

REHABILITATION
of the
WAR INJURED

A SYMPOSIUM

Edited by

WILLIAM BROWN DOHERTY, M.D.

AND

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THE SEQUELAE OF WAR HEAD INJURIES

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Early in 1939, Air Commodore C. P. Symonds, consultant in neurology to the Royal Air Force and an authority on the subject of disability from head injuries, was planning the establishment of a central air-force hospital in England for neurologic problems from head injuries in flying personnel. He recognized the variety of special problems inherent in the assessment and adequate treatment of head injury in modern warfare, particularly the peculiar interrelation of surgical, neurologic, ophthalmologic and psychiatric problems involved. Colonel Hugh Cairns was, he found, already interested in neurosurgical organization for the British Army, and it was proposed that the two plans be coalesced in a combined services hospital for head injuries. Arrangements were completed with the enthusiastic co-operation of the Directors General of the Army and Air Force medical services, but not until some months after the outbreak of war did the hospital begin to take shape. It was eventually opened in February, 1940, as an army hospital with some specially seconded Royal Air Force personnel. It received both Army and Royal Air Force casualties. I had the honor of being placed in charge of the Medical Division, which was entrusted with the original plan of Air Commodore Symonds, closely interrelated with the Surgical Division to which Colonel, now Brigadier General, Cairns was consultant. Air Commodore Symonds was not only the consultant to the Medical Division but also organized and supervised the Registry of Head Injuries, which is making a most valuable research correlation of all the data made available by this unique unit.

The following account is concerned with the assessment and

treatment of prolonged sequelae of head injury, although other types of neurologic disturbance also claimed attention. The surgical aspects of acute injuries have been commented on elsewhere.^{1, 2} From the beginning, it was evident that, as had been foreseen, the proper treatment of the late effects of head injury under service conditions required a more than usually thorough preliminary examination. The large numbers of possible factors causing failure to return to duty following a reasonable convalescence from head injury (six weeks was the arbitrary time adopted) may be resolved into two chief categories — organic and psychoneurotic. It is essential to assess these factors accurately, for their treatment and disposal differ greatly.

The Registry has already collected complete data, including follow-up, on well over 1200 cases of head injury handled by the hospital. Complete analysis will ultimately be published by the British Medical Research Council, which finances this aspect of the work. The kind of problem involved can be estimated from my personal notes of the last 400 cases of persistent disability admitted by me for assessment. It must be emphasized that, although the hospital received acute head injuries from a large area and a majority of cases of persistent disability from all areas, these figures are highly selective, and complete data regarding all head injuries or all casualties cannot be published at present. I purposely omit the patients with recent injuries who made rapid recoveries. Out of the 400 cases of unduly delayed convalescence, 38 patients had suffered gunshot wounds of the head, 13 injuries to the head in aircraft crashes, 303 head injuries from other trauma (motorcycle or other accidents with vehicles; tanks and so forth), and 46 from recurrence of symptoms from old head injury dating from before the war. Of these 400 men, 22 (5.5 per cent) were suffering from *traumatic epilepsy*, 116 (29.0 per cent) from other *organic defects*, and 262 (65.5 per cent) solely or chiefly from *psychoneurosis*. In the group of 38 gunshot wounds, 3 patients suffered from epilepsy, 19 were still disabled by organic (structural) disorders, and 16 by psychoneurosis. Of these, 21 were subsequently fit to return to duty, and

Rehabilitation of the War Injured

17 were discharged unfit. The proportion of the 400 returned to duty was almost exactly the same.*

It is clear that disorders such as hemiplegia and aphasia following a laceration of the brain are the result of damage to structure; on the other hand, a prolonged disability, such as insomnia, tremors, depression and fear of crowds, following a trivial head injury in a person who was previously prone to such symptoms is palpably psychoneurotic. The actual decision is, however, seldom so clear cut, and with increasing experience of all classes of injury from a variety of circumstances, more and more involved mixtures of organic and functional sequelae were defined by modern methods. Thus, to quote extremes, the aircraft pilot who has made a perfect recovery from a surgical head wound, has shown himself fit for every form of strenuous physical exertion, and pesters everyone to be allowed back to duty may develop a serious flying error on return to his squadron owing to a previously undisclosed nervous anxiety caused by the terrifying circumstances of his accident. Apart from the danger of further accident, treatment for this neurosis involves a waste of time that is saved if the liability is diagnosed earlier. The patient who has suffered an apparently trivial head injury and later wanders, with loss of memory, is sometimes shown by the electro-encephalogram or subsequent attacks to be suffering from epilepsy, although his original wandering fugue was hysterical and his memory is recoverable under Amytal. The patient behaving in a clearly neurotic manner may be found to have a xanthochromic spinal fluid, and the real reason for the failure to return to efficient duty of a patient with optic atrophy in one eye may be related not to his vision but to his anxieties about his relatives at home. An unsuspected abscess may be discovered by a chance air encephalogram, and an unsuspected but fundamentally important emotional factor may slip out in a casual remark.

Moreover, in the modern soldier, the tremendous tension of modern warfare — the noise, the rush of movement, the variations

* Symonds has published in the July, 1942, issue of the *Proceedings of the Royal Society of Medicine* the results of a follow-up of 871 cases, including the 400 mentioned here, that show 68 per cent successful return to service duties.

in climate and, above all, the heightening of individual responsibility — renders accurate assessment of great value in the decision regarding the return to duty and the kind of duty; such a decision is even more important in the airman, and may present the utmost difficulty in officers and commanders. When downgrading of responsibility appears desirable on medical grounds, or when the question of invaliding out of the services arises, further psychologic consideration complicate the picture and must be carefully weighed regarding individual personality if successful adjustments are to be achieved.

The medical services of the United States are no doubt fully alive to and prepared for the inevitable problems that will arise in these respects, but discussion of them, in the light of over eighteen months' experience of this kind of work before I was transferred to my present assignment, may be of interest.

General Considerations

TRAUMATIC EPILEPSY.—The incidence of traumatic epilepsy following head injury will no doubt be a surprise to some, especially in view of the low figures of Sargent³ after World War I (4.5 per cent in 18,000 cases) and of Stevenson⁴ (1.5 per cent in 17,300 cases). But in the present whole series, the incidence was even higher than in the 400 cases mentioned above, for the Registry had filed 53 cases (16 focal and 37 generalized) out of a larger group of 630 fully documented consecutive patients. Of these, 22 had had attacks within one month, 16 in one to six months, 8 in six to twelve months, and 5 in two to five years. Of the 22 having convulsions within one month, only 6 had suffered gunshot wounds.

Traumatic epilepsy is a complication of localized destruction and scarring of cerebral tissue, particularly from so-called "open injuries," when the dura has been penetrated. The attacks had rarely remained sufficiently localized to give good results from excision of the scar (1 case in 400 head injuries, and this was a closed head injury). Closed head injury undoubtedly can give rise to traumatic epilepsy, as Symonds⁵ has remarked; but the liability to epilepsy is