

THE JOURNAL'S CENTENARY MESSAGE OF CONGRATULATION

Dr. J. O. Mercer, Editor, "New Zealand Medical Journal":

Please accept the sincere congratulations of the New Zealand Branch of the British Medical Association on the publication of your centenary number. In this the most remote of your affiliated Branches the *British Medical Journal* has ever been a strong and important link between us and the parent body. We welcome this opportunity of acknowledging our debt of gratitude to those who maintain its standard of scientific excellence and to those who keep us so well informed on professional and political matters. In these great and difficult times we follow the work of the medical profession in the United Kingdom with increased interest, and the articles on the special problems of the war which have appeared over the past year are of the greatest value to us in New Zealand. We have the greatest admiration for the manner in which the *Journal* has maintained its high standard in the face of difficulties the magnitude of which we can only dimly comprehend. We wish you continued success in future years.

Reports of Societies

INJURIES TO THE EAR

At a meeting of the Section of Otology of the Royal Society of Medicine on November 1 Mr. LIONEL COLLEDGE, the President, opened a discussion on "Injuries to the Ear."

Mr. Colledge said that injuries caused by explosions could be grouped roughly into two classes: those in which there was a gross tympanic injury which could be seen with a speculum, even if it did not cause blood to escape from the meatus, and those in which there was concussion of the labyrinth without signs of injury to the tympanum. The two might be combined, but most authors took the view, which was in accord with his own experience, that rupture of the tympanic membrane seemed to exert some protective influence upon the labyrinth beyond. The actual effects upon the tympanic membrane, from small haemorrhages or tears to almost total destruction, were well known, but it was not so commonly recognized that the membrane might be blown out, the edges of the perforation being everted instead of inverted into the tympanum. Concussion of the labyrinth without necessarily rupture of the membrane could be produced either by transmission effects of a blow on the head through the bones of the skull, or through sudden increase of atmospheric pressure from an explosion.

Direct wounds of the temporal bone in warfare must be fairly common, but not a great many were recorded, probably because they were often immediately fatal. Most of the wounds caused by firearms which had been studied were in cases of suicide. Here the projectile was a small bullet fired from a pistol without much power of penetration, and such cases were not of great interest. A French observer had mentioned forty-two cases of gunshot wounds of the ear in the last war, in which the projectile was in the tympanum in fourteen cases, in the mastoid in twenty-one, and in the petrous in seven. For the extraction of such foreign bodies a supra-auricular route was suggested as long ago as 1888, and a pre-auricular route in 1894. The latter would give very poor access, and the method of approach had nothing to recommend it. If the foreign body could not be extracted through the meatus the proper route was by a retroauricular incision. In most cases the damage to bone was so extensive that the radical operation was necessary, and this should certainly be carried out if the labyrinth was injured or the projectile impacted in the petrous.

Haemorrhage from an injured internal carotid artery could be controlled by packing, as from the lateral sinus. The value of ligature of the internal or common carotid in the neck was doubtful. If it was necessary to resort to either, probably ligature of the common carotid was the better.

Although fractures of the skull involving the temporal bone were sometimes limited to the external auditory meatus, to the mastoid process, or even to the walls of the tympanum, by far the most important were those which passed through the petrous portion; the cause was usually a blow or a fall on the head. The fracture of the petrous was always indirect, brought about by radiation from some part of the vault into the anterior, middle, or posterior fossa. Although the petrous appeared to form a solid buttress, it was less strong than it seemed because it contained the cavities in which the organ of hearing was lodged. Longitudinal fracture was the most common, but it was impossible to fit every fracture into a rigid classification. The old observation that fractures of the skull united slowly and only by fibrous union had been proved to apply to fractures of the labyrinth. This defective repair carried with it remote dangers in the region of the middle ear, because the fibrous scar, which was weak or might scarcely exist at all, formed an ineffective barrier to the spread of an infective process. This accounted for the relationship between labyrinthine injury and late meningitis. There was some immediate risk of meningitis in a longitudinal fracture which laid open the tympanum. On the other hand, transverse or other unclassified forms of fractures which occasioned a fracture of the labyrinth without necessarily being accompanied by a rupture of the membrane also induced a permanent liability to meningitis following a chance attack of otitis media, no resistance being offered to the immediate invasion of the labyrinth.

Mr. Colledge added that examination of the ear in head injuries should follow the usual lines, but all syringing or lavage to clean the external auditory canal of blood clot or other debris must be avoided. Escape of cerebrospinal fluid from the ear indicated a rupture of the meninges, but it was not necessarily fatal, nor necessarily associated with rupture of the tympanic membrane. Operation on the ear was seldom indicated, but the opinion which Nager had expressed—that in a case of old head injury, with signs of fractured petrous, shown by deafness, absence of vestibular excitability, and intact tympanic membrane, the earliest suspicion of meningitis called for radical mastoid operation and exposure of the labyrinth—was a good guide in a situation the dangers of which were not generally appreciated.

Ear Injuries in Air Raids

Miss D. JOSEPHINE COLLIER discussed injuries of the ear in the civil population as a result of air-raid bombardment, basing her remarks mainly on experience in Barcelona during the Spanish war. Injuries of the middle ear could be divided into two groups: those produced directly by the penetration of bomb fragments and those due to the expansion of air produced by explosion. In the first group the entry was by the mastoid process or the temporo-mandibular joint with fracture of the bony external meatus. Patients with wounds in this region caused by large pieces of bomb seldom reached hospital alive. There might be signs of associated cerebral injury with unconsciousness for several hours or days, and only when this stage had passed were the symptoms of middle-ear lesion noted—namely, tinnitus, deafness of the middle-ear type, and occasionally nystagmus. Cases treated by an otologist in the first instance were likely to escape infection. A foreign body should be removed only when it was provoking severe reaction such as pain and persistent discharge. Removal should be done by the radical mastoid operation as conservatively as possible because of the liability to intracranial infection.

The majority of ear injuries treated at Barcelona were caused by blast. Dr. Rafael Trueta found that out of 208 consecutive cases of middle-ear damage, 175 had been caused in this way, and only thirty-three by direct violence of bomb fragments. With medium bombs of between 100 and 300 lb. rupture of the tympanic membrane with bleeding from the middle ear was liable to occur in individuals who had been within a radius of 50 ft. Partitions and walls of buildings

protected the individual against blast effects. In Barcelona only 0.5% of those injured within buildings, including those actually in the room where the bomb exploded, suffered injury to the middle ear, as compared with 40% of those injured in the street by the medium bombs mentioned above. Rupture of the tympanic membrane in these patients was accompanied by a sharp pain, bleeding from the ear, and high-pitched tinnitus which soon changed to a low note; the tinnitus was always the last symptom to disappear. If the otologist was able to treat these injuries from the outset the course was almost always favourable and infection did not occur. Unfortunately, in the majority of cases the tympanic lesion had to take second place to more serious injuries of greater importance to life which demanded immediate attention.

Treatment of middle-ear lesions was simple. If the patient was seen during the short period while bleeding from the ear was in progress it was best to assist the drainage by placing the patient with the ear on the appropriate side. If a clot had already formed in the tympanic wound aspiration with a Siegle speculum was necessary, followed by closure of the external meatus by sterile gauze. The persistent tinnitus was less easily resolved. There might be a psychological factor in addition to the ear damage. The presence of nasal obstruction contributed to the incidence of tympanic lesions. In Barcelona it was also found that tympanic injuries were more frequent in men than in women, perhaps because the latter were more likely to cry out at the approach of a bomb, thereby maintaining the balance of atmospheric pressure on both sides of the membrane. The practice of placing a pipe or pencil between the teeth when the fall of bombs seemed imminent was found to diminish the incidence of tympanic injuries. The ear protector which gave best results in preventing tympanic injury consisted of a small plug with a valve that remained open save when the external pressure was increased. It was perhaps unfortunate that the rubber plugs now being distributed to the civil population as part of the A.R.P. services had not been designed on similar lines.

Civil and Military Injuries Compared

Mr. V. E. NEGUS said that out of 622 civilian air-raid casualties 199 were injuries of the head and neck. Of these the cranio-cerebral cases numbered 129. The ear cases numbered twenty-four, or 3.8% of the total. He had also analysed 1,417 military casualties (chiefly war injuries, but including a few accidents), and among these there were 165 head cases, cases of cranio-cerebral injury numbering eighty-two and of ear injury twenty-nine, or 2% of the total. The majority of the ear injuries—sixteen out of the twenty-four in the civilian cases, and twenty-two out of the twenty-nine in the military cases—were traumatic rupture of the tympanic membrane. Practically all the ear cases were associated with other injuries, and the majority were due to blast. No patient complained to any extent of tinnitus or of vertigo, and a routine examination was required to discover some of the ruptures. This examination was made in view of the serious effects which might follow infection of the ear. In the treatment of these cases the ear should be left alone. For purifying the external meatus he preferred a mercury preparation which left the ear dry, moisture being likely to precipitate infection. Any cerumen should be carefully removed, but the deeper parts of the meatus should be left strictly alone. He protested against the practice of pushing wicks of gauze or other material into the ear. Spread to the mastoid seldom occurred; if it did, any operation on the mastoid process should be delayed certainly for two weeks. At one time the case for immediate operation in wounds of the mastoid process might have been arguable, but the introduction of chemotherapy pointed to the wisdom of delayed operation. Any fragments of loose bone or metal should be removed at the time, but nothing in the way of extensive operation should be done.

Mr. F. W. WATKYN-THOMAS said that his experience rather supported the view that labyrinthine lesions were progressive. He had seen two cases of civil injury with labyrinthine conduction in which some progressive labyrinthine deafness seemed to have occurred. One was in a contemporary of his in his public school who received a "knock-out" blow in

boxing, and from that date noticed a slight deafness in his left ear which made slow but gradual progress for more than thirty years. Mr. W. M. MOLLISON mentioned a case of a man injured in the ear in an explosion at a munitions factory. This was an example of positive pressure, because on opening the antrum the incus was discovered stained with gunpowder. Dr. HUGO FREY said that small tympanic ruptures might heal within a few weeks, but where the rupture was larger many months might pass without any visible tendency for the perforation to close. He believed that the reason for the delay was that the epithelium from the outer surface of the membrane went over the border of the perforation and thus prevented further union. He had employed a slightly irritant treatment with a probe tipped with cotton-wool dipped in normal saline solution, using it on the border of the membrane, and, if this did not avail, a paracentesis needle, and the perforation afterwards began to heal.

Mr. E. D. D. DAVIS agreed with Mr. Negus that in rupture of the drum the best course was to leave the patient alone. In drainage, when there was blood in the middle ear, the best position was the sitting one; to lay the patient on one side did not give anything like so good a result. Blood in the middle ear in fractures of the skull very rapidly disappeared. Concussion deafness was a difficult subject, and neither in the last war nor in the present bombardment of London was the number of cases of internal-ear deafness large. Distinction must be made between concussion deafness and psychological deafness. The former was accompanied by other cerebral symptoms and signs of severe injury. Mr. C. HAMBLEN THOMAS mentioned grafting operations for the pinna. In one case he had succeeded in using a tubular graft from the inner surface of the arm. Usually a graft from the back of the neck was recommended, but the graft from the arm had proved quite convenient and successful. Mr. R. J. CANN said that in some patients with war injuries of the ear he had noticed great sensitiveness to slight sounds such as footsteps. One out-patient had complained that owing to the irritation he could no longer endure the tinkling of the piano which he had previously enjoyed.

Mr. COLLEDGE, replying to the question of buildings as a protection against blast, said that in the last war it was observed that if soldiers received their injury in a dug-out both ears were likely to suffer, but if in the open only one ear was affected, or one ear more than the other. Diagrams of the rupture of the tympanic membrane shown by Mr. Negus had brought out the point that Shrapnell's membrane was never ruptured; the damage was always to the tense membrane. He agreed with Mr. Watkyn-Williams about progressive deafness. Many patients who had concussion deafness in the last war had had something corresponding to senile deafness develop prematurely.

CHEMOTHERAPY FOR WAR WOUNDS

At the meeting of the Medical Society of London on October 28, with the president, Dr. G. W. GOODHART, in the chair, a discussion took place on "Chemotherapy and War Wounds."

Colonel MAX PAGE said that it was not until 1939 that surgeons took any interest in the use of the sulphonamide group of drugs in the treatment or prevention of infection in wounds. Sulphanilamide and some of the other compounds were used in the treatment of streptococcal infections, but there was no evidence that they were employed against anaerobic infections or in the primary treatment of a wound. Experimental work during the last few years, mainly on mice, had indicated that the members of the sulphonamide group had prophylactic value, varying with the particular drug and the particular organism, and with these suggestions in mind the use of these compounds in the prophylaxis and treatment of war injuries was keenly anticipated. Plans were made for controlled experiments on the question of prophylaxis, which appeared to be the first issue calling for settlement, and it was hoped to obtain groups of comparable cases treated

within a reasonable time surgically in certain of which the drugs would be used and not in others. Owing to the nature of the campaign in France and Flanders, however, the plans went awry, and only sporadic attempts were made so far as the recorded evidence went. In one group of twenty or thirty cases treated under relatively stationary conditions in which excision was systematically carried out, followed by the sulphanilamide pack and primary suture, Major Sampson Handley was convinced that the cases did remarkably well. Given the conditions under which Major Sampson Handley was then working, with the wounds excised within twelve hours of infliction, there was no reason why healing should not be by first intention. The speaker's own impression was that the incidence of secondary infection in the average wound which had been treated with sulphanilamide was lower than might have been expected from the experience of the last war, but he agreed that that was a very vague statement.

Prophylaxis by mouth had not been much practised. In Flanders a certain number of field ambulances handling patients on whom they could not operate gave them sulphanilamide by mouth, and in some instances introduced it into the wound, but the circumstances made scientific recording out of the question. The condition in which the prophylactic use of a sulphonamide was probably good—though he acknowledged that here he spoke rather at random—was a late wound, twenty-four or forty-eight hours or perhaps a week or more after infliction, requiring operation and in which it was anticipated that as a result of operation there might be a flare-up. If in such a case the patient was given a full dose by mouth beforehand intervention could then more safely be made. How far that had been practised at home he did not know, but it appeared to be a sound practice so far as streptococcal infections were concerned. As for gas infection, this was more rare than formerly, but there were causes other than the introduction of the drug which explained the lower incidence—for example, the cleaner condition of the patients.

In the sphere of treatment a few doses of the drug would deal with an acute streptococcal infection on most occasions, but the same was not true of the chronic infection. He had seen two cases of septicaemic infection in France in both of which death occurred in spite of intensive treatment. When the infection was in the blood the drug was not of the same value as when it was in the body tissues, and in practice blood infection by the streptococcus failed to respond to chemotherapy. The same, in his opinion, was true of gas gangrene of the developed type in which there was gross necrosis of the muscles with constitutional symptoms. Every surgeon would perform an operation, clearing out the necrotic tissue, but he did not believe that sulphanilamide had a very great influence on the progress of the condition. He had seen cases treated locally by operation and with full doses of sulphanilamide, but the condition had progressed and amputation had to be performed, and the patient had died.

In conclusion he said that he had only been able to give impressions, but he did not believe that at the present time many people had much more to offer. There was some tendency to use this new therapeutic weapon indiscriminately. It was to be hoped that perhaps before the end of the war the exact value of these various drugs, both in prophylaxis and in treatment, would be known, their limitations understood, and it would be determined how far the surgery of wound excision was necessary and to what extent surgical procedure might be modified.

Objectives on which to Concentrate

Colonel LEONARD COLEBROOK said that peacetime experience with the sulphonamide group gave some indication as to what might be expected in the treatment of war wounds. He thought that the plan adopted in some hospitals at the time of Dunkirk of giving one of these drugs to the whole convoy regardless of their infections or the length of time which had elapsed since the infliction of the wound was not going to get them very far.

Certain definite results from the careful use of the drug might be expected. The first of these was the prevention of haemolytic streptococcal infection, although there was very little evidence from human beings as to what could be done

in this direction. Some important experiments on mice had been conducted by E. D. Hoare. Three groups of mice were injected with haemolytic streptococci: the first group were not given any sulphanilamide, and all died; the second were treated some hours after infection, and some survived; while the third were given moderate doses of the drug three hours before infection, so that at the time of infection a little was remaining in the blood, and these recovered. He saw no reason to doubt that something of the same kind would happen in human beings, and if it could be known that men were going to be infected matters could be arranged so that they had a little sulphanilamide in their blood. But the great majority—something like 95%—of the wounded in war were not infected by haemolytic streptococci at the time of injury; their infection occurred at any time within a week afterwards as a hospital infection, and it was difficult to arrange prophylactic treatment unless the patient was put on a sulphonamide for seven to ten days to ensure that he had some in the blood at the time of his problematical infection. This would not be justifiable; many patients would vomit and feel miserable, and even worse harm might be done. A sulphonamide drug would be valuable in a case of secondary operation when there was a suspicion of haemolytic streptococcal infection, the right principle being to arrange the first dose in such a way as to ensure rapid absorption, which was to give the dose in solution, preferably citric acid or lemon, and the subsequent doses should be given in uncrushed tablets to ensure slow absorption. Prophylactic treatment should be administered in four-hourly doses so as to keep up a steady level in the blood.

Secondly, it might be possible to arrest infection by haemolytic streptococci if prompt and vigorous action with sulphonamide compounds were taken. More should be done in blood examination; there had been far too much casualness, patients being supposed to have the same reaction. Proseptasine and soluseptasine were useful only in very mild infections.

Thirdly, as to the prevention and arrest of infections by the anaerobic bacilli, the animal experiments carried out by Stephenson and Ross at the Wellcome Physiological Research Laboratories, among others, made it fairly certain that the infections of *Cl. welchii* could be controlled, but inasmuch as anaerobic infections were a good deal less susceptible than streptococcal ones to these drugs, it was probable that more could be done by local application than by oral administration. Probably a combination of the two would be the best of all. Much might be achieved in heading off anaerobic as well as other infections by the application of sulphanilamide packs to wounds. The war furnished the best opportunity possible to investigate the question, which called for intimate co-operation between surgeons and pathologists. He would not leave it to the surgeons, because definite microscopical evidence of restraint and growth was needed. A few cases carefully controlled would be worth a hundred observed by the "naked eye."

Finally, it might be expected that haemolytic streptococci would be got rid of quite quickly from long-standing or superficial infections by the application of sulphanilamide powder to the lesion. He had had the opportunity of testing this theory in Sir Harold Gillies's plastic surgery unit, where there were a large number of old burns and road accident cases which had become infected. He had been astonished at the results, especially as there was something in the discharges and pus which neutralized the action of the sulphonamide. In these superficial granulating wounds which were not deep the infection could be eliminated within two days. If that experience was confirmed, and a fresh infection was not found to develop, it seemed to him that this would be a landmark in surgery. The wounds would be healed more quickly and thus an enormous reservoir of infection would be cleared from hospital wards.

If the value of sulphonamide compounds in relation to wounds was to be learned, there must be concentration on certain objectives. Convincing data must be obtained as to whether local application in the wound would hold up bacterial growth, as to whether oral administration would prevent haemolytic streptococcal infection, and as to whether the observation that the flora of wounds could be altered and organisms got rid of by dusting or the use of one of the sulphonamide drugs was refuted or confirmed.

Clinical Experience after Dunkirk

Mr. W. H. OGILVIE said that most of them were thinking in terms of the last war, and when they considered how the present war differed from the last infection seemed to be far less of a problem. The explanation was not so simple. The wounded were less tired and dehydrated; their clothes were cleaner, many of the weapons were far less damaging to the tissues than the shell and hand grenade which formed nearly the whole of the destructive armament of the last war, and he thought that the streptococci and anaerobias of to-day were feeble amateurs compared with their ancestors of 1914-18. But after making these allowances much of the credit must go to chemotherapy. This opinion was based on the observation of about 300 wounded, almost entirely from Dunkirk. Chemoprophylaxis when started early, unaccompanied by any form of treatment, put the cases into good condition, while those who arrived at the hospital infected, in whom chemotherapy was started immediately after débridement, quite early showed a state of repair and clean granulation which allowed of closure by approximation or grafting.

The cases from Flanders and Dunkirk were seen never earlier than three days, and most of them five days, after being wounded. Many had been operated on, others had relatively unimportant wounds and were fit to travel. Of the remainder there were two groups: those who had had sulphanilamide, and those who had not. About fifty had had sulphanilamide in varying doses; some had had it at once, others in transit; in some it had been continued regularly, in many it had been irregular. But considering the late stage at which these cases arrived they were surprisingly fit and the infection of the wounds was minimal. The majority of the wounds were caused by bullets, the weather was dry, many were wounded in sand and on board ship; but even allowing for these circumstances the contrast between these men and those who arrived at Rouen in 1918 was astounding, and the contrast between those who had been given a sulphonamide in transit and those who had not was almost equally so. The men who had had no sulphonamide drug and were admitted to hospital two or three days after being wounded were most heavily infected. On being put on to a sulphonamide drug the patients had a temperature which rarely went above 100° F., and a pyrexia which seldom lasted for more than three or four days. If it lasted for ten days it was nearly always due to the pocketing of pus. Chemotherapy had, however, produced a new lesion—the "sulphonamide" abscess. It was a cold abscess, and when opened contained an odourless pus.

Mr. Ogilvie went on to describe some of the cases he had seen. He also referred to certain disadvantages attending the use of sulphapyridine in the ordinary hospital. Apart from its greater cost it made patients vomit and feel miserable, and as it was essential to get a constant dosage and encourage fluid intake its use was difficult. The dose he gave was three tablets, crushed, to start with, followed by two tablets four-hourly for forty-eight hours, and one tablet four-hourly for the following forty-eight hours. Among the many wounded patients treated with this dosage there were no complications.

Comparisons and Combinations

Prof. A. FLEMING upheld Colonel Colebrook's appeal for the association of the laboratory with the surgeon. It was seldom that more than one specimen was sent to the laboratory from a patient; apparently if a report were made that there were haemolytic streptococci it was considered adequate until the patient either died or got well. There were three main types of infection in wounds: anaerobic (causing gas gangrene), haemolytic streptococcal, and staphylococcal. Sulphanilamide was effective with the haemolytic streptococcus, sulphapyridine with the pneumococcus, and sulphathiazole with the staphylococcus. Sulphanilamide was the weakest of the three, sulphapyridine a good deal stronger, and sulphathiazole stronger than either of the other two—so strong that it affected the staphylococci, which the others scarcely touched. He had found sulphathiazole much stronger than the others in its inhibitory action in the blood stream.

He also mentioned that for about twelve years a preparation named penicillin had been used for isolating bacteria in the laboratory. Lately Gardner, Orr-Ewing, and others from the Sir William Dunn School of Pathology, Oxford, had published a series of experiments in which by a method of extraction they had obtained a non-pure substance which showed most extraordinary effects in mice against staphylococcal, streptococcal, and other septic infections. He had tested this as an anti-bacterial agent in the laboratory and had found it, weight for weight, about ten times more effective than sulphathiazole, which itself was better than sulphapyridine and sulphanilamide. Some chemist was awaited who would synthesize it entirely, and the sulphonamides would disappear.

Civilian Casualties in Air Raids

Mr. E. W. RICHES mentioned three cases he had had recently of civilian air-raid casualties; one of them was not given a sulphonamide preparation, and the other two were. The patient who was not given the sulphonamide drug had within forty hours a severe infection of *Cl. welchii* in the wound from the ankle to the thigh. He was repacked, put on the sulphonamide drug, by injection and by the mouth, and when he was evacuated to the base hospital the wound was clean and granulating and the infection cleared up. Of the other two cases one had a compound fracture of the right arm, about half the skin being raised in a flap. The fracture was set, débridement carried out, the wound packed with 3 grammes of sulphanilamide powder, and put into plaster. Temperature came down after two or three days, and there was no pyrexia until after the second dressing. In the third case the skin of the leg was turned down just like a stocking, the wound was excised, débridement carried out, 5 grammes of sulphanilamide put into the wound, and the limb immobilized on a splint. There was no pyrexia after the first three days, the wound was dressed after a fortnight, some of the flap was about to slough because it was deprived of its blood supply, but there was no sign at all of any local infection. These three cases were comparable in that they were all dirty, large areas of tissue were exposed and soiled with debris, plaster, and glass, and they were all treated in exactly the same way by excision of the edges and immobilization, but the first had no local sulphanilamide and the other two had, and it was the first which developed a serious infection of the limb. He had been impressed by the value of the local application at the time of the primary operation. Air-raid casualties were received very early, and one waited only for them to recover from the shock before taking them to the theatre. He was sure that it was the wrong thing to do frequent daily dressings and wrong to do dressings in the ward. The first dressing should be done in the theatre, with precautions equal to those observed in the original operation. This was one of the difficulties in collaborating with the pathologist, with whom all surgeons would like to co-operate more. Another difficulty was that the pathologist was often some miles away, and communications were uncertain and sometimes impossible.

Mr. DUNCAN FITZWILLIAMS said that his experience of infected knee-joints was that nothing saved the patients but primary amputation. One of the speakers had referred to the increasing incidence of hospital infection. Could the hospitals be cleansed or some steps be taken to prevent infection of the wounds? The PRESIDENT asked how much sulphanilamide should be put into the dressings, and whether there was danger of poisoning.

Sir THOMAS DUNHILL gave an account of sixty-five patients treated at his hospital, all of whom were regarded as extremely ill. They were patients whose knees and elbows were shattered and ankles broken. They were in a very unhappy condition on arrival; pus was soaking through the plaster to the beds, and the stench in the wards was beyond belief. In the last war he would have felt that three-quarters of these men would require to have their limbs amputated at once, and that streptococcal septicaemia would occur. There was no question of treating them in the Trueta fashion, but it was desired to see what fixation would do. Their condition was assessed as quickly as possible, the worst being dealt with quickly. Two died from secondary haemorrhage

during the ensuing few weeks, and one from gas gangrene on the night he arrived; but apart from these three none of the sixty-five died. Their tongues were dry, their skin was the skin of poisoned people; they had no appetite and were in pain. A number got rigors, and when this occurred the plaster was taken off; if the drainage could be improved this was done, and the plaster reapplied. They all had a sulphonamide drug to begin with, which was stopped after a number of days when it was felt that the appropriate doses had been given. A good many times when rigor occurred he thought there was septicaemia, but it was not septicaemia, it was bacteraemia, which he believed was controlled by the sulphonamide which was given. Often he thought that amputation should be done. Yet not one had died, all were walking with some kind of apparatus, and there were very few in whom the wounds had not dried completely. Their tongues were clean, their colour good, and their demeanour cheerful. There was no doubt that the haemolytic streptococcus had been there all the time, but it had been controlled. He believed the result to be, as to three-quarters of it, due to fixation, and, as to the remaining quarter, to the sulphonamide preparation, which, with fixation, seemed to be able to scotch the spread of infection. In not one case was amputation done.

Mr. DICKSON WRIGHT said that many manufacturers were recommending sulphanilamide ointments, and he asked whether these were effective. Sir WILLIAM WILLCOX asked whether Colonel Colebrook recommended giving sulphonamide compound by the mouth as well as the local administration, and had prontosil soluble been used for the first two or three doses for quick absorption?

Colonel PAGE said that it had been laid down by those who had introduced the sulphanilamide pack that 5 to 16 grammes might be used in the pack, according to the size of the wound; 20 grammes was regarded as the limit of safety.

Colonel COLEBROOK also replied to some questions. He said that he would hesitate to use more than 20 grammes in a sulphanilamide pack, and he did not suppose there was any advantage in using more. In answer to Sir William Willcox, for preventive purposes it was best to give one or two doses by mouth. He did not think prontosil soluble had merits for quick absorption. If sulphanilamide was given in solution it was absorbed in two or three hours. With regard to hospital infection, this was the more likely because of inefficient ventilation due to restricted lighting. The best method of cleansing the wards was to formalize the rooms one at a time with a blow-lamp and atomizer. This would get rid of streptococci, though he did not know that it would get rid of all the organisms. He had little to say with regard to sulphonamide ointments. Sulphanilamide was absorbed quite well from a greasy base, but the difficulty was that there was a foreign body left in the wound in the shape of the base. A question had been asked as to the treatment after putting on powder. At his hospital they simply powdered the wounds, and put on a moist saline dressing, covering it with jaconet. This was done to maintain the activity of the leucocytes, which was encouraged by keeping the wound slightly moist.

SPONTANEOUS HAEMOPNEUMOTHORAX

At a meeting of the Section of Medicine of the Royal Academy of Medicine in Ireland on October 4, with the president, Dr. R. H. MICKS, in the chair, Dr. H. QUINLAN gave a short account of a case of spontaneous pneumothorax with intrapleural haemorrhage in a young man aged 28 who had previously been in good health. There was extreme distress, due partly to air under great pressure and also to the presence of blood in the pleural space. Sufficient air was allowed to escape to relieve pressure effects and a small amount of blood was removed. After fourteen days three and a half pints of fluid which looked like pure blood was aspirated. Complete recovery followed. Dr. G. T. O'BRIEN observed that it was quite common to see cases of pneumothorax in which no lesion of the lung was found after re-expansion had taken place. These patients were frequently in very good health. There was often a history of two or

three attacks of pneumothorax, and this he thought rather precluded anything of a tuberculous nature. Dr. BRENDAN O'BRIEN said that he had recently read a report of two or three cases of spontaneous pneumothorax complicated by haemorrhage; the patients had died in a comparatively short time. In these cases the air pressure was at first very high, and the subsequent collapse due to the bleeding had occurred some time later. It was possible that the introduction of a needle to relieve the air pressure might have damaged an intercostal vein. He had been told by Dr. Maurer of a case in which, during an operation for the division of adhesions, an aberrant vein had burst. The patient had bled profusely, and he had been unable to coagulate the bleeding vessel. Later the bleeding had ceased, but when the patient had begun to recover from the shock it had started again and the patient had died. Dr. W. R. F. COLLIS said that in two of seven cases of spontaneous pneumothorax he had come across there was no sign of tuberculosis at all. Dr. ALAN THOMPSON said that cases of spontaneous pneumothorax in the apparently healthy were quite common in Eire.

Correspondence

London's Air Raids

SIR,—After two months' continuous experience of control room and outdoor duties in an outer suburban area I should like to make one or two controversial comments which other readers may care to discuss.

1. The presence of a doctor is of considerable value where people are trapped, chiefly, in my experience, because by giving morphine as soon as any part of the patient can be reached shock is lessened and suffering minimized. I have followed up morphine-treated and other cases to hospital; there is no doubt about the contrast between the condition of the two groups on admission. Probably actual saving of life is occasionally effected. One needs a convenient method of carrying a charged 1-c.cm. syringe under more or less clean (if by no means sterile) conditions, so that it does not fall out of the pocket or empty itself at whatever angle. My improvisations up to date are not very satisfactory, and I should like the advice of a man with previous experience in the field.

2. The presence of properly trained first-aid personnel "at the forefront of battle" in rescue work ought to be insisted on. Our rescue parties do admirable work and appreciate the importance of gentleness, but even in the simple job of lifting out a patient freed from debris and getting him on to a stretcher the contrast between work by rescue parties, police, wardens, or public and work by stretcher parties is extreme, and the consequent shock is probably considerable. The proper methods are not only gentler; they are usually much quicker as well.

3. The number of casualties, except in such rare events as hits on public shelters, is altogether smaller than we were taught to expect. In consequence it is usually wise to send out enough ambulances to deal in one trip with the believed total numbers of casualties.

4. At incidents there is inevitably a tendency for a needless crowd to collect, consisting partly of the public, but often mainly of police, wardens, stretcher party members, etc. There is a need for police (in consultation with rescue party and stretcher party leaders) or wardens to keep more rigorously out of the way all those not at any given moment usefully employed.

5. The number of cases needing first-aid post treatment is small in proportion to deaths and serious injuries, and almost incredibly small in relation to the material damage. Our posts have been of value chiefly in treating for a few hours cases of shock, very few of which subsequently needed admission to hospital.

6. For some eighteen months I had taught my stretcher parties that speed was of paramount importance—a lesson which some of the more experienced first-aiders resented on the grounds that speed meant roughness. It was, in fact,