The Contribution to Neurosurgery of the Combined Services Hospital for Head Injuries at St Hugh's College, Oxford, 1940-1945

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During the First World War there were no designated Neurological Surgeons, although in some forward units one surgeon might deal with most of the head injuries. There was also no official segregation of head injuries, which were treated along with everything else¹. Penetrating wounds of the head carried a mortality of between forty and fifty per cent, mainly on account of infection. No plans to change this had been made in the years between the Wars. Principles for the treatment of brain injuries had been laid down in 1915 by Sir Victor Horsley and were to provide a basis for their management in World War II, though they would have to be relearnt. However, their major fault was a recommendation that head wounds should be left open. This caused ulceration of the brain (fungus), which was a serious complication of head injuries in the 1914-18 war, and a rarity in 1939-45 when closure was always attempted.

This was the situation in 1938 when, at the request of the Government, Sir Hugh Cairns began to plan the neurosurgical services that would be required by the Army if war should come. He realised that head injuries could be treated more efficiently, not only in the acute phase but also during recovery and rehabilitation, if they were cared for in a designated hospital or surgical unit by specially trained staff. Sir Hugh, with the assistance of Sir Farquhar Buzzard, Regius Professor of Physic at Oxford, Sir Charles Symonds, consultant neurologist to the RAF, and George Riddoch, consultant neurologist to the Army, created the Combined Services Hospital for Head Injuries at St Hugh's College, Oxford, which opened in February 1940 and closed in September 1945². It had 300 beds, partly accommodated in additional buildings, which expanded to 430 at the time of the invasion of Normandy. Some 13,000 patients of all three Services (predominantly Army and Royal Air Force) were treated there. St Hugh's was linked with a British Red Cross Hospital at Middleton Park that provided special facilities for the convalescence and rehabilitation of those who were head injured. Later there was a second rehabilitation hospital at Tusmore Park for patients with severe brain damage. There was also a close liaison with the Canadian Neurological Hospital at Basingstoke, and with the civilian Emergency Medical Services³.

The hospital at St Hugh's College also provided training for neurologists and neurosurgeons, nurses and

orderlies, and the other professional staff that are necessary for the care of patients with head wounds. It became a school for a whole generation of neurologists and neurosurgeons, who developed a lasting respect and affection for it. They were thoroughly grounded in the principles of neurological surgery which had been so clearly laid down by Harvey Cushing, the founder of modern neurosurgery, although this training was always with a view to their subsequent work in the Services. Sir Charles Symonds' records show how St Hugh's was "Cairn's Hospital"⁴. Cairns enforced a regime of patient care involving meticulous accuracy, accurate examination, careful recording and attention to detail, which was to continue to be practised, even in the most adverse circumstances during the fighting, and which produced a uniformly high standard of work. This influenced the whole of post-war British neurology and neurosurgery and has been propagated down to the present day.

Cairns had a gift for organisation, and one of his achievements was to found the Mobile Neurosurgical Units (nine in all if the first, which was captured in 1940 is included). Their equipment was set up in Oxford, and their training took place at St Hugh's. The effectiveness of early specialist care which these units made possible, sometimes within a few hours of wounding, inspired confidence and vastly improved the results of treatment. These units dealt with over 80% of the neurosurgical work in the African and European theatres of war, and more than 20,000 patients were treated by them. In Italy, one unit carried out 334 operations in 16 days, and another performed 208 in 15 days³.

It was while working at St Hugh's that Cairns turned his attention to the protection of motor-cyclists from head injury. During the first year of World War II three motor-cyclists were killed every day, despite relative inactivity during most of this period. In the majority, a head injury was the cause of death. A form of crash helmet had been used by racing motor-cyclists before the war, and Cairns and his team set about producing a helmet that would protect the head from penetrating injuries and deflect the forces of impact. Crash helmets were made compulsory for all the motor-cyclists in the forces at the beginning of 1942; their worth was immediately apparent, and as everybody knows, they were subsequently adopted by the police and then became mandatory for all motor-cyclists. Attention was also directed towards the mechanisms of brain damage

Members of the staff of St Hugh's Hospital for Head Injuries. Brigadier Hugh Cairns (later Sir Hugh Cairns) is third from the left in the front row.

in non-missile injuries, and great advances in the understanding of the effects of forces upon the brain were made in Oxford in the early forties.

As has been mentioned, infection was an important source of mortality and disability in war injuries, no less in the head than elsewhere. When the use of penicillin was developed, its application to the treatment of infections of the central nervous system, such as meningitis and brain abscesses, was placed in the hands of Sir Hugh Cairns who, with Dr Honor Smith and others, established an effective method of treatment at St Hugh's Hospital. Cairns then took this information to the Neurosurgical Units in North Africa and later in Italy, where it was further tested and applied, with results that were scarcely believable. When St Hugh's finally closed as a hospital and reverted to academic life once more, the care of head-injured soldiers and their families with neurosurgical problems was transferred to the Military Hospital for Head Injuries at Wheatley, where the same work continued that had been founded at St Hugh's. It was here that tuberculous meningitis, which had been an inevitably fatal condition, was at last made to respond to treatment with streptomycin and tuberculin.

All the patients who were admitted to St Hugh's, and all the head injuries that occurred in the Forces were very carefully documented. The transfer of patients to the convalescent and rehabilitation centres at Middleton Park, Tusmore Park, and later at Headington Hill Hall, allowed a detailed study to be made of their progress and subsequent disabilities. Specialised rehabilitation was developed in order to make use of every residual capability, so that the greatest number could return to a useful life, even when some disability remained, and those who were too severely handicapped could lead the best life that was possible in the circumstances. The study of these records, particularly under the guidance of Professor Ritchie Russell, produced invaluable information about the capacity of the brain to recover from penetrating and closed head injuries, and the effects of damage in specific locations. It also showed how best to treat the late complications of injury to the brain, such as disorders of speech, paralysis, epilepsy and so forth. The meticulous work carried out at St Hugh's and elsewhere bore fruit in many papers that were published after the War, and which have been the basis of subsequent work.

There have been very many advances in neurosurgery

since the Combined Services Hospital for Head Injuries closed. Most of them depended on developments in other fields, which could be adapted or adopted when an application was perceived. Some depended on better knowledge of pathology, and some on technical advances. Although specifically created for the treatment of head injuries, St Hugh's Hospital also treated any other neurosurgical condition that arose among Forces personnel, including cerebral tumour, but, not, unnaturally, the great contribution of the Hospital for Head Injuries was in the fields of trauma and infection. Foundations were laid upon which others have built, and our gratitude must always be due to those who gave their devotion and conscientious dedication to the care of these patients, and to Sir Hugh Cairns in particular. Furthermore, if the need should ever rise again for the treatment of large numbers of head injuries, the example and lessons to be learnt from St Hugh's must never be forgotten.

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(Editor's Note. As announced in the February 1988 issue of the *Journal of the Royal Army Medical Corps*, on Monday 6 June 88, the anniversary of D Day, the Chancellor of the University of Oxford unveiled a plaque to commemorate the use of St Hugh's College, Oxford, as the Military Hospital for Head Injuries.)

ACADEMIC ACHIEVEMENTS

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