

Section of Odontology

President—A. H. PARROTT, O.B.E., M.D.S. Birm.

[October 24, 1938]

Jaw and Facial Injuries in War-time

PRESIDENT'S ADDRESS

By ARTHUR H. PARROTT, O.B.E., M.D.S., L.D.S.

THE recent war scare has brought back to many of us the fact that the last war ended twenty years ago, and we remember the chaos and lack of organization which existed at its outbreak in August 1914, particularly with regard to our own profession. There was no Army Dental Corps worth considering at that time and the necessity for one was absolutely unrecognized, even by the Royal Army Medical Corps, whose ranks were barred to dentists without medical qualifications. The War Office and Admiralty had long waiting-lists of applicants for dental appointments, with no use for them, and many of our younger men joined up as combatants (all honour to them) involving a waste of specialized trained material which the country could ill afford. Medical examination of recruits at last revealed to the authorities the desperate need for dental service, and gradually the Dental Corps evolved. Its work in the Army has survived the War and I believe it to be to-day a fine organization, well equipped for military dental service as far as the maintenance of a fair standard of dental fitness in the armed forces is concerned.

More slowly came the recognition of the need of dental service in the major work of war casualties; jaw and facial injuries were a new thing. Royal Army Medical Corps surgeons did their best, entirely ignorant of the value of dental assistance, until at last the gallant volunteer work of some of our leading hospital teachers bore fruit; their surgical colleagues began to recognize the essential nature of their assistance, and jaw centres were tardily established in the military commands. But meanwhile, all over the country, men with shattered jaws and mutilated faces wandered in search of treatment which was non-existent. In hundreds of these cases constant sepsis, cicatrization, contractions, and distortions, resulted in months of unnecessary and often hopeless efforts to restore anything approaching normal function and appearance. It was grim tragedy for the men who suffered and for those who tried to help them. Here and there one meets with one of these scarred and shattered heroes, but to us as a profession they have become a memory only, and war-time jaw surgery has gone back into its pigeon-hole. Will it be dragged out again in England, and if so, in what condition and under what conditions? Shall we start again, when the first bomb drops, with the tardy organization of what should be a ready-equipped line for first-aid treatment, so that we, as a profession, may be able to act as our trained hands and minds should enable us to do, in close co-operation with our medical and surgical colleagues, both in civil and military hospitals? Or will there be again that period of chaos and lack of the team work—so essential in these cases? It is with these thoughts in my mind that I have chosen my subject to-night. I am fully

aware that in this audience I may be preaching largely to the converted, but twenty years is a long time, and a new generation of dental surgeons has arisen, comparatively few of whom will be able to take up the work where it was left off, should the grim necessity arise.

Another appalling thought is that to the military casualties with which our profession may be called upon to deal, may be added an extra demand for similar treatment for civilian casualties. The air-raid precautions which are being forced upon us now should serve to point to the huge extension of the surgical and medical calls that would arise, and I visualize the futility of a few highly specialized centres, military or civilian hospitals, being called upon to attend to the demand which would or might develop.

Ignoring for the moment other forms of injury or disease, jaw cases are dental cases primarily and surgical cases secondarily. The surgeon, however skilled he may be, will not, if he is also wise, attempt surgical treatment on a shattered face or jaw until he is assured that the oral cavity has been dealt with first and put in as favourable a condition as possible before he attempts surgical manipulation on the external parts. That was the lesson taught us by the first year of the Great War, and it cannot be too strongly reiterated now. My own experience, when commencing jaw work at the First Southern Command centre, was that of many other colleagues. The surgeon-in-charge said: "These are my cases; I will call you in when I want you." The result was lamentable; surgical operations were performed without regard to the severe internal sepsis due to broken teeth, bone fragments, &c., and case after case went backwards and brought a string of unnecessary complications and problems in remedying the primary dental neglect with it. Fortunately our surgeon changed, and the late Professor Billington (then Captain Billington) took charge. His attitude was exactly opposite: "These jaw cases are dental cases first; call me in when you want me." The case-histories became entirely changed, and his wisdom earned heartfelt gratitude from his dental colleagues; co-operation was fully and freely given, and masses of complications disappeared when treatment was put on to this logical basis. I find myself wondering how far that axiom of Professor Billington's is recognized by our surgical colleagues of to-day. I hope far more generally than I imagine, for without its acceptance we shall find ourselves once more struggling in a sea of avoidable difficulties and complications if ever the need for jaw surgery on a military footing should arise again in this country.

Following this argument, I think it should be made plain in what ways the dental surgeon is to be of value to the surgeon by the early co-operation for which I have pleaded. These are:—

— In diagnosis: All cases of fracture may not be obvious to a surgeon and yet be detectable by the dental surgeon owing to some slight abnormality in occlusion of teeth, &c.

— In prevention of sepsis internally, from compound fractures open to the mouth, by: (a) Removal of carious, broken, or septic teeth and roots, fragments of bone where necessary, and foreign bodies (shrapnel, clothing, &c.). (b) Manipulating fractured jaws into normal alignment as far as feasible, retaining same and putting parts at rest by wiring, temporary splinting, &c., whilst providing for nourishment.

— In brief—in cleansing wounds; resetting fractures; giving rest by retention.

How is this co-operation of surgeon and dentist to be provided for on a general scale? I am not forgetful of the fact that full team work for complete treatment of jaw cases necessitates other branches of skilled science; radiography is essential, anaesthesia, bacteriology, photography, and last, but highly important, skilled mechanical dentistry. These can be organized in hospital centres, and the War Office Report framed in 1932 by a specially appointed standing Committee, including Mr. Kelsey Fry, Sir Harold Gillies, and Mr. Warwick James, has relieved any doubt in my mind as to the preparedness of our Army Dental Services.

For dealing with civilian casualties a similar but more elastic scheme will be needed. May I urge that the attachment of local dentists to first-aid units, to be called upon as necessity arises, if and when such units are mobilized, should be an integral part of our civilian organization? Doubtless in time some such arrangement will find a place in the vast organization of our population on a defence basis, but I feel strongly that our profession as a whole must play its part in framing a scheme, at once systematic and elastic, which will enable us to make use of our opportunities of service to the best advantage of the community. And to do this, it will not suffice merely to enrol our names as willing to serve in local units. Facilities should be found for the rank and file of the profession to gain the rudiments of instruction necessary for them to render adequate first dental aid in cases which may well be quite outside the routine practice of dental surgery. Such emergency measures seem to be covered by the following list:—

Diagnosis of fractures (crepitus, mobility, loss of alignment or occlusion of teeth, &c.).

Control of hæmorrhage and danger of suffocation.

Cleansing and irrigation of facial wounds.

Removal of foreign bodies, tooth and bone fragments, &c.

Reduction of fractures.

Temporary fixation by wiring or ligatures; compo splints; bandages; adhesive tape.

Provision for feeding.

Suturing wounds, flaps, &c., in emergency.

To advertise to our rank and file the need of some study and instruction in maxillo-facial treatment, a simple emergency dental outfit might be standardized and made available through surgical and dental depots, and every dentist enrolled should be provided with it. I had almost suggested that such an outfit should be a Government issue, but that is, I fear, beyond expectation. Such outfit suggested to deal with first-aid conditions on the simplest lines might include the following: (1) Pocket torch; (2) mouth mirror; (3) tweezers (dissecting); (4) syringe; (5) antiseptic: (tabloids) iodine; (6) ligatures, wire, &c.; (7) adhesive strapping; (8) bandages; (9) lint (absorbent); (10) artery forceps; (11) hypodermic syringe; (12) morphia; (13) sutures and needles.

The above are merely haphazard and tentative suggestions; it would be a matter for a little careful collective thought to add essentials or eliminate non-essentials. At the best a skeleton outfit of this type would be readily amplified from the dental surgery. Such things as metal trays, compo for use as temporary dental splints, forceps, elevators, &c., would probably be added by many to the nucleus provided by the small and portable first dental aid outfit. I am not qualified myself to elaborate the idea further, having had no actual front-line experience, but I put emphasis on the idea because we are considering conditions where dressing and clearing stations, as organized in the Army, would need to be represented throughout the country by volunteer A.R.P. bodies in possibly very loose formation. Further development would be possible in team organization, when essential dental appliances should be included in every first-aid outfit of any size, rising to the more complete stocking and furnishing of motor ambulances and temporary hospitals (halls, schools, &c.), the provision of which would necessarily be greatly extended in any complete scheme of national defence on modern lines.

Thus far I have spoken only of the problem of organizing dental service in collaboration with first-aid medical organizations, and air-raid precautions units and formations, as they may arise, and I sincerely hope our dental associations will take the matter up and assist us as a profession to achieve some measure of organization which may be of practical value in the face of national war-time emergencies. Cities and factories, munition works, aerodromes, towns, villages even, will all have their needs and place

in a general scheme ; real service will not be achieved without a great deal of organizing spade-work.

I have tried to lay stress on the importance of this civilian front-line dental work because we learned so much, from our Great War experiences in treating jaw and facial injuries, of the vital import of early dental treatment. In ordinary civil practice fractured jaws, which are not really a numerous class of hospital cases, do not as a rule involve immediate loss of substance, as is the case with most gunshot or shell injuries. The treatment even of a simple fracture, does not always result in a prompt and perfect restoration ; with one broken tooth present the advent of sepsis may complicate matters seriously. With loss of substance, problems multiply exceedingly and the whole resources of a hospital team may be needed to deal with a single case ; medicine, surgery, dentistry, mechanical dentistry, radiography, bacteriology, photography, and plastic surgery, may each and all be called upon to contribute to the treatment of a case. Such treatment can only be achieved in an organized centre, and here I would stress the importance of the mechanical side being well equipped with first-class mechanics, to help the dental surgeon by supplying dental or interdental splints and appliances of all sorts which may be of infinite variety in construction and material, every case being a law unto itself.

Bone-grafting.—One big problem which was solved in many cases successfully was that of bone-grafting in the case of fractured mandible. It was solved largely by repeated failure bringing unexpected facts to light.

In the First Southern Command Jaw Centre Professor Billington, after many successes and failures with us, evolved principles of treatment which proved so sound eventually that one found it hard to realize why we had not recognized them at the outset. There is one important point about his method which I would like to mention ; he used no wiring of the fragments to the graft, which simply lay in broad contact at each end of the jaw fragments, overlapping them in a bed of healthy tissue. Previous to operation the parts had been put into alignment by splints ; at the grafting operation all splints were removed, being replaced only after the external graft wound had healed, when the parts were easily restored to their proper position. That wires have been successfully used to fix the bone is recorded by other writers, but often they gave rise to troublesome sepsis and sinuses and endangered the life of the graft and its union. The simple laying-in of the graft and leaving it free till it was healed over proved in Billington's hands one hundred per cent. successful in obtaining osseous union without sepsis (*Proc. Roy. Soc. Med.*, 1919, 12, Sect. Odont., 55-72).

In our earlier efforts at repairing fractures we were largely governed by the idea that complete rest for the parts could only be obtained by complete fixation and that any movement at all would be an encouragement to sepsis. One element of fallacy showed itself later in this argument when it was realized that if the osseous and dental hard tissues were rigidly fixed, the muscle attachments were more heavily strained by their inevitable tension during speech, deglutition, &c., and therefore the aim of splinting became not so much absolute rigidity, but a balanced rest and restraint for hard and soft tissues, allowing free circulation of blood with minimum disturbance of cellular activity. I think that principle is the sounder ; if it were not so, healing and healthy union would seldom be attained in edentulous cases in which real rigidity cannot be achieved. One calls to mind also cases in which an extra-oral bandage only has been used, with unexpectedly good results. There again is a simplification of the mechanical difficulties, parallel to the simplification of Billington's bone-grafting methods.

Aviation accidents.—Another class of jaw injuries which particularly interested me during the Great War was that of aviation accidents. The First Southern General Hospital, to which I was attached, received a number of these from neighbouring aerodromes, and facial injuries caused by crashes showed a large percentage of a constant type which we attributed solely to one cause—the striking of the aviator's

face against the coaming of the cockpit of the plane, as the head was thrown forward to receive what came to be known as the "hammer-blow".

According to the severity of impact, the result was a broken tooth, a broken jaw, or a broken skull. Fractures of the mandible or maxilla or both (seldom both) were usually of a type directly traceable to a common cause, and my colleague, Mr. Harold Round, and myself, spent much time and effort trying to induce the Air Ministry to have planes provided with a special cockpit padding to minimize the effects of this particular accident. Things were extremely hard to move, for with the whole of the Medical Research Board behind us, the Technical and Equipment Boards held fresh ideas at arm's length. At the close of the War we had the satisfaction of knowing that at least some hundreds of training machines had been treated as we suggested.

Novices in flying are more prone to suffer this particular damage; the expert senses a coming crash, possibly in time to crouch and protect his head, whereas the learner clings desperately to his joy-stick to the last moment.

It is not, however, my object in this paper to give any sort of full description of war-time oral surgery methods. These cannot be covered in a profitable and practical manner in one address, but sufficient literature is available to open the minds of those who feel ready to equip themselves to the best of their ability for the service of the nation and common humanity, and from that literature may be extracted sound and simple principles, bred from the hardly-won experience of the comparatively few men who wrestled with these problems during the Great War.

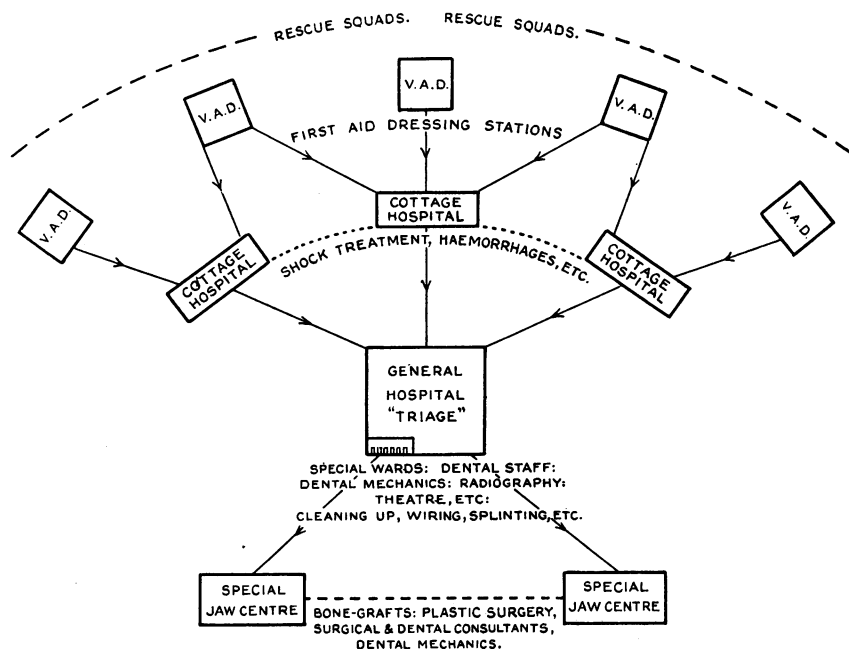
We have all, I think, received forms issued by the B.D.A. or Public Dental Service Association asking for information as to how, when, and where, we could volunteer our services as dental surgeons. The replies to that circular will at least give a nucleus on which to build. And, whilst trying to crystallize my own ideas for this address, I found a brief editorial letter "To all readers" in the *Public Dental Service Association Journal* for this month, giving me hope that the necessity for organization on a wide scale is being foreseen. It concludes:—

"In the meantime the most useful thing that members of the profession can do is to take such steps as may be within their power to arrange their own affairs in order that any urgent change of circumstances may be carried through with as little delay and as little dislocation as possible and for the rest, hold themselves in a state of cheerful and resolute preparedness."

With this I think we shall all agree whole-heartedly, and as I see it, it is incumbent upon members of this Section to encourage with all their power the spread of such emergency knowledge, and to use every means in their power to help forward the essential collaboration and pooling of ideas and actions with our surgical and medical brethren, which alone can produce the real team work—which, again, alone can produce any worthy result and reward for such skill and effort as we may be able to offer.

Personnel.—To be prepared as a profession the question must be asked: How best can our special work and skill be made use of for the common strength? Beginning with the youngest rank, our dental students, I venture to give you the opinion of the Dean of the Birmingham Dental School, Colonel Howkins, whose wide experience of war conditions gives great value to his opinion. It is this: All students who have received any instruction in anatomy and physiology and have some first-aid knowledge should not be enlisted but should be attached as dressers to civilian dental surgeons who should be appointed to attend at hospital centres. At the present moment there is a big drive in progress in Red Cross work: the number of V.A.D. workers in Birmingham rose quite recently from 200 to 500. All these will have received some first-aid knowledge in connexion with general casualty work including jaw injuries. After cases have been dealt with at the outset by these first-aid agencies, they will be transferred to local or cottage hospitals (in large centres possibly direct to a general hospital) where jaw cases (unless, of course, complicated by major injuries or disease)

may be segregated and treated by dental surgeons and student dressers, already attached. Here the necessary cleaning-up, operations, removal of foreign bodies, broken teeth, shrapnel, &c., may be performed, and the parts put at rest as far as feasible by ligaturing, temporary splints, bandages, plaster, &c. For more complete and advanced treatment, the cases will then be sent to special hospitals where maxillo-facial injuries may be dealt with by a fully-qualified surgical and dental staff, who will act together as a unit or team in the highly skilled work entailed in interdental splinting, bone-grafting, plastic operations, &c. Here also must be found a ready staff of highly skilled mechanics, with adequate laboratory (vulcanizer, casting outfit, &c.), to carry out the often intricate type of mechanical devices involved.



Radiography, bacteriology, photography, electrotherapy, are other departments which may be called upon, and my hope is that facilities for the collaboration of these specialities will be organized and provided for in any scheme of hospital treatment which our authorities may put before us as a profession, the whole resources of which would then be at the service of the nation to its best advantage.

This outline of a possible scheme (see diagram above) is, of course, only suggestion on my part, but it is at least an ideal to aim for.

REFERENCES

- ARMY ADVISORY STANDING COMMITTEE (1935), Report on Maxillo-Facial Injuries.
 BILLINGTON, W., PARROTT, A. H., ROUND, H. (1919), *Proc. Roy. Soc. Med.*, **12**, Sect. Odont., 55.
 DOUBLEDAY, F. N. (1919), *Ibid.*, 100.
 FRY, W. KELSEY (1919), *Ibid.*, 73.
 PARROTT, A. H. (1919), *Brit. Dent. J.*, **40**, 1.
 WEST, C. E. (1919), *Proc. Roy. Soc. Med.*, **12**, Sect. Odont., 95.

Textbooks

- BLAIR, V. P., and IVY, R. H. (1936), "Essentials of Oral Surgery".
 COLYER, J. F., and SPRAWSON, E. (1931), "Dental Surgery and Pathology".
 GILLIES, H. D. (1924), "Plastic Surgery of the Face".
 TURNER, G. GREY (1934), "Modern Operative Surgery".