ance to and from Kasauli. He loses neither leave nor the pay of any appointment he may hold at the time. Furthermore, he spends a very pleasant month in a hill station, away from the trying hot weather on the plains of India.

From the syllabus it will be seen that the course is a most interesting and valuable one. It affords one a unique opportunity of familiarizing oneself with the most recent advances in tropical bacteriology under a staff of able teachers and in well-equipped laboratories.

In conclusion, being the first officers of the Royal Army Medical Corps to do the course, we wish to express our keen appreciation of the kindness, courtesy, and assistance of the director and his staff.

Echoes from the Past.

INTRODUCTORY LECTURE DELIVERED AT NETLEY ON THE TWENTIETH ANNIVERSARY OF THE OPENING OF THE ARMY MEDICAL SCHOOL, OCTOBER, 1880.

BY SURGEON-GENERAL T. LONGMORE, C.B., Q.H.S.

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WE are to-day commencing the twenty-first year of the existence of the Army Medical School. Twenty years have passed, forty sessions have been held, since I delivered the introductory lecture at Fort Pitt, Chatham, on the opening of the School in October, 1860. Twenty years form a period of considerable importance, not only in an individual life, but also in the history of an establishment such as the one with which most of you are only to-day becoming personally acquainted. The work which has been done, the changes which have taken place during this period, sufficiently attest the correctness of the latter part of this assertion. During these twenty years, 804 commissioned officers in the British Army Medical Department and 568 in the Indian Medical Department have entered the service through the School portals. Candidates for commissions in the medical branch of the Royal Navy came for the first time in 1871 to attend the courses of instruction, and since that year 216 Naval candidates have taken part in them. Altogether, 1,588 surgeons have passed through the school prior to receiving commissions in one or other of the branches of the public service, giving an average

of nearly forty each session. During most sessions, together with the candidates there have been some commissioned medical officers attending the School. The total number of such officers, up to the close of the last session, amounted to 256.

I am not able to say how many of the surgeons who obtained commissions in the three sections of the public service through the School still hold appointments in them, but with regard to the 804 who were commissioned for the medical service of the British Army, it may be interesting to mention that there remain 583 in active employment at the present time. This shows a loss by various casualties of 221 out of the 804 surgeons, or over 27 per cent, during the twenty years. The 221 casualties consist of 115 lost by death, of 76 who have left the service for various reasons, and 30 retired on half-pay.

Death, during these twenty years, has not spared the brightest and most distinguished among the promoters and supporters of the Army Medical School: Lord Herbert, the master-mind in the prolonged and searching inquiries that led to its establishment; the sagacious framer of the principles that were laid down for regulating its administration, the scope of its work, and the maintenance of its vitality; the disinterested commissioner, statesman, and minister, who in this, as in all his other official undertakings, had the Army's and country's best interests at heart, was taken away, in the prime of life, within a year after he had opened the School; before it had acquired, it might well be thought, sufficient strength to maintain itself without the powerful support of its founder.¹

Director-General Alexander, the accomplished, fearless soldier-surgeon; most honest, open, and straightforward; who, as one of the Royal Commissioners under the presidency of Sydney Herbert, took an active part in the organization of the School; and who, raised comparatively early to the highest post in the Army Medical Department, would have been a constant prop to the School had he lived, but who was carried off by sudden fatal illness before he could even see it start on its career.

Sir James Gibson, his successor, who was present and took part in the opening proceedings, and who honestly tried to promote what he believed to be calculated to advance the interests of the School, and the standard of professional education in the department over which he presided.

¹ Lord Herbert died on August 2, 1861. He personally opened the School in October, 1860, and then appeared to be in vigorous health.

Sir James Clark, whose active mind from the days of his service in the Royal Navy, and great influence during many years with the Court and highest functionaries of the realm, were constantly employed for the advancement of medical education in the military services as well as in civil life; who, as recorded by one of his biographers, organized the method of examination when the Government, in 1854, determined to open the Indian Medical Service to unrestricted competition; who not only took a leading part in the establishment of the School as a distinguished member of the Royal Commission presided over by Sydney Herbert after the Crimean War, but was subsequently himself President of the Committee which made the arrangements adopted by the Minister of War on its removal from Chatham to Netley; who, to the latest period of his most useful career, even in his venerable old age, still maintained a warm interest in the institution and its welfare.

Sir Ranald Martin, another of the Royal Commissioners who acted with Sydney Herbert, a most earnest friend of the objects of the School, and always ready to give a helping hand in advancing it, either as a member of the School Senate or by his private influence and advice.

Dr. Parkes, the devoted founder of the system of study of practical Army Hygiene at the School, whose world-wide reputation in his profession, no less than his perfect character and benevolent disposition, gave him an influence for good that few can realize who were not intimately acquainted with him and his works.

All these have been removed in the course of the period that has elapsed since the School was first organized and inaugurated twenty years ago.

And, although not connected with the School at the time of his death, yet having been associated with it for the five years just preceding that sad event, in assisting me in the duties of the Chair of Military Surgery, I cannot but add the name of Surgeon-Major Porter to the roll of distinguished men I have just enumerated. The soundness of his judgment in surgical diagnosis, the dexterity he had acquired as an operator during his term of office at Netley, his zeal for the professional reputation of his department, his indefatigable industry and devotion to duty, his warm-hearted and amiable disposition, formed a combination of qualities which made not only myself but others who were well acquainted with him look forward to his filling the highest posts in his department with distinguished credit; and, though all too brief, his career in Afghanistan, particularly that part of it when he was directing the

medical affairs of the Cabul field force, as testified by the honourable tribute paid to it by the General Commanding and by the regrets of his comrades, sufficiently proved that these anticipations had been well grounded. The death of Surgeon-Major Porter was an irreparable calamity to his personal friends, and a grievous loss to the branch of the profession of which he had already become a conspicuous ornament.

During the interval that has passed since the School was inaugurated by Lord Herbert at Chatham, important changes have also occurred in some of its administrative arrangements and regulations. It is not my present purpose, however, to review the past history of the School, and I will only now refer to one change, recently made, because it may affect some of you injuriously, and to a certain extent defeat the object of your coming to the School, if you will allow it to do so. It must depend chiefly upon yourselves whether this is the effect of the alteration I allude to or not. The change is this: you who are probationers in the Army Medical Department now come here with your order of merit and place in the public service already fixed; that is, in case nothing should occur to prevent you from receiving a commission at all. With the exception of the first session, at which time the best mode of classifying the probationers at the School was still under discussion, the rule has been for the positions of the candidates to be settled after the completion of the course of study in the work of the School, not before it. The marks gained in the entrance competitive examination in London, and the position taken according to them, counted; but so also did the work done at the School, and the results of the examination upon that work at the close of the session. The marks gained in this final examination were added to the marks gained in the competitive examination in London; and the two sets of marks combined settled the final order of merit and future position in the service. Now the examination at the close of the session at Netley is only a qualifying one as regards the surgeons on probation of the Army Medical Department; with those of the Indian service and Royal Navy, the examination is still a competitive as well as a qualifying one, and its results still count in arranging the lists for commissions. The effect of the old arrangement in the Army Medical Department was to stimulate candidates to extra exertion in following the studies at the School. The candidate who arrived from London No. 1 on the list, worked hard to maintain his position; No. 2 strained his energies to try and become No. 1. Some who happened to be at or near the

bottom of the list, would work to their utmost to obtain a less unenviable position. Some who had gone through the ordeal for their general professional qualifications a few years before competing for an Army appointment, and who, from having become rusty in some of the details of the subjects on which they were examined, had not gained the place they thought themselves entitled to, worked hard at Netley in the hope that their diligence and practical professional knowledge might retrieve the loss in position they had sustained at the London examination. Thus in various ways, and from various motives, the fact of the amount of practical work done at Netley having an influence in determining the future position in the service, acted as an incentive to increased study and exertion. The experience of the last two sessions, during which the change of system was brought into operation, has proved, I regret to say, that the removal of the stimulus to exertion has led, in a large proportion of instances, to the removal of the exertion itself. Neither the duties in the wards, nor the studies in the practical hygienic and pathological rooms, were conducted with that zeal and attention to which we had been previously accustomed; and in the concluding examinations the contrast between the work done, and the knowledge shown by those, on the one side, whose positions partly depended on the results of the examinations, and by those, on the other side, whose positions were already fixed and independent of them, was so strongly marked that the Professors felt it incumbent on them to make a full representation of the subject to the governing authorities of the School. There was no attempt, on the part of the probationers of the Army Medical Service, to disavow the fact that they had not laboured as their colleagues of the Royal Navy and Indian services had done, nor to conceal the motives of their relative inactivity. In one instance, the neglect of taking ordinary advantage of the means of instruction at the School, imposed on the Professors the painful task of reporting the gentleman in question as not sufficiently qualified to be recommended for a commission; and he lost the appointment he was hoping to obtain in consequence. I can only call your attention to the facts I have mentioned, and ask those of you who are surgeon probationers for the Army Medical Department, as gentlemen who have already attained an amount of professional experience that will enable you to judge yourselves of the value of the practical knowledge which will be placed within your reach, that you will do your best to grasp and retain it while you can do so. The information which you will have the

opportunity of acquiring here is all of a practical kind; it is information which you have not had the opportunity of acquiring while pursuing your regular studies in the civil schools; it is of a nature to add greatly to your value and power of usefulness in your everyday service as Army Medical Officers; and if the opportunity of gaining practical acquaintance with it now offered be lost, it may probably never occur to you again. I do not think it likely to be of advantage to enlarge further on this subject; but I could hardly address you on this occasion, when you are about to commence your work at the School, without making the remarks which I have just made, and trying to turn to account, for your own benefit and that of the Army Medical Service, the observations which the last two sessions have forced on the attention of the Professors. At the same time, I must not hide from you the fact that you who have come for this session will be placed at a disadvantage as compared with your predecessors in respect to the amount of time there will be at your disposal for acquiring the practical information I have alluded to. There is only room for thirty-six gentlemen to work in the hygienic laboratory, or pathological department, at one time. As the number sent down for the present session is one hundred, it is an obvious result that you will have to be divided into three sections for work, and a little further consideration will show that as the same work will have to be gone through separately for each section, you can only get the opportunity of doing one-third of the amount that was originally designed to be done, and that would be done if there were adequate accommodation for the whole number to work together during the four months the session lasts. All that the Professors can do under the circumstances is to do the best the time and space afforded to them will allow. This they will do, and they hope that you will second their efforts to the utmost of your ability, and thus hereafter be enabled to look back upon the time you are now entering upon at Netley as a time not merely of pleasant and agreeable intercourse, which they sincerely desire it may be, but also as a time pregnant with useful acquirements destined to be of benefit to yourselves, and to those who may come under your professional charge, throughout your career in the public service.

I will now leave the topics I have been touching upon, which, in some respects, may be regarded in the light of family matters incidental to our school relations, and will ask your attention to a subject of more special interest in connexion with my own

department of military surgery. I propose to make some remarks during the time that remains to us on the question of introducing the antiseptic method of treatment into military field practice. It may be seen from the discussions which have recently occurred in this country on the subject, that, although the number of adherents to the antiseptic method of treatment of wounds has largely increased during the last few years—some of the most eminent practical surgeons of the kingdom, and some former opponents, being included in this number—still the rule of antiseptic surgery, in its strict sense, can by no means be said to be universally accepted in civil practice ; but still less is it acknowledged as a method to be followed in field practice. The military aspects of the subject have hitherto absorbed far more of the attention of army surgeons on the Continent, especially in Germany, than it has done among army surgeons in England. I think it hardly possible, however, for anyone to become acquainted with the experience which has been published in Germany by Dr. Reyher and Dr. Bergmann of the effects of the antiseptic treatment of gunshot wounds during the last Russo-Turkish War, the results of the practice of Surgeon-General Dr. Cammerer in Roumania, during the same war, among the wounded from Plevna, or the writings of Volkmann, Esmarch, Nussbaum—all surgeons practically acquainted with the treatment of gunshot injuries on a large scale—without acknowledging the importance of the subject, and almost coming to the conclusion that we are on the eve of something like a revolution in the practice of military surgery. I do not think it possible yet to see the full results of the employment of antiseptic treatment in military practice, nor to forecast with anything like precision what it will settle down to, should it be generally adopted. The experience, taken altogether, which has hitherto been gained in the application of it in the field is still comparatively limited in amount. It has not been practised in the field in any instance by British surgeons, as far as I am aware. I need not say to those who know what is meant by “antiseptic surgery” in the modern sense of the term—by *asepticism*, which has been suggested as a better definition—that the mere application of carbolyzed tow, or of dressings of lint soaked in carbolyzed oil to wounds, does not constitute it, though wounds dressed in this manner have been quoted as having been treated by the antiseptic method. Asepticism means a good deal more than this. For practical use the name *Listerism* seems to be a very convenient one. There is no confounding, under this designation, the various kinds of practice

which are sometimes spoken of as the antiseptic mode of treatment. Moreover, it appears to be a very proper as well as expressive term; for, without at all committing one's self to the theory on which Lister has based his practice, it expresses what that practice is in its entirety; and if the practice be sound, if it be true that it produces more advantageous results as regards the saving of lives and the healing of wounds than any previous mode of practice, it is but simple justice that a name should be given to it which will remind all that use it, and all that hear it, of the eminent surgeon to whose talents, scientific researches, and indefatigable perseverance, the introduction of the treatment, regarded as a whole, is entirely due.

I have referred to the use of the antiseptic method of treatment, Listerism, presuming it should be generally adopted, as involving little less than a revolution in military surgery. Is it right to speak of it in this way? It has been truly observed, on many occasions, that all surgical practice is antiseptic in principle—that almost all surgical dressings and applications are, or are intended to be, antiseptic; just as it has been said that not merely a certain phase of modern surgery, but all surgery from its very commencement, has had a just claim to the title of “conservative surgery.” What true surgeon ever treated a wound without having in view the removal of septic elements in the wound itself, and the prevention of any conditions which might lead to septic poisoning of the patient's constitution? What surgeon ever treated a gunshot wound of any severity, without endeavouring to arrest and get rid of the gangrenous and putrefactive condition which the very nature of the injury had in varying degrees brought about, without trying to ward off the extension of a similar putrefactive and septic condition to other wounds, which, though they might be less liable to a change of the kind from self-contained elements, were exposed to the risk of becoming septic, by septic agents being carried to them by contact, or through the air, or by other undiscovered means. True, in the days when hospital gangrene, pyæmia, and septicæmia were common, sometimes terribly destructive, in our military hospitals, the means of prevention were not well understood; but it would be an unjust reflection on the great military surgeons of former days not to acknowledge that the prevention of these septic disorders was the great aim of the remedies which they habitually employed—the main purpose to which all their efforts were directed. And so with conservative surgery. If the limb were sacrificed by the military surgeon, was it not to preserve a life which was in

jeopardy, either from the nature of the injury, or from the circumstances under which the patient was placed, or from a consideration of both combined? If the damaged joint were excised, was it not to preserve the limb? If the shattered bone were treated without the use of the knife, were not the same conservative measures always in view? Is Listerism, supposing the benefits attributed to it to be undoubted, anything more than a further step of improvement in mode of practice? Can it, looking at it particularly from the point of view of the military surgeon, be justly called anything approaching to a revolution in treatment?

Let us examine the matter a little more closely. In the treatment of wounds in field practice it has always seemed to me that, leaving on one side the acknowledged necessity for a comprehension of the special features of each particular injury, and a knowledge of the special requirements depending upon its particular nature, everything else of importance in the treatment might be summed up under two heads: purity and repose. Purity of air, purity of all the surroundings of the patient, purity of all local applications, the simplest being generally the best if only pure, and local rest. So far as these essentials could be secured, so far would morbid constitutional states be warded off, and local repair quietly and speedily effected. If we could only secure these essentials in the field to the same extent as they are secured in our best civil hospitals, then in field practice we should meet with equally successful results, like injuries with like, as the results obtained in those civil hospitals. But the great difficulty in field practice has always been to obtain even an approach to that amount of purity and repose which such a hospital as the one in which we are now assembled enables the patients placed in it to enjoy. Wounds in the field are usually inflicted on men whose surroundings can nowise be regarded as surgically pure, either at the time they are inflicted, or, as a rule, during their subsequent treatment. The men are wearing the uniforms they have been long toiling in, they are covered with perspiration from exertion and excitement, the air is filled with dust and debris caused by the movements of the troops, the tramp of horses, and the passage of guns and vehicles, or the surface of the ground is often a bed of slime and mud. The wounded in a great battle lie about for hours, it may be for a day or even two days, with their wounds exposed to all these hurtful influences. If the men who have fallen are removed more early to a dressing station, or conveyed to a field hospital, the transport can scarcely ever be accomplished without a serious amount of additional injury to the

complicated anatomical structures which have been wounded. And who that is acquainted with the state of things inseparable from the movable field hospitals of an army, owing to the limited amount of equipment of all kinds, and of skilled attendance relatively to the needs of the time, or that is usually found in the more stationary but still temporary hospitals in rear, can regard them as presenting those complete conditions of purity which thoughtful surgeons have always held to be not merely desirable, but even to be essential, for a perfectly successful repair of grave wounds?

Sufficient experience, however, has now been gained to show us that in spite of these sources of impurity, notwithstanding all the septic conditions to which the wounded are exposed, it is possible to obtain successes that have never been before obtained in military surgery, if antiseptic precautions be faithfully and fully enforced. The impurities, organic and inorganic, which are carried into the wounds by the projectiles, the impurities in the atmosphere surrounding them, the impurities that are inseparable from the use of barns and old buildings as improvised hospitals, can be neutralized by the antiseptic method of treatment. This being so, is it anything less than a revolution? Look at some of the facts recorded by the few surgeons who, as yet, have had the means of following out the treatment in the field, and who have followed it. Take, for example, its effects as regards gunshot wounds of joints, for they have ever been among the most serious wounds which military surgeons have had to deal with in field practice.

An incised wound of a joint is a very simple injury by contrast with a gunshot wound of a joint. Yet in such an apparently slight operation as the removal of a loose cartilage from the knee-joint, with so limited an incision as is required for its extraction, who that has been in the habit of performing it in old days as I have been, can forget the extreme importance which was attached to the perfect exclusion of air from the interior of the articulation? It was to this point that attention was chiefly directed during the operation. If air were excluded then and subsequently, the wound healed like any other simple cut; if air got admission, the wound was converted into one of great danger. Even a dislocation of a joint produced by excessive violence, with its ligaments torn, with blood extravasated and infiltrating the parts around, even with injury to bone, is relatively harmless if there be no open wound; let there be an external wound, and air admitted, we all know it to be a most dangerous injury,

dangerous not only as regards the limb, but also as regards the life of the patient. The whole of subcutaneous surgery is based on the principle of preventing the admission of air among wounded structures. But now, under antiseptic precautions, joints, in cases of need, have long incisions made into them by surgeons, air is freely admitted, and all this is done without hesitation, and without apparent risk. Such a change seems really marvellous. It is not a step forward in the direction surgeons were moving; it is entirely a new path that is opened up. In the case of a large articulation traversed by a bullet, impure air must pass along and enter with the projectile, some portions of the tissues are broken up, deprived of vitality, and forced into the adjoining structures, the whole wound is a contused one, the extravasated blood finds its way among the anatomical parts in the vicinity; yet under these septic and most unfavourable conditions, it has been found that not only the joint may be preserved without danger to life, but even the mobility of the joint restored, when the treatment planned by Professor Lister is strictly pursued.

I will only just refer to Professor Reyher's published experience as regards gunshot wounds of the knee-joint; time will not allow me to follow his experience in wounds of other joints, or in gunshot fractures of the shafts of bones, though the results in these equally tend to show the remarkable advantages that have been gained by the use of Listerism in their treatment. In Dr. Reyher's report there is a detailed table of eighty-one gunshot wounds of the knee-joint which were treated without amputation being resorted to in the early part of the treatment. Of these he had under his care eighteen cases that were treated antiseptically throughout, from the beginning to the close. Among these only three deaths occurred, while the remaining fifteen fully recovered. Not only the wounded limbs, but the mobility of the wounded joints were preserved in all these fifteen cases. In forty cases, which, according to Dr. Reyher's description, had been manipulated and operated upon in opposition to antiseptic principles before coming under his care, the deaths amounted to thirty-four. Six patients, therefore, out of forty survived. In five of these instances life was only saved after amputation of the wounded limbs; in one case only was the wounded limb preserved as well as life, and in this the mobility of the joint was lost. The remaining twenty-three cases were treated altogether without antiseptic precautions, and of these only one patient survived. Thus, in the cases in which Listerism was practised from the outset, the wound openings being merely

antiseptically occluded by an antiseptic compress until the arrival of the patients at the field hospital, the mortality was reduced to 16.6 per cent; in the cases treated partially only on antiseptic principles, the mortality was 85 per cent; in the twenty-three cases in which antiseptic treatment was not employed at all, the mortality was 95.7 per cent.

I need hardly say there have been instances of gunshot wounds of the knee-joint occurring in the field saved under former methods of treatment, but such cases, when there has been complete evidence of the interior of the joint being opened, have been rare and exceptional; and whenever they have occurred the patients have been subjected to the greatest risks during the treatment, while a fixed joint has been regarded as a remarkably good result in the end. I believe no instance occurred during the Crimean War in which the knee-joint was manifestly penetrated and the epiphysis of the femur or tibia fractured, where the wounded limb as well as the life of the patient was eventually preserved. Amputation, as a rule, was performed early, being regarded as essential to give the patient a fair chance of life in such cases, as it had been by the eminent surgeons of the Peninsular days from the experience they had gained during the early wars of the present century; and where it was not performed in the onset of the case it had to be resorted to subsequently, if the patient had not already succumbed to the constitutional effects of his injury. In the expedition against Kinburn a healthy young officer, under twenty years of age, shot himself in one of his knees by a small bullet from his revolver. The limited size of the wound, the absence of any evidence of injury to the bone surfaces (and, indeed, as afterwards proved, none existed), the youth and healthy constitution of the patient, made this a case in which it seemed justifiable to try and save the limb. Conservative treatment was therefore adopted, and every effort made to prevent inflammation in the joint by local means as well as constitutional treatment. But the too common results followed—inflammation, suppuration, and disorganization of the joint, and eventually death. Amputation was performed four weeks after the injury, but proved too late. This young officer had advantages that are not often to be obtained in field practice, for he was removed on board ship directly after the wound was inflicted, and had all the care and attention from the first that could be possibly given to one in his position.

Prior to the war of 1870 between Germany and France, Baron Langenbeck, of Berlin, advocated the conservative treatment of gunshot wounds of the knee-joint when the bones were not much

fractured as the proper mode, and during the war many such wounds were treated without amputation. The success, however, appears to have been very limited, although the treatment laid down by Langenbeck resembled in some respects the practice of Professor Lister. Air was to be excluded as far as possible, immobilization of the injured joint was imperatively enjoined, and carbolized dressings were to be employed. But it is one thing to attempt to exclude air; the admission of air after chemically destroying the septic qualities of its contents, as aimed at by Listerism, is quite another thing.

In some respects the condition of field hospitals in time of war is often not unlike what that of some foreign civil hospitals has been in time of peace; the great difference being that the state of things in the civil hospitals was a preventible one, while in the field the circumstances of warfare render it unavoidable. Soldiers lying in tent hospitals, without bedsteads to keep them off the ground; the air filled with dust and those organic elements on which, whatever their nature, putrefactive changes in animal tissues have been proved to depend, freely entering and settling on their coverings and their persons; scant means of ablution or cleanliness for them or their attendants; or subjected to the same noxious influences while lying on the floors of churches, outhouses, or old buildings in villages and towns; generally without any suitable appliances for the proper conservancy of the number of wounded patients lodged in them: these are common conditions in time of war, which surgeons, however alive they may be to the evils which result from them, are often powerless to avert. I have seen Continental hospitals, however, in large cities, centres of civilization, where the state of the injured sufferers lying in them was certainly as hazardous, if not more so, than that of the military patients I have referred to. Hospitals where, from the long-continued absence of adequate sanitary arrangements, every part of them must have been deeply impregnated with septic materials; where from the habits of the patients, from the habits even of the surgeons and attendants looking after them, it appeared nothing less than marvellous that any grave wound could follow a healing course and become repaired. Indeed, we know that so great has been the ratio of mortality in many of these Continental hospitals as compared with the mortality in most of our English hospitals, in which hygienic improvements had advanced with so much more rapid strides than they had abroad, and where the habits of persons in respect to cleanliness were so different, that many inquiries were instituted by Continental surgeons, and visits of observation to this country made, to arrive

at an explanation of the difference; and it is curious to note that, in some instances, so little were the visitors capable of appreciating the immense influence of sanitation in producing these results, they argued that the greater success of treatment in the English hospitals was due to the constitutions of Englishmen being more tolerant of injuries than those of their own countrymen.

The civil General Hospital at Munich, where Professor Nussbaum practised, was in the condition I have been describing. Sanitary defects of all kinds abounded in it. Every wound in it took on an unhealthy action. Erysipelas, pyæmia, and hospital gangrene were dominant. Almost every patient on whom an amputation had to be performed died. No important operation was undertaken, therefore, that could possibly be avoided, however advantageous it might be to the patient if it could be done with success. But then comes the startling fact that, without any change in the hospital itself, without any improvement in its sanitary defects, but with a change only in treatment—the adoption of Listerism—all these disasters disappear. Operations of the severest description, operations that would not have been contemplated previously, could now be performed with remarkable success.¹ Undoubtedly, under the new treatment there is a certain amount of cleanliness which probably was not much attended to previously. The hands of the surgeons are bathed, the instruments are cleansed; but with all the other unhygienic defects remaining, it is sufficiently obvious the mere washing of hands and instruments would have made no material difference in the general results. If the *avoidable* sanitary defects in such civil hospitals can be thus counteracted by a special treatment, is there any reason why the unavoidable sanitary defects in the surroundings of patients in time of war should not be counteracted by the same special treatment, if it can be applied to them? And if this can be done, will it not amount to such a radical change in our notions of what could be expected, almost of what we deemed

¹ My friend Dr. Renk, Assistant Professor at the Hygienic Institute of Munich, who at the request of the Bavarian, and with the consent of the British Government, went through the course of instruction in the Army Medical School at Netley, in 1876, and who was formerly one of the surgeons in the General Hospital above mentioned, has to-day (October 11, 1880) informed me that the above remarks convey the exact truth regarding it. He adds that while he was serving in it not even a whitlow could be opened without gangrene following, and in some instances fatal results, while since the antiseptic treatment has been introduced, neither hospital gangrene nor pyæmia has occurred in any single operation that has been performed within the building.

possible, in field practice, as to justify calling it a revolution in military surgery? It does not seem possible to ignore the facts I have mentioned. On the one hand, we see the septic conditions inseparable from the treatment of gunshot wounds in the field neutralized by a particular line of treatment, as proved by the experience I have partly quoted; on the other, the fatally unhealthy circumstances of notoriously unsanitary civil hospitals equally counteracted by the same mode of procedure.

At first sight it might appear that a real and serious evil would result from such success under the circumstances I have described. I mean that if unsanitary defects can be neutralized as regards their influence on open wounds by a special mode of treatment, surgeons may remain content with the continuance of these unsanitary surroundings. But no thoughtful surgeon can ever remain satisfied with such a state of things. Even if the local mischief can be repaired in spite of them, every good surgeon knows that the constitutional vigour of his patient will depend on good sanitation in all its thousand ramifications being properly maintained; and that as regards the treatment of other patients, patients labouring under constitutional diseases, the prospect of satisfactory progress and restoration to health with neglect of hygienic requirements must ever be delusive.

Whatever views, however, we may hold regarding the probable consequences of the adoption of Listerism, the facts as regards the results of the treatment on wounds remain unaltered by them. Their weight is not lessened whatever misuse might be made of the means by which the facts have been accumulated. The views advanced in explanation of their occurrence may be accepted or not. They still belong to the domain of theory. We may be unable to explain satisfactorily occasional recoveries under circumstances which would appear to be utterly subversive of every chance of cure if the views on which Listerism is founded be correct. We may be unable to explain, in the present state of our knowledge, the close resemblance between the fever and other constitutional symptoms induced by inflammation and progressive disease in a joint without an open wound, without exposure to the action of external agents of any description, and those induced by suppuration and destructive disease of the same joint consequent on an open wound, with exposure to the influence of aerial agents, be they germs or whatever else they may be; but so far as surgical practice is concerned, if trustworthy means for warding off the inflammation and its consequences in the case of the open-joint wound be discovered, no

one can surely hesitate to acknowledge that an immense and most advantageous stride in practice has been taken.

We are justified in asserting, I think, that the germ theory will explain a greater number of observations in connexion with Lister's plan of treatment than any other theory that has been advanced; but I do not think we are warranted in asserting more than this. If we plant an acorn in the ground, the tree that grows from it is an oak; the oak when it bears fruit produces acorns, which will reproduce trees of the same kind, and we know no other seed by which an oak can be reproduced than the acorn. We assert, then, that an acorn is or contains the essential germ of the oak. It is not necessary to determine how the first acorn was produced, through what successive changes oaks and their seeds may have been developed from other forms of vegetable life, though this may be a subject of philosophic speculation. We find the relation between the acorn and the oak an established fact, and we accept it as such. But no such complete facts have been established as regards organisms and their influence in causing irritation, inflammation, suppuration, septic changes in wounds and septic disorders. No special germs for producing these results have ever been satisfactorily demonstrated. The special germs of particular diseases have sometimes been supposed to be discovered, and especially of late there have been very remarkable observations in this direction; but we have no examples yet that have stood the test of repeated observation and thorough inquiry.

But leaving theory aside, so long as a particular course of treatment is found capable of producing beneficial results in the cure of wounds which no other kind of treatment has yet succeeded in producing, of saving more lives and of effecting a more easy, sure, and rapid repair of injuries, we are morally bound, it seems to me, in the interests of our patients, to follow it, if we can do so. If any other kind of treatment would enable me to open joints freely, and expose them to the air with the same amount of local and constitutional impunity, if I knew, under other treatment, of as many as fifteen out of eighteen patients with gunshot wounds of the knee-joint being saved without amputation, and not only this, but with the mobility of the joints restored, then I should have a choice between this mode of treatment, whatever it might be, and Listerism. But as far as published records go no such instance exists, and no such choice is open to me.

One of the difficulties which surgeons have had to contend against in the treatment of gunshot wounds has been the lodgment in

them of foreign substances, some of them of a very irritating and deleterious nature. I refer not merely to leaden or iron projectiles, but particularly to substances like fragments of stone, cloth, leather, and such still more hurtful objects as portions of contused and devitalized tissues, which are apt to be carried from one part of a wound to another in gunshot injuries. It is true that with the modern bullets of narrow diameter the lodgment of foreign substances does not occur so frequently as formerly; but as statistical observations during recent wars have shown, even with these projectiles, and still more with projectiles of other kinds, these complications still occur in a far larger proportion than might be thought likely to happen. Many examples in former days might be met with of smooth metal substances, as musket bullets, becoming encysted, and wounds cicatrizing notwithstanding their lodgment; but I myself never saw, and I do not know of other surgeons having seen, in former days, a wound into which a piece of woollen cloth from a man's uniform had been carried become soundly healed in spite of its continued presence. But even the presence of bits of dirty cloth in the deep parts of wounds, we are told by eminent German surgeons, has not prevented them, in many instances, from pursuing a favourable course, and becoming healed under antiseptic precautions. If further experience should continue to confirm these observations, I cannot regard the change in any other light than that of a revolution in military practice.

To ensure the necessary precautions, and to carry out the course of treatment comprehended under the general term *Listerism*, certain special appliances and kinds of dressings are required. What chemical agents and what forms of these agents, what description of dressings will best answer the purpose, and at the same time be compatible with the peculiar conditions incidental to military arrangements in time of war, is a subject which still requires a good deal of consideration; but if *Listerism* is to be followed in military surgical practice, a thorough investigation of it must be made. Whatever may be ultimately determined upon in these respects, an important change will have to be made in some parts of the equipment of our bearer companies and field hospitals. Some of the ingredients for the treatment of wounds will probably have to be abandoned as useless, and others introduced in their stead. Here, again, something like a radical change in the principles of selection of articles will occur. But supposing the ingredients of the equipment to be revised in accordance with the needs of *Listerism*, questions will still occur whether some of them can be preserved in

an efficient state for use for long periods, as articles for military purposes generally have to be; whether the equipment can be provided in quantity adequate to meet the needs of the probable numbers that will require it; or, if provided, whether the views of commanding officers and the necessities of military service in other directions, will allow it to be carried with the troops on active employ. The free access of air, and its frequently forcible movement, will be another difficulty in the way of acting chemically upon it in the vicinity of wounds which have to be treated in the field and in tent hospitals. And even if these impediments be overcome, it may still further be regarded as questionable whether a personnel will be found to apply the treatment with sufficiently due regard to the accuracy which it demands, especially amid the tumult and confusion incidental to a scene of conflict; or whether, as the wounded are pouring in, or in case of particular military events—with a retreating force, for example—there will be either time or opportunity for a treatment requiring such close observation and care. In no method of treatment are extreme accuracy and thought regarding the minutest details so essential. At the late meeting of the British Medical Association in Cambridge, I heard Mr. Lister remark on a point in the treatment, connected with the use of a drainage tube, which had until recently escaped even his observation, but which, in the particular instance that had called his attention to the subject, had, he believed, interfered with the aseptic progress of the case, and at one time had threatened to prevent its successful issue.

I cannot at present consider how the antiseptic treatment of wounds may be best carried out in field practice—either the best materials for the purpose, or the systems on which they may be best applied, so as to bring them into accord with other military arrangements; it would be out of place to do so in this introductory lecture, and I shall have to refer to these matters again in the future. I will only add now, that if the advantages of the Listerian plan of treatment of gunshot and other wounds be real—if the dangers and mortality of wounds and surgical operations are everywhere lessened by it under unfavourable conditions analogous to those which are commonly met with in field practice (and with the facts brought to our notice from all sides, I do not see how the truth of this can be longer doubted or gainsaid), then we must regard it as our bounden duty to make every effort to adopt it, until some other plan superior, or, at least, equal to it, is available; and although there may be apparent contradictions in regard to it, and although there are, undoubtedly, many and serious impediments in the way of its intro-

duction into military practice, we must hope that these contradictions will in time be reconciled, the impediments be overcome, and thus the soldiers of the army who may be wounded in their country's service in time of war derive the same advantages from it that are now so extensively enjoyed by thousands of patients in time of peace.

Reviews.

THE DIARY OF A SURGEON OF THE GRANDE ARMÉE. L.-V. Lagneau, 1803-1815. Edited by Eugène Tattet. Paris: Emile Paul. 1913.

The diaries of the great wars of the Napoleonic period have probably not yet all been published, and one of the more recent to appear is the "Journal d'un Chirurgien de la Grande Armée." The original manuscript was put at the writer's disposal by a grandson of Dr. Lagneau.

During Lagneau's eleven years' military service, he took part in twenty-two campaigns, and recorded his impressions from day to day in small notebooks in which he illustrated costumes worn by inhabitants, scenery, monuments, etc. Some of his notebooks were lost with his baggage at Wilna, and these gaps in the records he filled in subsequently from memory. There is unfortunately very little in the narrative about medical work; there is an occasional allusion to treating this or that officer wounded in a particular engagement, but practically nothing about collection, disposal, and evacuation of wounded. As a regimental surgeon he would be little concerned with the after-treatment of his cases.

The book is full of interesting foot-notes. A short descriptive account of the military career of nearly all the officers he mentions in his diary has been inserted in the foot-notes, and many of these are copies of letters which Lagneau received from Larrey, Percy, and other illustrious medical officers commenting favourably on his medical work and reports. So we must take it that while his diary was more of a personal nature, the professional work was being recorded in other documents.

Lagneau commenced his medical studies in Paris, at the age of 16. At the age of 20, having obtained his degree, he was called up for military service and managed to obtain a commission as a medical officer on October 10, 1803. He was posted to Ostend to the "Ambulances de l'Armée des Côtes," destined for the invasion of England. He describes his daily life there in cantonments where the medical officers of the army and fleet formed a medico-surgical society which met with Percy's approval. He describes how the 21st Light Regiment, which had come from Egypt and which contained in the ranks Egyptians, Copts, Abyssinians, and negroes, suffered a lot from pulmonary trouble and dysentery.

Lagneau's next move was to the 9th Regiment of the Line, also recently arrived from Egypt; its headquarters were at Strassburg, whither he proceeded to join. At Strassburg he was attached to the military hospital for duty, where he served under a principal medical officer who was at that time nearly 80 years old. Thirteen months later,