

# Henry Potter Hall (1891–1862)

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## Presidential Opening Address Ulster Medical Society

### WAR AND SURGERY

At the conclusion of this, the greatest of all wars, it surely behoves us to consider the problem of war, its aetiology and consequences, what we have learnt, and how to apply the lessons of war to civil surgery. The latter applies mainly to wounds, burns, fractures, amputations, and similar conditions, leaving aside for the moment the medical side or preventive medicine, a vast subject, the success of which has been so clearly shown in this, the second great war, when, during and after a world-wide conflict under all sorts of conditions, no serious epidemic has occurred, and in which fighting strength has been conserved to the utmost, a remarkable achievement for which the medical services deserve the greatest credit.

The history of man is largely of his wars, from the earliest biblical times to our own time each important event seems to be dated by war or disease, or both, and these are man's greatest problems.

War may be considered as a disease, the most terrible of all diseases, and has been described by Pirogoff as "a traumatic epidemic" affecting people's minds and bodies, of all nations and tribes. War has always existed, nothing up-to-date has been able to prevent it. From its very nature war means wounds, and wounds need treatment, hence the development of the army medical services.

War is old and civilisation is new, so relapses into primitive savagery occur, especially among people whose ideas of civilisation are only according to their own ideas or standards, or lack of them. It has been said that "Educated men of to-day are merely primitive men who, by intelligent effort and training, have subjugated their instincts and emotions to reason. Children born of civilised peoples do not differ inherently from children born of primitive peoples. If the children of to-day were not educated and trained in the ways of civilisation they would grow up like primitive men. Every child, during its first year or two, even in the most civilised home, is nothing more than an animal, a little beast. From this stage the child develops naturally into the state of a



savage. His advancement from that point onwards depends upon his training and education." This is perhaps too sweeping a statement, but it contains much of the truth, as evidenced by the Hitler youth with its Nazi training. It shows that the only hope of the future among the aggressive nations which have caused such world-wide trouble, is education and civilisation with a spiritual or moral basis.

Civilisation has been defined as self-discipline, and history has shown this to be a somewhat thin veneer, apt to crack or blister in places, or even flake off. Nevertheless, without undue flattery of ourselves and with our many faults, history again shows that Britain, from the time of Alfred the Great, who set a standard of kingship for all time, and from the time of Magna Charta, with its standard of liberty for the people, has been the nursery of civilisation for the production and testing of the formulae and plans of men in their affairs and ways of living. Now, with America and Russia, we, though somewhat shaken and battered, are still one of the three pillars of security against war, and of economic stability, from our history and character perhaps the most stable

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element, or even the keystone of this arch of civilisation.

The present state of Europe, as described by Mr. Garvin, is now worse than at any period since the Dark Ages, which was the era of misery and distress following the fall of the Roman Empire, the last years of which Hitler's Germany resembled, and which met with a like fate. A similar condition now exists over Europe, and man's greatest tragedy and curse, Civil War, will be difficult to prevent on a large scale.

It is almost incredible that a civilisation such as ours could be lost and disappear, but such has been the case before. The civilisations of Crete, Greece, and Rome disappeared, and were replaced by the misery of the Middle Ages, and what has occurred could occur again, and nearly did so. Hitler commenced his campaign by killing or interning scientists and burning the libraries, as the hostile barbarian tribes destroyed the library of Alexandria and its literary treasures, and brought a thousand years of darkness over Europe, showing civilisation to be an uncertain process, as liable to go back as to go forward. Medical science could now give the world its most healthy period, but this depends on the survival of the scientific spirit and an advancing civilisation.

Since earliest times wounds have been man's heritage, and, whether wars continue or not, industrial and other accidents will do so, and necessitate the same careful treatment, much of which has been learnt in the field of battle. It is, therefore, essential that the student should devote much more time and study to this branch of surgery, and at first, instead of learning details of rare operations, he must acquire a good working and practical knowledge of wounds and fractures and traumatic surgery in general.

The Great War established the treatment of fractures on a sound and world-wide basis, established blood transfusion, and the excision of wounds, all of which have been improved in this war and carried a stage further. New to this war, and of inestimable benefit, has been chemotherapy, i.e., the sulphonamides and penicillin, and, with all this experience and data as guides, there is now no possible excuse for bad industrial or civil surgery.

It used to be the fashion for the combatant units of the army to despise the medical services, but this branch is now recognised as perhaps the most important of all. Unless soldiers are kept morally and physically fit, they cannot and will not fight. Lord Wolseley, in his soldiers' pocket-book, described the medical officer as "the most useless officer in the army," but a more sane view is that of the late King

George V, who referred to the Army Medical Service as "the one department which has never let us down." An inefficient medical service affects the morale of the troops. This was recognised long ago by the Romans, as quoted by Livy, who in his writings described the moral effects of a leader's care and interest in his troops, and in particular in his care of the wounded. Two thousand years later, Field-Marshal Montgomery in this very city bears witness to the same principles with the same results, and extols the efficiency and value of the medical services of all ranks.

War has now lost any glamour. It is a brutal and dirty business, as shown by the relapse of the German civilisation, their concentration camps, and hospitals for human experiment. The crowning insult to medical science, as described in the Belsen trial, was the arrival of the gas for the crematorium victims in a Red Cross ambulance. In the East we have the hypocrisy, treachery, and deceit of the Japs, and their inhuman cruelty, while at the same time boasting of their honour.

Out of so much evil there has been some good. Medical and surgical progress, with its resulting benefit to humanity, has been at least expedited. "In traumatic surgery," says Crile, speaking of the Great War, "the concentrated and accumulated experience of this brief period was greater than the experience along the same lines during the past one hundred years. ... Many new chapters were opened, some were closed and some discarded, while some were completed and their subject matter passed on to the benefit of civilian practice." War gives unlimited opportunity for experimental research and the stimulus to use that opportunity to the utmost, and this is the way to knowledge. Preventive medicine is, of course, an enormous subject, on which both war and peace depend, but at present we propose to deal mainly with wounds, their varieties and treatment.

What then do we owe to war? The creation of hospitals for the care of the sick and wounded was mainly due to the Roman Empire, which developed these, essentially from a military point of view. Between wars they also did much in the way of sanitation, water supply, housing, etc. The Crusades led to the establishment of various Orders of Mercy, the Order of St. John of Jerusalem and The Knights of Malta. The representatives of these bodies have done much fine work in the last two great wars. The Crimean War, with its tragic history of lack of medical supplies and the sufferings of the troops, nevertheless led to the foundation of the modern system of nursing, which has done as much for humanity as any

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other major discovery. Coming to the immediate present, war has resulted in the training of millions in first-aid, in auxiliary nursing, and general health consciousness. There have been great advances in the knowledge and treatment of industrial diseases, mass radiography, D.D.T., and penicillin, which we would probably not yet have had in more normal times.

Larrey, Napoleon's surgeon, instituted field ambulances and the excision of wounds. This latter method of treatment, however, lapsed, till it was revived during the Great War. In our own time penicillin, discovered by Fleming in 1929, was not used or developed till the stimulus of this war necessitated its use. Even the greatest wars could not continue long without an adequate medical service, and many wars have been brought to an inglorious end by neglect of this fact — witness Napoleon's campaign against Russia, when, out of the flower of the French army of half a million men, a few thousand wrecks struggled home, the remainder lost from disease and exposure.

The advance and development of science have been blamed for much of our present trouble, and certainly much of the scientist's work and achievement has been toward destruction. On the other hand, the work of Pasteur and Almroth Wright have saved more lives than wars have destroyed. This matter is being discussed in the public press at this time, with special reference to atomic energy, and suggestions have been made that scientists should not disclose their findings. This is an impracticable suggestion, as scientists from hostile nations working on similar lines would discover the secrets, and would be forced to disclose them or die in a concentration camp. Nevertheless, something must be done about the matter, and in this connection our Minister at Washington, Sir Gerald Campbell, in a recent lecture on "The Effects of Science on Humanity," says: "The scientist cannot wholly isolate himself from the rest of human affairs and remain indifferent to the wider implications of his discoveries, if civilisation is to advance into that spacious era which science is laying open to us." We must use science aright, there must be a general changing of heart, as Mr. Wells says in his "Guide to the New World," "We must now change or perish." This matter has been raised by the scientists themselves, as reported in the daily Press of 18/9/45, and which expresses their horror at the recent use of the atomic bomb, for which they blame the politicians. Certain religious elements have objected to the use of this method of war, but, when one reads of the atrocities perpetrated by our enemies, another section might think with reason that the only mistake

was not to have used the method to a much greater extent. You do not discuss the moral issues with the snake or rat that bites you, you kill it as you would any deadly germ. Perhaps a demonstration might have been given first, but we all know that actual experience is usually the only effective lesson. It, however, raises the whole question of science and its relation to medicine and to human life in general.

Dr. Clark-Kennedy, in a recent lecture on "The Art of Medicine in Relation to the Progress of Thought," given at Cambridge in the early part of this year, states that "We live in an age in which scientific knowledge has outrun philosophy, narrow specialization is the order of the day, religion has ceased to be a unifying force in education, belief in the Christian revelation seems to have declined, and excessive anxiety over the health of the body has replaced preoccupation with the welfare of the soul. Humanity seems to be travelling through the night without any white line to keep us in the centre of the road. As knowledge widens, we have less and less ground in common, and our views tend to become more and more extreme.

"The art of medicine is unique in that it alone seems to occupy a middle place. Medicine has to deal with human personality, and human hopes, human fears, and human failings, in conjunction with the material human body, which is liable to so many disasters in the physical environment of our existence. Medicine could, and medicine should, be the connecting link reconciling the conflicting points of view of the humanities, on the one hand, and the sciences on the other. A purely scientific education in the arts alone is insufficient for minds compelled to live in a material world. Yet philosophy has dropped out of medical education, and the tragedy is that medical education seems to trail along after a 'half-baked' materialism, already out of date, in an age when medicine could, and medicine must, help to integrate the arts and sciences in university education, if our sense of proportion is to be once more restored. Unless this can be done, we run the risk of losing our intellectual balance, and sinking in the sea of our own widening knowledge.

"Science looks for a definite answer to a general question. Medicine demands judgment in a particular case. That is the difference. Medicine teaches the necessity for balanced judgment, and that common sense is often a safer guide than the latest theory founded on apparent knowledge of all the facts. Medicine seems to me to teach that the white-line, though faded, obliterated in places, and always difficult to follow, is still to be found in the middle of

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the road.”

You will say that this is neither surgery nor medicine – but war is very closely connected with both, and the soldier in his relation to his foes and the protection of his country corresponds to the doctor and his infinitely smaller but much more deadly foes – the organisms of disease and his efforts to preserve humanity. We cannot alter all these scientific and other problems suddenly, but there are at least some practical matters that we can do, and in which we can profit by past experience – that is, in the active physical treatment of wounds, and in establishing and standardising in civil life methods which have proved useful in war.

## WOUNDS.

War wounds are more severe in their consequences than those sustained in civil life, the tissue destruction is greater, and the tissues are more devitalised from the heat and force of the shell or bomb fragment, more infection is blasted into the deeper layers of the wound, and the resistance to infection is diminished. The time factor between the receipt of the wound and its treatment is most important, because after six hours the wound from being contaminated becomes infected and cannot be effectively cleaned by ordinary measures. This applies more to industrial wounds, as G.S.W. are usually infected from the start, owing to the force of the projectile.

In the Great War, after a very unsatisfactory experimental period of antiseptic treatment, a fairly satisfactory basis was at last reached. This consisted in a radical excision of the wound, which was not closed by primary suture, but left open with some antiseptic gauze applied. If no sign of inflammation occurred, the wound was closed in a day or two by the method of delayed primary suture. If the wound was obviously infected and became inflamed and septic, it was left open, treated by Wright's hypertonic saline method, or the Carrel Dakin technique, and allowed to heal by granulation or secondary suture, nearly all wounds being drained.

The situation has been very much improved in this war, owing to increased experience. The wound, and especially the deep fascia is opened up to minimise tension, and the wound is trimmed rather than excised. Only devitalised tissue and a minimum of skin edge is removed, the wound is lightly packed with vaseline gauze, left open for drainage, and sulphonamides given as a routine, and penicillin if available. The wound may not go septic; if it does the infection tends to remain local, and there is not the generalised septic infection of the Great War. The

wound is often put in plaster of paris for transport, and delayed primary suture follows, or secondary suture hastened by skin grafting. The better transport in this war has improved surgical results, also the increased use of blood and plasma. This can all be done much more easily in civil surgery, where wounds are got early and radical treatment can be commenced at once.

Trueta, the Spanish surgeon, gives a good synopsis of wound treatment from his experience in the Spanish civil war. He calls it his five-point programme of basic points or principles.

(1) *Prompt surgical treatment.* Infection is proportional to the interval between the receipt of the wound and operation. This emphasised the six-hour basis between contamination and infection. He also emphasises the avoidance of numerous aid posts and frequent dressings. The patient should be rapidly transported to the main dressing station, usually in hospital.

(2) *Cleansing the wound.* No antiseptic known is equal to soap and water for wound contamination.

(3) *Excision of wound.* This must be properly done; incise, then excise dead tissue.

(4) *Provision of drainage* – by vaseline gauze and rubber strips.

(5) *Immobilise in plaster* – direct to the skin except over bony points. Without considerable experience, the plaster should be split after application.

To these should be added –

(6) *Chemotherapy* – now recognised to be a very important factor in wound surgery.

I would express agreement with Trueta's observations during the Spanish civil war that the best antiseptic is soap and water, many of the stronger antiseptics doing far more harm than good by killing tissue cells and providing a growth medium for bacteria. I have not for years put iodine, spirit, or any other violent antiseptic into or around wounds.

Another important advance is the more constant putting of wounds in plaster, although this was instituted by Lister. The plaster splint supplies the essential principle of rest to the wound, and prevents secondary infection, which has so often occurred owing to the too frequent dressing of wounds. Sulphonamides and penicillin may be given in traumatic surgery as in war wounds, when serious infection is thought possible.

Good results have recently been quoted in that most important branch of industrial surgery – finger and hand injuries and infections, which are such a steady loss to both employer and employee.

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Experienced industrial medical officers, using penicillin and vaseline gauze, have greatly improved the treatment of such conditions, and secured earlier return to work with hands and fingers showing a surprising degree of recovery following severe injury.

## FRACTURES AND COMPOUND FRACTURES.

Here again the same principles apply, splints are more simple and consist of either the skeleton type of Thomas splint, made popular by the late Sir Robert Jones, and plaster of paris, or both combined.

It is a matter of history, which you will no doubt remember, that the mortality of compound fractures of the femur in the early days of the Great War was about eighty per cent., and this fell to twenty per cent. by the routine application of the Thomas splint in the field, with traction from a skewer passed through the boot. Improved technique in this war has been a Thomas splint with fixed surface traction, combined with plaster of paris, the so-called Tobruk splint, which immobilised the wound and fracture and facilitated transport by ambulance or plane, the toilet of the wound being carried out as before, with routine chemotherapy. This method would, of course, be less necessary in civil practice, as the case could be got to hospital quickly and unhindered, but nevertheless the method could and is being used in hospital with skeletal traction. If the wound has been efficiently treated, it does not go septic, and the plaster of paris case prevents secondary infection, and prevents meddlesome interference. Penicillin is most useful in such cases, as a staphylococcal infection of bone is most persistent, and once established is likely to be permanent. In this connection, if penicillin has done nothing else, its beneficial results in osteomyelitis would have been of outstanding benefit to humanity. In many recent cases, it has appeared to cure the infection in a few weeks, which took as many years even to become chronic, and at the expense of gross deformity, loss of function, and permanent crippledom. This is a horrible disease, which for some reason has of late years become more frequent and more virulent, and, but for this war, penicillin would probably not have developed till much later, if at all, and many staphylococcal septicaemias and cases of osteomyelitis now recovered would have been lost or hopelessly crippled.

## BURNS.

In this sphere war has provided ample stimulus and opportunity for experiment leading to increased knowledge of the treatment of burns. This has been a machine and petrol war, with enormous numbers of burns, and we have got through much trial and error

to a moderately sound basis of treatment.

The classification of burns has been simplified into superficial and deep, according to the degree of skin involvement. Superficial burns only involve the superficial layers of the skin, and so are sometimes called partial. Where the skin is completely burnt through, the burn is classified as deep or complete, the skin being the important factor. Of course, the same burn may be both superficial and deep, superficial in one part and deep in another. Without going into great experimental details, I will describe briefly the treatment of a badly burnt child, which must go to hospital without delay.

*First-Aid Treatment.* — If the patient is going to hospital, and all bad burns should go to hospital, little is done beyond covering the part with a clean towel, wool, and bandage. No local treatment whatever should be done (except in the case of airmen who cannot get treatment for some days: here there are various applications which may be used). The patient should be well wrapped up, kept warm, given hot drinks, and perhaps a sedative, if trained personnel is available.

*In Hospital.* — The general condition is assessed on arrival, the B.P., Hb., etc., estimated. If these are satisfactory and shock is not marked, suitable sedatives are given and the patient taken to the theatre. Here the surrounding skin is shaved and washed with soap and warm water, sterile towels applied, and the burnt area treated in a similar manner. Dead tissue is gently removed, blisters are snipped away, the area is frosted with sulphonamides or penicillin, or both, and dressed with squares of vaseline gauze, and covered with a thick, soft, wool dressing and crepe bandages. In bad cases, the child is nursed in a plaster shell on an abduction frame, which is convenient for nursing purposes, and sulphonamides are continued by mouth or otherwise. Subsequent dressings may be done in a bath, or under some form of anaesthesia. In deep burns, early skin grafting will be beneficial and cause more rapid healing. In a severely shocked child, the burn must not be touched till the general condition has improved, and here is the great indication for plasma. Great quantities of fluid are lost from burnt areas, and the fluid and protein must be replaced. Blood transfusion is not given here, but is most useful later when anaemia and failure of healing is common. Here blood transfusion often produces wonderful results.

With regard to tannic acid and similar fixatives, these are only used in minor domestic burns of small size and superficial type, such applications being positively contra-indicated in deep burns.

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This technique has taken years to standardise, but has now reached a fairly satisfactory basis, after considerable confusion. Good nursing will pull a child through, where indifferent nursing will lose it. This is a most important factor which is sometimes lost sight of.

## SHOCK AND HEMORRHAGE.

The pathology of shock has been considerably simplified, at least from a practical point of view, which is that shock is due to loss of circulating fluid, plasma in the case of burns, blood in the case of wounds. The treatment is, therefore, early and rapid replacement of these fluids.

Blood transfusion, of course, was established as a successful procedure during the Great War, and the advance in this war has been in team-work, organisation, blood banks, the public response as donors. The use of group 0 or 4 as standard has simplified procedure, and here again the lessons learnt in war will benefit many in civil surgery. Blood is already getting more scarce and less readily available, though industrial accidents are rising, and unless some form of transfusion service remains for the giving, grouping, and storing of blood, we will to some extent lose the full advantage of this method as seen in war. There is still an enormous field for blood transfusion, both in accidents, various medical diseases affecting the blood, and especially in maternity cases, and, if this service continues, it will ensure that such patients, who would once have died, will now live.

As an extension of this, the importance of protein replacement has been emphasised, and much work done in the giving of amino acids, hydrolysates, and so on for starvation. In this field much more remains to be done, and by these means we should be better able to prepare patients for operation and sustain them afterwards. In civil surgery during the war period we have found blood and plasma of inestimable benefit in burns, and also in the secondary anaemias following septic infections or wounds. The amount of these fluids given is much larger than formerly, and I have yet to see any ill effects from giving large quantities, provided reasonable care and judgment is used. The case of a boy with a burst appendix illustrates this. The boy had a neglected perforated appendix, the abdomen full of pus, and his general condition was very bad. After operation, which was mainly for drainage, he developed signs and symptoms of intestinal obstruction, thought to be mechanical rather than paralytic. A jejunostomy caused enough improvement to allow operation, at which a loop of small bowel was

freed. The jejunostomy then began to digest his anterior abdominal wall, and he wasted to a shadow. Another operation succeeded in closing the jejunostomy, and he recovered, but the point emphasised is that he had seven transfusions during his illness, without which he would not have recovered.

## CHEMOTHERAPY.

The dream of the scientist, worked for so hard by Erlich and others, was at last realised in this war, antiseptics being used to kill bacteria in the tissues without injury to tissue cells. The action of the sulphonamides and penicillin are so well known to you all that there is little fresh to add at the moment. You will remember that the discovery of penicillin followed Fleming's interest and work on antiseptics, as a result of his investigations on this subject during the Great War, when he was even then seeking for the ideal antiseptic. In 1928, he first noticed and recorded a preliminary survey on the action of penicillin, but, lacking the stimulus of war, this was not proceeded with at the time. It was, however, taken up by Florey (1940-41) and his team of workers at Oxford, but, for a considerable time, was not available in sufficient quantity, owing to the technical difficulties of its production and the enormous cost of producing it on a sufficiently big scale. Here American methods of organisation came to the rescue, and there was sufficient penicillin for the Services towards the end of the war, and we can now get adequate amounts for civil surgery. Points of interest are its effectiveness in extreme dilution, and, most important, it is perhaps the first powerful antiseptic which is non-toxic and does not injure the tissue cells. Its use has saved countless lives and limbs in the latter stages of the war, which would otherwise have been lost, and it was used to bridge the gap between the time a man was wounded and the time he reached a base hospital. In civil surgery, it must facilitate primary suture in many cases, with consequent shortening of convalescence and rapid return to function. The enduring benefits to wounds, of course, remain, and are increasingly available for civil surgery. I think, however, these drugs should be used under proper pathological control, and after due examination of the type of organism. The practice of giving the patient, or the patient giving himself, sporadic doses is to be deprecated, and will result in the drug being ineffective when most required.

## PERIPHERAL NERVE INJURIES.

I have had a large personal experience of these cases extending back to the Great War, and such injuries are also fairly common in civil surgery.

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Children frequently get cut with glass, and adults (often nurses) frequently get severe cuts on the wrist from crockery or milk bottles, often dividing important nerves.

From a large series of cases, the following conclusions were reached:— After any serious wound, nerve lesions should be sought for and tests carried out. Too often we find a wound sutured and a peripheral nerve paralysis only observed later, when the optimum time for successful suture has passed. Any severe wound should be opened up and investigated under local or general anaesthesia. If a doctor is not prepared to do this, he should at least make the patient carry out a few simple test movements to try the ingenuity of the main nerves of the limb. If such movements cannot be carried out, the wound should not be sutured, but referred to a surgeon for special treatment. Loss of sensation, of course, occurs in the area supplied, but in motor nerves is not very extensive and may easily be missed. From my experience in this field, I think the only hope of a good result is early primary suture. This should usually be possible in civil surgery, though often this is not possible in war from service conditions, and where large portions of a nerve are actually lost. Purely motor nerves, such as the radial or muscular spiral, recover well with good function after primary and even after secondary suture. Mixed nerves, such as the medial or ulnar, do not recover well except under the very best conditions. Recently Mr. Souttar reported good results of ulnar nerve suture in children, which is encouraging, but his two cases described were the motor branch of the ulnar, and, as I said previously, motor nerves recover well. The cases illustrate, however, that it is always worth while trying suture.

## THE AMPUTATION OF LIMBS.

I have a special interest in these cases also, having been in charge of this branch following the last war, and have observed their progress since then, and in the present war. There is but little change in the amputation results other than has been described in the treatment of wounds, which, of course, is very considerable, and many limbs have undoubtedly been saved by modern methods and chemotherapy. There have, however, been many losses of limbs from the greatly increased use of mines, which produce very destructive wounds. The resulting wounds have been treated on general principles and the limbs only amputated when grossly destroyed. Amputations done in the field have been good, the surgeons following a standardised technique. That surgical horror, the guillotine amputation, has not been used

in our services, some form of flaps being cut. The Americans, however, have told me that they are not allowed to use any other method, and this produces an unnecessarily bad stump. Most cases will require trimming or re-amputation, and some of these have been bad, due to having been done by temporary surgeons in temporary home hospitals, without adequate experience in this work.

An interesting historical commentary on this subject dates back to the earliest times in Egypt. This states that the sick and wounded in campaigns are treated according to standard methods compiled by learned and experienced men. The narrative continues: "If, following the prescriptions of this sacred book, they fail to save the patient, they are absolved from all guilt; but if they run counter to its directions they are put to death, for the law-giver judged that few physicians are more competent than a system tested by time and compiled by the best." This point serves to illustrate the difference between civil surgery and army surgery in war. In the latter, standard methods of surgery were laid down by consulting surgeons of experience, from which the surgeon in the field, C.C.S., or base hospital was not allowed to depart, although the penalty for doing so was not so extreme. The rule, nevertheless, was wise, and contributed to the general good results. This is more difficult to arrange in civil surgery, where there is no limit to what a man may undertake or attempt, whether competent or not, but the efforts of such a one will become more limited with definite lists of consultants and of surgeons, outside of which, if a patient goes, he does so on his own responsibility.

The Ministry of Pensions has issued much valuable information on the subject of stumps, suitable lengths of amputation, etc., and have given four standard sites which they regard as optimum. This is, no doubt, sound in a broad, general sense, but with experience in the subject, other levels are often better in suitable cases. This is essentially a technical point, so I will not go into details, except to indicate to the surgeons that what is called an 'end-bearing' stump, i.e., one on which the patient can bear weight, always gives a much superior stump, e.g., a good Syme's amputation, or one through the knee-joint, though not artistically handsome, is often extremely good from a functional point of view. These variations, however, require personal experience, and, no doubt, standard methods and lengths are more foolproof, but occasionally waste valuable length and support.

The artificial limbs themselves are now extremely good in the lower limb. In the upper limb, appliances are used according to requirements on a short

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prosthesis, and a light show or dress hand kept for appearance. There is no substitute for the human hand, and the principle remains that every possible effort should be made to save even a portion of a hand or finger. Stumps should be fitted early with at least a temporary appliance, both for its physical and mental advantage.

A recent surgical report on the B.L.A. illustrates a further stage of surgery in war-time. Here maximum results were attained by team-work, efficient organisation, ample supplies of blood and penicillin, and routine standardised methods of treatment. Needless to say, the results were excellent in such conditions in an advancing army with complete air cover, ample supplies and personnel, all constituting overwhelming superiority in all forms of equipment, which, however, is not quoted to take away credit for a good job well done, but to illustrate what can be done and what should be done more often in civil life.

Much more could be said on these subjects, but this is enough to show how war surgery is related to civil surgery. We have learnt much from our comrades in the field, and the student must learn and appreciate the differences in technique in the forward areas and at the base (which areas were often less defined in this war than in the last), and we try to express a balanced opinion on what should be done at each stage in the best interests of the patient. With our wealth of scientific knowledge, and with the accumulated experience of two great wars under every variety and circumstance, it is the bounden duty of every medical officer to know at least the standard surgical principles governing the treatment of wounds and burns under war and peace conditions, and to know how to treat his patient conscientiously and well.

Coming to traumatic surgery in civil practice, recent figures from the T.U.C. show a considerable rise in cases of injury or disease incapacitating men for more than three days, as shown from the figures 1938-1943. In the latter year, the cases had risen to 173,000, an increase of 41,224, while meantime the numbers employed in the industry had fallen by 74,000. In 1938, there were 2,500 fatal and 450,000 non-fatal accidents in industry, for which six and a half million pounds were paid in compensation. In this city, in one of the big industrial firms, the medical officer, Dr. James Smiley, has done much to prevent and reduce accidents. By careful organisation, good nursing, and good technique in the treatment of wounds, he has also reduced the sepsis rate of the less severe industrial accidents, mainly involving fingers and hands, from eleven to less than one per

cent., a most remarkable local improvement in the treatment of wounds.

There is one other cause of accidents – motor accidents, which constitute nearly one-half of the total accidents to the general public, and are much more numerous than those occurring in coal mines and factories, and which are now so familiar that they do not affect us much unless personally concerned. These constitute a serious loss to the community both in money and life. They are a constant drag on hospitals and a prolific source of crippling deformities. It is again a sad reflection on our state of civilisation that this should be so, and that our intelligence cannot devise some remedy. We cannot now go into the pros and cons of “Safety First” movements, and the various objections to the term as tending to inhibit the spirit of adventure, but there is no intelligence or spirit of adventure shown in being criminally careless in traffic problems and indifferent in this matter.

In this last war the safety and comfort of the troops was looked after much more carefully than in previous wars, and risks taken only after due consideration and with all possible preparation. Such methods, however, do not apply to the roads in peace-time, and we as doctors, who see so much of the results, should study the problem more, and force the civil authorities and those above them to take steps, which even now are obvious to all, to remedy this national disgrace. In this matter also we cannot dissociate ourselves from the public, and, as in food, housing, and public health, generally play a more decisive part in the life of the community.

What then of the future? Medico-political changes are in the air, and no one quite knows what will happen next. Many Poor Law infirmaries in England have become general hospitals under the Ministry of Health, and thus, being freed from financial difficulties and with an ample supply of beds, may become the leading hospitals if a State Medical Service should come. We must not forget, however, that it was due to the failure of these state hospitals, in an earlier stage, to deal adequately with the problem, that led to the foundation of the voluntary hospital, whose record of unselfish service and teaching is indeed a glorious one. These voluntary hospitals are now often financially embarrassed, and worried by impossible waiting-lists, whereas the municipal, or state hospitals are weighed down by a burden of civil sloth, lack of interest and foresight. Both tend to be understaffed and overworked. These are problems which the young surgeon and physician must take an interest in and work for their

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improvement. There has been too much *laissez-faire* and lack of unity in the past. Like the scientist, it will not do to dissociate ourselves from medical politics, and at least all are agreed that some change is necessary.

The country town must have one or more competent surgeons, and an adequate local hospital for ordinary and traumatic surgery. The more serious cases can be sent to a central or key hospital. In the large town there should be more accident hospitals, or, at least, accident departments, where cases are seen by senior practising surgeons who are sufficiently well paid to have time to deal with this work, which is now so often left to the newly-qualified M.O., who, with the best intentions in the world, has not had adequate experience in wound and fracture surgery. The young surgeon should earlier be able to secure a living wage, so that he is not forced to take on far more work than he can possibly do efficiently. These and other points, especially the modernised teaching of the student, the medical societies are studying at present with care and attention.

While the war was on there was one single aim – Victory, and we were never more unselfishly united as when the peril was greatest, and never achieved finer results. With the end of the war, there is no purpose, no incentive common to us all, selfish interest tends to creep in and clog our efforts. There could be an aim, purpose, and cause common to us all – the battle of health, which is the basis of life and happiness; the improvement of health services, adequate hospitals and staffs, and better traumatic surgery. We must learn and know the facts of social medicine, make these public, and interest others in the fight. This cannot be left to municipal authorities, politicians, and experts; these matters are the responsibility of every one of us. Much has been left undone, and there is much talk about guilty men; but one lesson is obvious, that there is little good blaming others. Let us blame ourselves for what we did not do to prevent war or to improve social conditions. The only thing to do is to see that this calamity of war must not happen again, and social conditions are improved. The war was fought to make the world safe for democracy; now let democracy make the peace safer for the people, and not a breeding-ground for fanatics, freaks, and financiers, while children are dirty and starved, as they are now starving all over Europe. Let us use the established facts of better health to establish this new democracy, and these facts we must first learn, and then act on them. All such information can be easily acquired once the

desire to acquire it exists.

Lieut.-Col. Nelson, in the B.M.J. of 22/9/45, writes on “Housing and Health,” with special reference to the lot of the slum-dweller. He gives statistical proof of the ill-health and high mortality rate of the poor, and emphasises their misery, cold, hunger, and general discomfort. He points out the need for rehousing, essential foodstuffs, warm clothing, and a social security system which will provide the basic amenities of life for all those who are prepared to do an honest day’s work. Housing is important, but these other factors are equally important, and this problem must be undertaken by team-work of all the different civic and medical bodies concerned. As a profession, we should have a much greater say in, at least, the health policy of the country, and should insist on many necessary reforms being carried out, not put aside. The only means to the end is a live and abiding interest for each one of us in the welfare of the community and of our own profession, and to work unceasingly to this end.

The war has been won, but the war against disease and bad social conditions goes on. Each advance, each scrap of knowledge has only been achieved through sweat and toil on the part of someone. As the Great War was largely lost by lack of imagination and foresight, let us not neglect the lessons of this one by our lack of effort and interest, and let us bring to bear on civil surgery and on the social problems of peace, the united co-operation and energy that characterised our efforts for war.

A fitting conclusion is the words of Pasteur, perhaps the greatest scientist of all time, who died just fifty years ago, and whose work was all constructive and for the good of mankind. These words were used by him at the opening of the Pasteur Institute and apply even more to-day than then: “Two contrary laws seem to be wrestling with each other nowadays: the one of blood and death, ever imagining new means of destruction and forcing nations to be constantly ready for the battlefield; the other a law of peace, work, and health, ever evolving new means of delivering man from the scourges which beset him. ... The latter places one human life above any victory, while the former would sacrifice hundreds and thousands of lives to the ambition of one. ... Which of these two laws will ultimately prevail God alone knows.”