by persons interested in the choice of the site: be this as it may, the troops were crowded together on a low marshy alluvial plain, where good water could not be procured, which was shut out from the sea breezes by hills, and was completely exposed to the land-winds. As if this was not sufficient, the diet was bad, and salt meat without bread and fresh vegetables formed the staple of the food. With a view of increasing the strength of the body, an old custom of the English army was in full force, and the men received large rations of rum. Of all the errors committed in our service this seems to be the most persistent and the most ineradicable. Although the best army surgeons had at that time protested against the use of rum in hot climates, although in the American War of Independence the uselessness of rum had been proved almost immediately before, although at San Domingo the immense amount of sickness showed that it was producing no good result, the fatal practice was persevered in. That army had everything against it, and the result was certain; it was almost literally annihilated by yellow fever and dysentery. A writer who saw the sad catastrophe calls San Domingo "the grave of the British army," and says "The army languished and dwindled away without the least service to the cause it was meant to support." It is impossible to know the exact amount of the mortality. Many regiments 800 and 900 strong had only fifty or one hundred men left. All lost largely, and it is probable that few of that gallant force ever did the State more service.

The expedition to Walcheren gives perhaps a still better example of the effect of a marshy and malarious locality. In 1747 Sir John Pringle, one of the most celebrated in the long list of illustrious army surgeons, described the great unhealthiness of South Beveland and of Walcheren. So great was the sickness that in many corps 6-7ths of the men were in hospital at that time.

This low tract of ground, won in almost modern times from the sea, which is everywhere swampy, and where good water cannot be procured, had not lost its ancient and well-known reputation, when in 1809 the finest expedition that ever left the British shores landed in the highest health and vigour. They found there a Dutch regiment which in three years had lost 715 men out of 800: this was the type of their own fate. This great force, nearly 40,000 men in all, was destined to attack Antwerp; it never even approached that fortress. It sailed on the 28th of July from England, invested Flushing with 17,000 men on the 7th of August and took it on the 15th: twelve days later, the men were falling sick so rapidly that the guards had to be relieved twice daily. On the 14th of September, seven weeks after leaving England, out of the 15,000 men in Walcheren 10,000 were in hospital. The deaths at last reached sixty daily, at which rate the whole force would have been destroyed in 250 days. Four months after landing, the army, utterly disorganised, was hastily re-embarked. "The expedition"—to use the words of an eye-witness—"had been productive of nothing but mortification, misery, and disgrace." The diseases were malarious fever and dysentery.

Let me take another example on a smaller scale. In the American War of Independence, two battalions of the 71st Regiment were encamped, contrary to the advice of Robert Jackson, the prince of army surgeons, and of the inhabitants of the country, on the marshy banks of the Pedee river. The men fell sick so rapidly, that the post was ordered to be abandoned. It was then found that it was almost equally difficult either to keep or leave the post. At length, after a great deal of trouble, boats were collected, the sick men were placed in them and were sent down the river, and it is said that few of them were ever seen again. The rest of the force retired from the banks of the river, and, to show the deadly nature of the encamping ground, it was said that the men improved vastly in health even on the march.

The same mistake of a malarious locality being taken as an encampment, was seen in the second American War in 1814, at the siege of Fort Erie. And there are other instances too numerous to bring before you. Even the great Duke himself was said to have crippled his forces by a prolonged sojourn in the marshy plains of Estremadura.

As in the case of food, it may be said to be impossible that errors of this kind can occur again—that, with the present organisation of the service, before any campaign is undertaken the country will be investigated, its features known, and its influences estimated, and that the campaign will be entered upon with a full knowledge of all the circumstances which can affect the men. But we have unfortunately evidence that the immense influence of a malarious locality is not even now sufficiently appreciated by our soldiers. Under some circumstances indeed it is impossible but that campaigns must be undertaken in unhealthy localities and in marshy countries. In that case certain precautions must be adopted; these precautions have relation chiefly to the arrangements of the camps and bivouacs so as to shelter the men as much as possible from unhealthy emanations; to arrangements of guards, so as to expose the men, especially at certain hours of the night, as little as possible; to the use of an extremely nutritious diet, for that has been

found to have a great effect in lessening the susceptibility of the body to malaria; to the supply of good water, and to the employment of various drugs which have been proved to produce, more or less, immunity from attacks of malaria. If malarious countries are entered, and these and similar precautions are taken, the troops will escape with as little harm as can happen under the circumstances.

3. I must now pass on to another condition. The wars in Flanders in 1742 and in Germany in 1760 have been very carefully recorded; perhaps more so than any other war, with the exception of the Russian war of 1854-5. In both these wars, at certain periods, the men were exposed greatly to inclemencies of weather. It was then seen that if men are well fed and can be kept dry they can bear great cold. The winter of 1742 was extremely severe, and in April, when the troops commenced their march, there were extraordinary snows for seventeen days. The troops marched through these storms, but were every night received into warm houses. Out of the 16,000 men not twenty were lost. Again, in the German war in 1760, some regiments made a winter campaign on the borders of the Lower Rhine; they were exposed to great inclemencies of weather, to great hardships, and to extreme cold, yet they were very healthy, much more so than the troops left in the fixed camp at Warburg, who, it may be supposed, must have been in the possession of much greater comforts. This was owing to their good food and good clothing. At that time, 1760, every soldier wore a flannel waistcoat, a custom which has now unfortunately disappeared. This custom was commenced by gifts from the Quakers to the army in 1745-6, and it was found to be attended with the greatest possible benefit. In 1760 the Government issued warm clothing of this description, and in addition there was a very large private subscription in England, and blankets, great coats, under-clothing, shoes, stockings, &c., were given to the men. The men's blankets were carried on horses, and were wrapped in waterproof clothing. Each company had its own horses, which kept up with the men on the march.

The same fact, that men can bear great exposure to cold if properly fed and clothed, was also established in the American War of Independence. Some of the Rangers were out during the winter, and escaped almost entirely the diseases produced by cold. They attributed their immunity in a great measure to the use of hot ginger tea. Every man carried a piece of ginger in his pocket, and would on no account be without it. With this they made hot tea, and they found this much more comforting than spirits, which appear to have been in a great measure disused among them. Hot infusions of garlic and infusions of horseradish were also used for this purpose, until the more common employment of hot tea and coffee supplied us with means which may perhaps be considered even better adapted to protect the body against exposure to weather.

The same fact was again seen in the American War of 1814; in the partial winter campaign, the men bore the cold without great difficulty, being very carefully protected from the weather.

The same fact was again shown in the celebrated marches in Canada in the rebellion of 1837, and similar marches appear to have been repeated with as much success during the last few months.

Although, however, it appears to be quite certain that if men are well

fed, and if the surface of the body be kept thoroughly dry, they can bear great exposure, yet few armies have been so well cared for; and exposures to inclemencies of weather must be put down as the third cause which has been productive of disease in our campaigns. Even the campaigns of Flanders and Germany to which I have referred give many examples of this; one of the best, perhaps, is the often-quoted case of what occurred after the battle of Dettingen. Previously the men had been extremely healthy, after the battle they were exposed to wet and cold for two or three days; the consequence was that an attack of dysentery occurred, and was so general that half the army were affected; had this occurred a few days previously it is by no means improbable that the strenuous exertions which alone won the battle of Dettingen would have been impossible. So also in 1760 there was at times a considerable amount of sickness from exposure to weather, in spite of the great care which was taken of the men. In 1799 another campaign in Flanders owed its chief disasters to the inclemency of the weather, and the gallant force of the Duke of York was, in fact, beaten by the elements.

It is impossible that a general in command can ever protect his men perfectly from inclemency of weather; armies must be expected to suffer from this to a considerable extent; the diseases it produces are of course catarrhs, inflammation, rheumatism, and dysentery. But it is satisfactory to know what great effect the measures to which I have referred can have: if men are well fed and are well clothed and covered with waterproof clothing (which will probably be found the greatest boon which has ever been given to the soldier, but which is not yet sufficiently appreciated in our army), if hot liquids are provided for them, and spirits kept from them, or at any rate issued in the greatest moderation, there is no reason to think but that troops will bear a great deal of exposure to inclemencies of weather. Even the winter in the trenches before Sebastopol, had these means been available, might certainly have been met with comparatively little loss. But if from poverty or from defect of transport the warring nation cannot clothe and feed its troops, its plan of campaign must be adjusted to its circumstances, or it must be prepared to encounter a great mortality.

4. But catarrhs, slight dysentery, rheumatism, and inflammations are not the only diseases which affected the troops in the wars in 1742 and 1760; in both cases they suffered, though to a comparatively slight extent, from the spotted typhus and the putrid dysentery—diseases which have been the grand scourges of armies in temperate climates, in the same way as cholera and yellow fever have been the destructive agents in the tropical wars. The spotted typhus, the great typhus of armies, is, perhaps, the most terrible disease of all; wherever men are closely crowded together in ill-ventilated, unwholesome dwellings it is sure to appear. If scurvy be also present, it then attains its greatest intensity, and commits ravages which are truly astonishing. It has often passed from the army to the civil population, and has half dispeopled towns and even districts. Its ravages in the English army have never been comparable to those which have occurred in foreign forces, and, to give an idea of its powers, permit me to allude to a few examples of the effect of this disease among some continental troops.

In 1620 the Bavarian army in a few months lost in Bohemia not less than twenty thousand men from spotted typhus, and the disease being carried into other parts of Germany, obtained the name of "the Bohemian disease," just as, in the same way, on a later occasion, the typhus carried back from Hungary received the name of "the Hungarian disease." In 1628 and 1632 the Swedish army under Gustavus Adolphus carried typhus into Northern Germany, and the population was so destroyed that fifty or sixty years later villages remained without inhabitants. The wars of Louis XIV. were always followed by this disease, and the losses of the French army were enormous. But it was in the wars of 1812 and 1813 that its greatest ravages were seen. In May, 1812, the Bavarian army serving among the French numbered 28,000 men; in February, 1813, there were only 2,250 under arms. The great destroyer was typhus. In August, 1813, the first Prussian army consisted of 37,728 fighting men, in November of the same year it reached the Rhine with 11,515 men, having lost 16,000 men by the sword, and 10,000 men by disease, almost entirely typhus. Even this was trifling compared with the enormous losses among the French army. Not only the army but the civil population suffered fearfully. It is impossible to enumerate the hecatombs of victims; in Mayence alone the French lost in six months 17,000 men from typhus. It is impossible to overlook the effect which this must have had upon the fortunes of the campaign.

In later wars the same fact has occurred. I need scarcely refer to the great losses, even yet not perfectly known, of the Russian army in the Crimean War, and to the losses of the French army in the spring of 1856, when more than 17,000 men perished in less than three months, and when the highest authority stated that the safety of the whole French army was endangered by the outbreak. In the war in Flanders in 1742, and again in 1760, the great cause of the spread of typhus appeared to be the state of the hospitals. If typhus once enters a hospital, unless that hospital be extremely well adapted for the treatment of this disease, and if it once attains any proportions, it spreads among the patients with astonishing rapidity, and the hospital becomes a veritable pest-house. The only plan to adopt under these circumstances is that which was carried into effect by Sir James M'Grigor in the Peninsular War. Typhus had broken out in some of the hospitals; Sir James M'Grigor broke them up and distributed the sick among the villages, and in this way, in spite of bad food, in spite of bad attendance, and in spite of exposure, the disease was arrested. Anything indeed is better than a deficiency in the supply of air. There is no doubt that with proper sanitary precautions, the spotted typhus, terrible as it is, may be almost entirely put a stop to. It must, however, be considered as taking the fourth place in the causes which have produced disease in the British army.*

* Whether or not the circumstances to which I have referred, viz. great overcrowding and vitiation of air from organic impurities derived from respiration, will absolutely generate typhus *de novo*, is yet uncertain. In all the English wars, there has always been plenty of typhus-poison, waiting for favourable conditions to assume activity. This arose from the peculiar system of recruiting. Even in the Crimean War, we saw the relics of a system constantly resorted to in the last century to raise men. Commissions and commands of regiments used to be given to those who collected a certain number of men. Every low

It has never been absent from any considerable European war till the wise sanitary measures adopted in the Crimea showed us an army with scarcely a case, while two other armies under the same circumstances lost numbers of men.

5. The other disease to which I have referred, the putrid dysentery, is one which has prevailed to a still less extent, in the English army, than the spotted typhus. It prevailed to a certain amount in the wars of 1742 and 1760, and in the Peninsular War during a short time. Arising from various causes, from exposure to cold, from bad weather and bad food, it is also propagated by contagion, and appears, indeed, to give us an example of a disease acquiring contagious properties. This fact appears to have been first indicated clearly by Sir John Pringle, but it has been subsequently confirmed by a great number of observations in the French wars, and in other cases. As in the case of typhus, there is no reason to doubt that proper sanitary measures will lessen the spread of putrid dysentery. It must, however, I believe, take the fifth place among the diseases which have caused losses in the English wars.

6. I must now pass on to another condition, which possibly might have come before one or two of the others. In 1760 the head-quarters of the troops in the German war were at Paderborn in Westphalia. There was much sickness, and great dissatisfaction was expressed in England much in the same way as in the winter of 1854-5. The diseases were putrid dysentery to a slight extent, spotted typhus to a considerable extent, and other forms of fever, among which doubtless was the disease now known by the name of typhoid fever. These malignant fevers arose at the standing camp at Warburg, and were carried to Paderborn. They were produced by the condition of the camp, which had been inhabited for a very considerable time. Both it and the whole country around were covered with putrid remains. We are told that dead men and horses lay around in "infinite numbers," and that the bodies were only thinly covered by earth.

The unhealthiness of standing camps—unless the greatest care be taken to cleanse them—is one of the best known facts of army hygiene. The frequent shifting of encamping grounds is almost the only rule which has come down to us by means of which Alexander the Great so marvellously preserved the health of his men. The Romans also took the most special care for the cleanliness of their camping grounds, as indeed in all other matters connected with the health of their men.

Unfortunately, in modern armies the grand rule of paying the greatest attention to this duty has been too little regarded. In the English army it has perhaps been more attended to than in other armies, but even with us it is impossible to read the accounts (unfortunately too short) of the

purlicu, every infamous haunt, every jail even, used to be ransacked for recruits. Wherever these men went, they carried typhus, at that time the constant scourge of our towns and our jails. It gives one a strange idea of the making of a soldier, to read in Donald Monro's essay, published in 1764, a caution "that particular regard be paid to those soldiers picked up in the streets, or who have been taken out of the Savoy or other jails. All dirty rags from such people should be thrown away or burnt." Complaints of the introduction of typhus from this source are frequently found in the writings of army surgeons of the last century. Typhus was several times carried to the West Indies, and even prevailed there apparently to some extent.

camps even in the Peninsular War without perceiving what prolific sources of disease they were.

Let me take another instance of the effect of bad encamping grounds, as it illustrates one or two other points. In 1801 a force of 4,000 Europeans and 4,000 natives landed in Egypt from India. In June they commenced their march across the desert; they underwent hardships which Sir James M'Grigor thinks were never exceeded by any army. The heat was intense, the thermometer in the tents marked 118° , and at nine o'clock in the morning at three feet depth in the ground the thermometer marked no less than 69° Fahrenheit. Owing to the difficulty of carriage, no spirits were issued. In spite of all this the men were remarkably healthy, proving, what our Indian campaigns have also shown, that with proper precaution, and if spirits are avoided, great heat can be borne without risk. Having reached the Nile, the army descended that river for 400 miles, and landed at Ghiza. There they found the 89th Regiment very sickly; scarcely fifty men mustered on parade. This ought to have attracted attention, inasmuch as the 89th should have been considered to be the touchstone by which the sanitary condition of Ghiza was to be judged. However, the army was there disembarked, being then, to use the words of Sir James M'Grigor, "uncommonly healthy." In less than a week they sent into the hospital ten per cent. of their force; in three weeks there were a thousand sick out of the eight thousand men; in four weeks there were twelve hundred sick: then the army moved to Rosetta. We must therefore consider that no less than fifteen per cent. of that force had in that short space of time been in the hospital, and one-fourth of the duty-men in all probability must have passed through the hospital. The diseases produced in this short time were attended with very slight mortality; they were chiefly fevers which appear not to have been of malarious origin, but chiefly of that kind, yet little investigated or understood, which are known by the name of the bilious remittent, or the bilious typhoid, and the bilious relapsing fevers of the Mediterranean and Egypt. There were also slight dysenteries, and some ophthalmia, but no plague till afterwards, when the army got to Rosetta.

It was supposed at one time that the diseases produced at Ghiza were owing to the marshes in the neighbourhood, but this is rendered improbable; first from the fact that, as far as can be known from the accounts of the diseases, which are very short and imperfect, the malarious taint did not form any grand element in these diseases, and secondly from the following fact—Ghiza for months had been an encamping ground of a succession of bodies of troops—Turks, Mamelukes, French, and then English. The whole country was covered with putrid effluvia. At a subsequent period, when time had been given for the perfect dissipation and complete decomposition and elimination of all these putrid remains, Ghiza was again occupied and was found to be healthy; therefore it would appear certain that the condition of the camp was the cause which led to the great amount of sickness in the expeditionary force.

Filthy standing camps, then, giving rise to various forms of fever, typhoid being among the chief, and to other forms little understood, also to dysentery, and to cholera in some regions, must be put down as the next cause which has given rise to mortality in English wars. It is probable that this

cause will never again produce any great amount of sickness in our forces, inasmuch as not only is the necessity of the most perfect cleanliness in camps well understood, but in the present organization of the medical department, sanitary officers are appointed, whose special duty it is to insure the perfect and continued cleanliness of the camps.

7. I will now pass on to another head. The fatigues in war are excessive, and can only be borne by men whose frames are matured by age and constant physical exertion. Boys and immature young men are speedily destroyed, or only throng the hospitals. In campaigns every soldier ought at least to be twenty-one years old, and should have been accustomed to the most constant physical exertion and open-air exercise. Before a regiment goes on a campaign, it should be weeded of its immature men, who should form a corps of reserve, and be subjected to a thorough course of training, and be then sent on to join their regiment, when deemed fit to encounter the hardships of the campaign. The effect of exposing immature troops to the hardships of campaigns has been frequently illustrated. Some of the heaviest mortality in the Peninsular War was among regiments thus hastily recruited. In the Crimean War, during the second winter the troops were fortunately not called upon to undergo great exertion. Had they been so, in spite of all sanitary precautions, that young and untried army must necessarily have suffered very considerable mortality. Perhaps the best example in our annals of the effect of this cause is to be found in the history of the British Legion in Spain, in 1837, as given by Mr. Alcock. This body of men consisted of about 7,000 persons, hastily recruited, comprising Englishmen and Scotchmen, chiefly drawn from towns, and Irishmen who were more largely drawn from the open country. Almost all the force were either too young or too old. They landed in Spain during the winter. In the first few months after landing, one-third of the English, one-fifth of the Scotch, and one-eighth of the Irish were "rapidly swept into the hospitals." During the six months which succeeded their landing, they lost the "lives and services of 2,000 men," and the whole force was enfeebled and crippled for six months; no doubt they underwent very great hardships, were exposed to the weather, had bad food at some part of the time, and bad shelter; but they were not exposed to greater hardships than have often been met with little loss by seasoned troops. The great cause of their losses is to be found in the quality of the men, and it is worth observation how comparatively easily the Irishmen, drawn from the country and accustomed to open-air life and to the physical exertion of agriculture, bore the hardships which prostrated so rapidly the town recruits drawn from Scotland and England.

The often-quoted marches of Napoleon may be just alluded to here in reference to this point. In 1805 the so-called "Army of England" marched across France, a distance of 450 or 500 miles, with scarcely a straggler, and with scarcely any sick. In 1812 and 1813 the French army was an army of recruits, "boys who died by hundreds on the roadside." The Emperor bitterly complained, but his complaint met with no response. He had exhausted France by fifteen years of glory, and seasoned, hardened veterans were not procurable.

But even seasoned and veteran troops may be too highly taxed. Of this

there are not many examples in the history of English warfare. There are a considerable number in the history of continental armies, as in the army of Prussia in the time of Frederick the Great, and later.

Properly to train his men, to train them so that they shall be ready for great emergencies, to save them when saving is practicable, so that when necessary their whole strength may be called upon, must be one of the most striking powers of a great commander. The exposure, then, of immature young men to the hardships of war, hardships which must be undergone, must form the next series of causes which have given rise to disease in the English wars.

8. But now, supposing that the provident care of the Government and the skill of the general have succeeded in meeting all these conditions—have succeeded in providing well trained and seasoned men, in properly feeding them, in properly clothing them, and protecting them as far as can be done against inclemencies of the weather, in looking out for, anticipating, and providing for the causes which produce typhus, the causes which produce putrid dysentery, the causes which produce typhoid and other forms of fever—supposing that all this could be done, would an army be healthy?

In answer to this it may be said that it would be, that it must be, in a great measure, healthy. But there are still some causes which the soldier himself calls into action, and from which his officers can only in a very slight degree protect him. The agencies which the soldier himself thus calls into action are, especially, the want of cleanliness, which is so difficult to be enforced in war, the excessive use of spirits, and debauchery.

During any exertion it is an important matter to keep the skin perfectly clean. There are those who underrate the importance of this point, but they are mistaken. It is a point of prime necessity. Now in war such cleanliness is hardly possible to be enforced. Water cannot be procured, time perhaps cannot be given, and the soldier necessarily becomes extremely dirty. Hence there is a certain amount—no great amount, but a certain amount—of ill-health proceeding from this cause alone.

Whenever an army has been kept from spirits, although it has been placed otherwise under unfavourable conditions, its health has been good. Some striking examples of this may be taken from the American War of Independence, among the American troops. At first the American troops in the revolutionary war were unhealthy. After a time they ceased to be paid—funds were not forthcoming to pay them. They then became very much healthier—in fact extremely healthy. The same thing occurred in 1814. In that war the American troops were also unhealthy at first. They ceased to be paid, they ceased to purchase spirits, which previously they had indulged in, and again they became healthy. A surgeon who witnessed both these campaigns states, and very truly states, that “when the soldier is poor in money he abounds in health.” The same effect of abstinence from spirits being attended with an improved state of health of the troops has been witnessed often in the English army. The case of the “illustrious” garrison of Jellahabad is a striking instance. Another most striking instance is given by Sir John Hall in the last Caffre war. The troops were exposed to great hardships and inclemency of weather, and yet remained extremely healthy, in consequence, mani-

festly, as appears from all the circumstances of the case, of the fact that spirits could not be issued to, or procured by them. But perhaps the most interesting example of this fact is to be found in the celebrated Cornwallis campaign of 1781, in which a body of men made a long and fatiguing march of more than 2,000 miles, were exposed fully to inclemencies of weather, were supplied by a commissariat which was rather indifferent, and yet remained extremely healthy. Dr. Chisholm, the surgeon of the 71st Highlanders, shall however narrate this case. I will read an extract from his book giving an account of this celebrated march. He calls it "the most remarkable campaign of the American Revolutionary War, owing to the dangers, fatigues, and privations sustained by the army in the course of it:—

"They effected a march of nearly 2,000 miles through a poor country, inhabited by inveterate enemies, always more than 200 miles from their resources; forded many large, deep, and rapid rivers at the hazard of their lives; fought one pitched battle against thrice their number; were almost constantly engaged in skirmishes; were deprived of rum or any strong liquors; were for weeks successively reduced to the scanty support which a few heads of Indian corn, and a precarious very limited allowance of lean fresh beef afforded them; had no shelter from the inclemency of the weather, or the damps of the earth and night, but a single blanket and a few boughs of trees hastily put together in the form of wigwams. These hardships, fatigues, and privations they were enabled to support by the example shown them by their excellent and amiable commander; by the exercise of marching being alternated by rest every third day, when practicable; by parading in clean linen once every marching day and twice every halting day, being obliged to clean and bathe themselves every day; by the men being obliged to wash their shirts and waistcoats and pantaloons themselves; by a necessary abstinence from strong liquors; and, finally, by what may be considered as not the least cause, their pursuing, not flying from, an enemy. The regiment I was surgeon to, the 71st Highlanders, composed a part of this truly gallant army; they consisted of about 600 men, and the average number of their sick during this arduous service was about twenty-five, exclusive of wounded, and they were all trifling cases."

Now here the great immunity from sickness may be considered to be dependent,

1. Upon abstinence from liquors.
2. Upon the enforced cleanliness.
3. Upon the rest every third day.

The commissariat, though indifferent, was not extremely bad; the men had fresh meat, at any rate, and appear also to have had corn, and possibly other vegetables. Of these causes the abstinence from strong liquors must be put down as the most important. In the long catalogue of wars I have not been able to find a single instance in which the use of spirits has been proved to be useful, and there is a very large number in which it has been proved to be detrimental. There are only three ways of keeping men from the excessive use of spirits. The first is to supply them with good malt liquor, and with red wines which contain a small per-centage of alcohol. The supply of red wines of this kind was

formerly strongly urged by Sir Gilbert Blane, the celebrated naval surgeon. The use of these wines is not merely negative as a substitute for spirits, but also positive, for by their use a large number of salts, neutral and acid vegetable salts, are supplied to the body, which are of the highest importance to the nutrition of the system, and are themselves no mean antiscorbutics. The second mode of preventing men from getting spirits is of course by camp regulations. We have seen this attempted in the present American War, for a special Act has been passed by Congress for the purpose of hindering the men from purchasing spirits—a plan, however, which is always liable to considerable evasion. A third means by which men might be kept from the excessive use of spirits, would be to teach them how really ineffective and inoperative their use is in preventing them from suffering from diseases, and how many diseases the excessive, or indeed the even moderate, use of spirits may itself give rise to.

The third cause, which the soldier brings upon himself, and which has caused a great deal of sickness in some campaigns, has been debauchery. This, of course, is a point which can only be prevented, as far as it can be prevented, by camp and police regulations.

Such are the eight different and principal causes of mortality in our wars. I have arranged them in the order in which, looking over the history of English campaigns, I find they have produced the greatest amount of sickness. I have considered them separately or enumerated them separately for the sake of convenience, but in almost all campaigns two, or three, or four, or perhaps all of them, have been acting together.

There is no doubt that to a great extent these causes are preventible, but to prevent them would require that those in authority should fully recognise their existence and meet them with continued energy. To prevent them requires no special science, no peculiar appliances, but only the exercise of common sense and of knowledge which every soldier ought to have. The Romans certainly applied and acted upon rules which we must also apply, and acting upon them they appear to have escaped, at any rate to a considerable extent, those immense losses and tremendous catastrophes which have so often befallen modern armies. Their forces penetrated many countries and underwent many difficulties; the forest, the marsh, the desert, the cold mountain pass, the torrid plain, were traversed by them with impunity. Shall we, who boast a dominion as extensive and a knowledge more subtle and profound, fall short of the results obtained by those old masters of the world? If so, it will not be because our difficulties are greater, nor because our knowledge is less, but because we refuse to hearken to the lessons proclaimed to us from the camps and battle-fields of those thousands of British soldiers who in times gone by have fallen victims to the preventible diseases of campaigns. We must not suppose, because those lessons are so obvious, that they can be suffered to be forgotten. A writer whose name will assuredly be hereafter placed by the side of those of Robert Jackson and of Henry Marshall, says, "All errors should be treasured up in our memories. Although the past cannot be redeemed, it ought to suggest lessons for the future."

And Ranald Martin goes on to cite those memorable words of Samuel

Johnson, which, written in 1771, are still full of meaning, and have lost nothing of their truth and force.

"The life of a British soldier," wrote Johnson, "is ill represented by heroic fiction. War has means of destruction more formidable than the cannon and the sword. Of the thousands and tens of thousands that perished in our late contests with France and Spain, a very small part ever felt the stroke of an enemy. The rest languished in tents and ships, amidst damp and putrefactions, pale, torpid, spiritless, and helpless; gasping and groaning, unpitied among men, made obdurate by long continuance of helpless misery, and were at last whelmed in pits, or heaved into the ocean without notice, and without remembrance. By incommodious encampments and unwholesome stations, where courage is useless and enterprise impracticable, fleets are silently dispeopled and armies sluggishly melted away. Thus is a people gradually exhausted, for the most part with little effect. In this last war Havannah was taken, and at what expense is too well remembered. May my country be never cursed with such another conquest."

It is now ninety-three years since these memorable words were written, and it is only now that we may venture to hope that this country will not again be cursed with conquests that are scarcely less disastrous than defeats. Now at last an enlightened policy has been initiated, and the health of the soldier is, as Robert Jackson said it ought to be, "a primary consideration of the State." I venture to prophecy that in after times few reforms will be thought more important than that with which the names of Lord Herbert and Miss Nightingale, and others scarcely less distinguished, are now for ever connected; a reform in which the State both recognises a duty, and, as a reward, reaps an untold advantage. But it must be for the army at large and for the general public to support exertions which, without their aid, would languish and disappear. It must be for us, in fact, not to forget the teachings of the past, but to make them ever-living, that their warnings shall not be forgotten, and that their lessons shall not be unfruitful.

THE CHAIRMAN : I hope you will allow me to convey to Dr. Parkes your best thanks for his eloquent and most instructive lecture.