MEMORIES OF HUGH CAIRNS*

BY

SIR GEOFFREY JEFFERSON

Hugh Cairns was born at Port Pirie in South Australia on June 26, 1896. That is the starting point, but some enrichment should come from a sketch of his early days and his Australian background. To be born of sound, if humble, stock under the high and wide Australian skies is as fine a beginning as a man could desire. His father, William Cairns, threatened with tuberculosis, had sailed out from Scotland on medical advice. At Port Pirie he had found work in timber construction for the loading of ships, for this was the port of shipment from the smelting plant of the great Broken Hill Proprietary, Australia's chief up-country mining area and today its largest and richest company. In Broken Hill, silver, lead, and other metals had been found in quantity. Hugh went to school at Port Pirie, transferring to the Riverton High School when his parents moved away to this quiet little place of some 600 or 700 people. It lies in good agricultural farming land and sheep country. Many of Australia's best vineyards are not far away, and it is a pity that we rarely see their products. There Hugh's parents established themselves, his mother in particular being still remembered as a very kind woman to

whom all went for advice. She had natural talents and a zest for life; she was one to whom everyone in the village went with their troubles. Perhaps from her he inherited his love of music, which she taught, but there was also his father with his violin playing. Hugh inherited something else from his father, a

perfectionist trait in manual skills. The son was fortunate to have fused into his character so much of the best qualities of his parents. I have had the pleasure of visiting Riverton, a quiet place indeed, basking and often baking in the brilliant sun and heat of South Australia. I saw the little primary school and met, by request, two or three people who had been Hugh's school fellows. It is a mixed school now, as in Hugh's day, boys and girls in one room, a practice common enough in small schools in our own country. A boy who made stupid answers was put back to sit with the girls. This was not Hugh's fate, because from early days, they still remember, he learned so fast

that he outshone his companions. There is a story current at Riverton that a visitor who had asked him, as, aged about 4 or 5, he sat on the floor playing, what he wished to be, received the reply, "the greatest doctor on earth!" Only just credible, I suppose. The child went far on the way to that impossible goal. It was not long before

Col., later Brig., Sir Hugh Cairns, K.B.E.

*The first Sir Hugh Cairns Memorial Lecture delivered at the London Hospital in October, 1958.

Hugh won a bursary that took him 60 miles to the Adelaide High School. This is a fine school by any standards, as so many Australian schools are, finely rebuilt since Cairns' day. In conversation with his old headmaster, Mr. West, I found that he was deeply impressed still by his memories of the boy. "A bright, frank, and candid boy—always popular but never seeking to be," he said of him, "always top of his class and finally top of the school." No one, I venture to say, will deny that this was a wonderfully accurate forecast of the character of the man. Winning an exhibition he moved on to Adelaide University where he continued his unbroken story of success. There he met Leonard Lindon who, as another oarsman, Rhodes Scholar, and eventual neurosurgeon, became one of his closest friends. They had many qualities in common. Hugh Cairns was not noted, it seems, for athletic prowess until he took up rowing at the University. Soon he was in the Adelaide University crew as he was again at Oxford, gaining his "Blue" in 1920. Rowing men rarely excel at ball games and though Hugh Cairns was interested in all sport he by no means allowed that interest to encroach on his work. Work dominated his life from the earliest days; it was dogged that did it, he was not to be distracted from the task in hand. On leaving Oxford he abandoned rowing to work for his F.R.C.S., the aim of all good Australians with surgical ambitions and a worthy one. He and Lindon roomed in the same house as Archie Malloch, the young Canadian who had watched at Osler's bedside and became eventually Librarian to the New York Academy of Medicine; they burned his gas-fire far into the night, having no money for their own.

The high spot in his life so far had been his acquisition of a Rhodes Scholarship in 1919. Balliol was his College, and he could have had no better. He gave it all his loyalty and admiration (in 1937 Balliol repaid him by making him a Fellow). Before this he had had two periods with the army in the First World War, was invalided back to Adelaide from Lemnos with typhoid, there to finish his medical studies and return at once to France to an English battalion until the war's end.

Hugh Cairns went to the London Hospital after having a resident post at the Radcliffe Infirmary. He was house surgeon to Henry Souttar (1921) and house physician to Sir Robert Hutchison in the same year. He had already been assistant in pathology under Professor Turnbull where he began the work on tumours of the testis that he presented as his address as Hunterian Professor at the Royal College of Surgeons in 1925. Turnbull, whom he greatly admired, certainly implanted in Hugh a life-long interest in pathology. By this time he was assistant

on the Surgical Unit under (Sir) Henry Souttar, Director of the Surgical Unit. At the suggestion of Alan Gregg, from that time on his friend and helper, and fired by his reading of Harvey Cushing's writings, he applied successfully for a Rockefeller Travelling Scholarship and went to the Peter Bent Brigham Hospital for 12 months in September, 1926, shortly after appointment to the honorary staff of the London Hospital (June 2, 1926—full surgeon June 7, 1933). From that time on his future was certain.

Stimulated by Cushing's example by what he had learned at first hand and by Cushing's advice he had decided to devote his life to neurological surgery as a specialty. Many wagged their beards in dismay because no surgeon in London had ever thought that he could make a living out of so recon-dite a pursuit—nobody, that is, since Victor Horsley, and he had done a little general surgery. Much wiser, it was thought, would it be to take neuro-surgery as a sort of dilettante hobby, an ornamental sideline to bread-and-butter general surgery in the way that Percy Sargent was so successfully doing. Cairns was nothing if not stubborn and, it must be said, courageous. Aided by a grant from the Rockefeller Foundation arranged for him by Alan Gregg, he thought that he could get by if he lived quietly. There were hardships as there were for all ambitious young men without capital in those times. The project could not have succeeded except with the collusion and help of his wife, Barbara Smith, the beautiful youngest daughter of the Master of Balliol. By the happy circumstance of his marriage Hugh had forged another link binding him to Oxford. Fortune had certainly smiled in other ways as well on this vigorous and friendly young Australian with the charming manners, for there was nothing brash or raw about Hugh—nothing, that is, if he was getting his own way! Rarely did he fail to do so, for everything seemed to come to him of its own accord.

The year of his return from Boston saw the start of his efforts to found a neurosurgical department to pair with the medical neurology of George Riddoch and Russell Brain. This had meant a breakaway from Souttar and such neurosurgery as was already in being. Cairns thought this break unavoidable. He wished to apply the special techniques, the team work, and ways of thinking that he had learned with Harvey Cushing and he knew that he could do so only if he were in control and independent. Cairns felt badly about the break because Souttar had been nothing but kind and helpful to him. In his last illness Hugh Cairns told me that it still worried him that he had hurt Souttar's feelings. As a junior surgeon there were

difficulties in establishing something different from the traditional teaching hospital unit. I know this because I was facing the same problems at the same time but with more encouragement from colleagues. It was our common enterprise that bound Hugh Cairns and me together at an important time—that and perhaps a mutual liking. (When I read again, as I have been doing lately, his letters to me from 1929 onwards, Hugh's personality, his generosity, come back to me as if he were alive, as if I had only to reach out for the telephone and I could speak to him.) The ideal we shared was of a self-contained unit with the ambition to raise the work done in it to the top level of international ranking. This did not come about overnight, for either of us. It was 1932 before these units were firmly established: in Manchester, my own with Harry Platt's in orthopaedics in our hospital epitomized a veritable revolution in the finding of a sufficiency of beds for specialties in a teaching hospital. Hugh's unit at the London Hospital was not officially established until 1934 but was no more than a formal acknowledgment of an established fact.

In 1930 we find him Secretary to the Section of Surgery at the B.M.A. Meeting in Canada. Cairns had already won a considerable reputation and he was shortly joined at the London by overseas trainees—Frank Morgan (Melbourne), Hugo Krayenbühl (Zurich), Almeida Lima (Lisbon), and Obrador (Madrid) amongst others—all men of the highest quality who have since made great names in neurosurgery. Douglas Northfield came to join Cairns in 1934 when his unit was complete and remained his staunch and intelligent aide, to become his admirable and wise successor.

Following the lead of Cushing and other Americans, he made his private patients come to consult him in the rather poky little room at the London Hospital that was all that he had of his own. It was a fault of our hospital construction that there was no place for any of the honorary staff to sit and work and write. There were the wards and the operating theatre and somewhere for the surgeon to hang his hat while he operated or did ward rounds—no more. That used to madden me—as it did Hugh Cairns. But anyone who wanted more was thought to be an odd sort of fish. If he were a neurosurgeon too he was probably crazy. Nowadays only the elder staff members remember that the idea of dealing with private patients at teaching hospitals was not only a new one 30 years ago but one that did not commend universal approval. That state of affairs has now been remedied as everyone knows. It came about at the London Hospital in 1936, and Cairns had been on the Committee forwarding the change. What was equally bad was that

facilities for clinical research were virtually non-existent and (what was equally bad) many universities had either no or inadequate facilities for survival experiments on animals.

Reports on Cushing's Work

The publication by the Medical Research Council in 1929 of Cairns' special report had brought him at once into the public eye. It was an account of the work done in the 12 months, September, 1926-27, when he was working as one of Harvey Cushing's assistants at the Peter Bent Brigham Hospital in Boston. Previously, in reports by Cushing himself, whether in his books or in his many papers and in those of his assistants, the objectives had been limited to descriptions of some or other neuropathological or clinical or surgical subject. Cairns' report was different. It had the great advantage that it covered the whole field, giving a global view of a year's work in intracranial tumour surgery by the master surgeon of the day. Although the material was Cushing's there was a great deal of Cairns in it. It was in fact so cleverly composed and illustrated by the occasional case history that it made first-rate reading and time has not diminished its interest. Of the 369 cases admitted to the Brigham during Cairns' stay, 157 had tumours verified histologically and of those the 135 survivors proved the material for Cairns' later follow-up review in 1936. To that I shall refer in a moment. The clinical accounts show all the care that was to mark Cairns' future work. He brought back to this country a characteristic of Cushing, the continual appraisal and periodic publication of his surgical mortality and something else—the forging of bonds between the patient and his surgeon so that after-histories were known. This had been a necessary and indeed a basic feature of Cushing's work since he was determined to establish the life history, the natural history of the so various tumours. The other thing that emerged was the importance of study of the visual fields applied to most neurological and all neurosurgical cases. Field studies were no new thing to us in Britain but Cushing was the first surgeon to make great use of them. The lucky chance of the coming of C. B. Walker to work with Cushing led to the introduction of quantitative perimetry. It was an ironical fact that Cushing's earlier erroneous belief that interlacement of the colour fields was a reliable sign of brain tumour led him to operate on General Leonard Wood's meningioma, an operation the success of which, he told me, he thought had played a considerable part in his invitation to leave the Johns Hopkins Hospital for Harvard. Cairns in his report discussed ventriculography. It had been used in no more than 37 of the 369 cases and

was the cause of death in two and of grave symptoms in a third. Cushing had been first hostile to and then niggardly in the use of pneumography, not merely because it came from Dandy but because he believed that it was more dangerous than Dandy allowed and there he was right. Glancing over the material for that year when Cairns was there, we see that there were 61 patients with gliomas operated upon, of whom 11 died (18%), 29 patients with pituitary adenomas of whom one died (3.4%), all but two operated on by the trans-sphenoidal route, and 28 patients with meningiomas with five deaths (17.8% mortality). To have seen all those cases so skillfully handled, to have been one of a team of devoted young men, to have watched the tumour types so expertly differentiated by Percival Bailey, and to have worked in a clinic where discipline was so high and where hours of work to the point of exhaustion were the rule—all this was a wonderful experience. (Norman Dott had been through it two years earlier.)

This report made it clear that a new figure had emerged on the London stage. Patients began to come to him not only from the staff of his own hospital; soon he had accepted an appointment to the Maida Vale Hospital (1931) and to Queen Square in 1935. In no time, as it seems looking back on it, he was reading papers on subjects that remained his favourites—brain abscess and injuries of the dura by fractures involving the paranasal sinuses. But by the year 1937 he was able to read a paper in Zurich describing his own tumour work during the 12 months of 1936 which almost matches what he had seen in Boston exactly 10 years earlier. He had had 120 verified tumours: 47 gliomas with a 12.7% mortality, 21 meningiomas with two deaths (9.5% mortality), eight acoustic neuromas, and seven angioblastic tumours, both with no deaths. The only score on which Cushing was much ahead was that of the pituitary, for Cairns had only 10 cases and three patients died—an unlucky run.

To revert to what I called a pet subject of Cairns, brain abscess. In 1930 he took part in the discussion by the otologists on this subject. Heinrich von Neumann of Vienna, then one of the most famous in his field, spoke of the cases that he had collected from the literature. Of 387 patients with temporal lobe abscesses, 61% had died and 88% of 124 patients with cerebellar abscesses. Von Neumann himself had had two recoveries in 27 cases. When Cairns came to speak he was emphatic on the need for better and more studious clinical examinations of these cases. Too many of the 200 patients with brain abscesses found in the post-mortem room since Professor Turnbull had begun to keep accurate records at the London Hospital in 1908 had died in

medical beds after admission in coma or with wrong diagnoses. He gave excellent and much needed advice on needling the brain and on the deductions that could be drawn from what one saw through a large enough burr hole. The results of the surgery of brain abscess did not immediately improve. Three years later he reported with Charles Donald his own figures. He had had 10 recoveries in 23 patients. We were, nevertheless, all set for the revolution unparalleled elsewhere in the body which did eventually come from penicillin and the other antibiotics and bacteriostatics—a work in which the Oxford School, first under Cairns then under Pennybacker, has excelled.

I must pass over with little more than a mention some papers such as that on head injury (with Russell Brain, 1928), on the treatment of spinal ependymomas (with George Riddoch, 1931), on the treatment of glioblastomas with radium (with Stanford Cade, 1931), his experiments with John Fulton on the effects of radon on the spinal cord (1930), and the very carefully described and cautiously treated case of pinealoma (with Wilfred Harris, 1932).

Cairns never lost the enthusiasm for pathology which had brought him originally to Turnbull's laboratory and finding there that remarkable person, Dorothy Russell, seized on to her to give him the sort of help that Cushing had had from Percival Bailey. Knowing that she was interested and could be more so in the structure of brain tumours he put her up for a Rockefeller Travelling Scholarship and sent her off to study in the States. Thus began a most valuable partnership, only broken when she declined to accompany him when he moved to Oxford, a refusal which astonished him. But those privileged to know Professor Russell will readily credit her with having a mind and purpose of her own. The fortunes of war took her in good time willy-nilly to Oxford but she did not stay. Ortega was already a bird of passage there. However, the Cairns-Russell partnership was a vitally important factor in Hugh Cairns' development and in the success of the London Hospital department. They wrote together two important papers on the seeding through the subarachnoid fluid pathways of gliomas, not only malignant but benign, papers marked by scrupulous technique. The older members of the Society of British Neurological Surgeons perhaps remember a joint paper given by Hugh Cairns and Dorothy Russell on the way in which different sorts of stains would bring out important variations in the histological appearances of brain tumours. Professor Russell's work on the tissue culture of intracranial tumours stemmed from those beginnings.

In 1935 Cairns went back, this time to New Haven

because Harvey Cushing was there now as Professor of Neurology at Yale and where Dr. Louise Eisenhardt had set up the Brain Tumour Registry. Cairns' object was to find out not only who of the patients operated upon by Cushing at the Brigham in 1927-28 were still alive but also to enquire into the usefulness of the lives that they had led. Cushing was delighted to have him back for he had been fond of Hugh, he admired him and was proud of him. Above all it was a matter for the greatest satisfaction that he had in him a really flourishing, respected, and well-thought of pupil in London. Too many London neurologists had been unfriendly to Cushing, had belittled his achievements. Jibes at his slow, careful Halsted method of operating were overheard by visitors from the U.S.A. and reported back home. Cushing was too sure of himself to care greatly but it was a good reply to get British disciples. Dott and Cairns were outstanding examples. Hugh Cairns' report on his follow-up was published in 1936. Of the 135 patients who had survived operation he found that 72 had died since, 63 were alive seven to nine years afterwards, and of those the best performance had been given, as we should expect, by those with acoustic neurinomas, pituitary tumours, and the meningiomas. Three of four cases of cerebellar astrocytoma were alive, and four of 15 cases of hemispherical astrocytoma. The average survival of patients with glioblastoma had been six and a half months, the longest 14 months. We know now that Cushing himself had spent too much time on those malignant gliomas but so had many of us until angiography came along mercifully to release us from that hopeless burden.

This survey by Cairns is a model of its kind; his discussion of what constitutes usefulness in life shows that knowledge of psychology which was to emerge in a later period of his work. While on this visit he wrote to Barbara that he was formulating a plan in his mind for something big and new at Oxford. We know now what that was.

An important discovery that belongs to the 1930s was the description with C. S. Hallpike of the temporal bones from two patients who had died from intracerebellar clots after eighth nerve sections for the Ménière syndrome. Cairns had kept the four temporal bones in the hope of salvaging something important from disaster. After six months' thought and enquiry as to whose would be the safest hands to receive this precious material, he acted on Turnbull's advice and gave them to Hallpike, then at the Ferens Institute. Hallpike has told me how very carefully he was cross-examined and how cagely he was looked over before Cairns thought it safe to put the bones into his hands for histology, with what eventual result everybody knows (1938).

Hugh Cairns had now been established in London for 10 years. By the honesty of his opinions, by his very likeableness, and by his unquestioned skill he had built up not only a first-class neurosurgical department at the London Hospital but he had acquired a busy private practice, one more time-consuming, more demanding than he found convenient or desirable. With his heart really in the London Hospital but his livelihood in the nursing homes of the Harley and Wimpole Streets area he was finding it difficult to live up to the ideals of perfection that he had long ago set himself. He was still the only whole-time neurological surgeon in London and even had he not been, who can doubt that his popularity would have been as great and his dilemma no less. He had been appointed to the National Hospital in 1935 but he operated on only one case there; he already had other fish to fry. He and I had worked hard on Alan Gregg to get the Rockefeller Foundation to give a large sum to that hospital for the creation of adequate surgical accommodation and for new research laboratories. We worked together again on the plans for the new block but on the subject of his own future in this hospital he was sometimes sure, sometimes vague, and it was not long before the first hints of something likely to happen elsewhere were detectable in the air.

The Oxford Dream

At the B.M.A.'s 104th Annual Meeting, which took place at Oxford in July, 1936, Hugh was evidently excited about something. He said when inviting me to a small dinner in New College, at which Lord Nuffield and Farquhar Buzzard were to be present with others, that he was bursting to tell me what was on foot but could not yet. The Presidential address, which had been given by Sir E. Farquhar Buzzard, then Regius Professor of Medicine, gave a likely clue. It was inadequately entitled "And the future". In it the President sketched a future in which the young doctor would have ample opportunity for research, where some chosen men could lead departments of medicine, surgery, and obstetrics in which the care of patients and research would be almost their only duties. They were to be fully and adequately paid. He thought that Oxford was the right place for this because of its ideal atmosphere for the advancement of knowledge and because of the excellence of the departments ancillary to clinical study. This ideal school would be in close touch with physiologists, biochemists, pathologists, pharmacologists, and radiologists. Here would be the place for the training of those fitted by ambition and ability to find a career in research. Their clinical teachers could give them all their time if they were freed from

the heavy burden of teaching medical students.

Farquhar Buzzard went on to remark that the better educated a man is the more time he needs—time to work, time to think. Maybe it was, he added, no more than an ambitious dream. Although Farquhar Buzzard's interest in medical education was well known, he was conservative in his outlook but shrewd and a man of great influence in the University's affairs. His knowledge of procedure made him the ideal person to present to the University's officers this new plan. It will be no surprise to discover that the propositions made in his Presidential address were not entirely original. The ideas had been put crisply and in detail to him by Hugh Cairns, but those who remember the circumstances say that it would be unfair to Buzzard to speak of him only as a mouthpiece. Buzzard realized that in Cairns he had a man with an energy and a driving force that perhaps he lacked himself so he joined wholeheartedly in collaboration in a scheme of which he himself heartily approved. Of the magnitude of Cairns' part there can be no doubt. He had started to draw up plans some time in 1934.

Sir Arthur Ellis, who eventually succeeded Buzzard as Regius Professor, has told me of private meetings at Cairns' house at 24, St. John's Wood Park, at which the Oxford Vice Chancellor, A. D. (later Lord) Lindsay, (Sir) Douglas Veale, the University Registrar, and himself were present. There were several such meetings during which the scheme was thrashed out with Cairns leading, pleading, and convincing. Late in 1934 or early 1935 Cairns sent to Farquhar Buzzard a "Memorandum to the Regius Professor of Medicine on the desirability of establishing a complete School of Clinical Medicine at Oxford". The arguments were roughly those that Buzzard himself used in the Presidential address referred to. They were these: that although the British schools of physiology had continued pre-eminent, above all those at Oxford and at Cambridge, in the clinical fields we had contributed remarkably little outside of neurology and cardiology. What fundamental research we had on our credit side had been applied more energetically abroad than here at home. Cairns went on to say that Oxford was the place above all others in which to found a new school. It had no large commitments to undergraduates whose yearly entry could be limited to 20 at most, all carefully selected men. The postgraduates, who would come for six to eight years' training and research, could be hand-picked from countries all over the world. Cairns estimated that £600,000 to £1,000,000 would be required to endow a sufficiency of fully salaried posts. He added that the present Regius Professor

(Farquhar Buzzard) had great influence outside the University as well as within it. He would be just the man to sponsor the scheme. A second document (March, 1936) is firmer in tone, as if he had had enough encouragement and knew that he had at least strong moral support for his plan. It is headed "Second Memorandum from Mr. Cairns to the Regius Professor etc.", is 39 pages long, and restates the arguments for the foundation of a research school with estimates of capital cost and annual expenditure. This was drafted with the help of Lady Cairns and a friend as secretary. The salaries for these people in their sixth, seventh, and eighth years would be £200 p.a. which was about the same as the Johns Hopkins level. There are estimates for the already existing Nuffield Institute of Clinical Research (in Professor Gunn's charge), medicine, pathology, pathological biochemistry, surgery (slightly the most expensive item), gynaecology and obstetrics, paediatrics, radiology. Anaesthesia was not mentioned. The reason why this last fact is brought up will appear shortly. Cairns did not know at that date where the money could be found; he wondered if the Government might considerably help. He said that if half the needful sum could be got, pious benefactors would emulate William of Wykeham, Radcliffe, and William of Waynflete in providing the balance. It is noteworthy that in this early plan the heads of all the departments were called director or reader, the only professor mentioned was the Regius who was to be in clinical charge of the medical unit. Oxford was not yet asked to accept the innovation of multiple clinical professorships.

Sir Arthur Ellis says that when bidding good-bye to Lord Nuffield, who had been Buzzard's guest of honour at the 1936 B.M.A. banquet, Buzzard slipped the Cairns document into Nuffield's pocket saying, "Read this when you get home". And now Lady Cairns tells me of something even more cogent, more perpendicular to our story.

Mrs. Smith, widow of the Master of Balliol and a "grande dame" of Oxford, introduced her son-in-law to Lord Nuffield at the B.M.A. reception in Christ Church. Cairns obtained an interview for the following Sunday. Apparently Lord Nuffield sat and listened whilst his visitor developed the scheme, we can be sure with great power, for an hour. Lord Nuffield said very little but at the close told Cairns that he would do the whole thing himself. He had sat weighing Cairns up and decided that he was a man with "fire in his belly". Naturally Hugh was wild with excitement. Lord Nuffield tells me that he himself had had it in his mind for some time to do something for Oxford medicine. No doubt willing donor and convincing supplicant met

at this meeting. Lord Nuffield had already helped the Orthopaedic Hospital at Headington generously, even more generously he had bought the Radcliffe Observatory site and started the unit which became under Professor James Gunn the Nuffield Institute for Medical Research.

The Nuffield Professors

In October, 1936, Lord Nuffield announced his intention of giving £1,250,000 for the creation of a medical research school. This was tremendous news. Hugh wrote to me soon after in reply to a letter congratulating him on his accomplishment for I had guessed his part in it. "I have been itching to talk to you about Oxford ever since the night of that dinner at New College. *You* can imagine what a strain it has been not to talk. . . ."

In Lord Nuffield's letter to the Vice-Chancellor, remark is made of Farguhar Buzzard's phrase "an ambitious dream". Lord Nuffield continued:

"It would be a great pleasure to me to help in giving reality to this dream in a city where there are already hospitals with which I have the satisfaction of being closely associated and in a University of which I am proud to be an honorary graduate and where, though on a small scale, is already an Institute for Medical Research."

He announced that he wished for the foundation of a trust to administer the fund, and of that Mr. (later Sir) William M. Goodenough was later made chairman. Goodenough was already treasurer of the Radcliffe Infirmary and Chairman of the Oxford County Council. He was an influential man and so he remained, as we all know, for did he not become through his special committee the arbiter of all our fortunes?

At the special meeting of Congregation at Oxford, convened in Lord Nuffield's presence to carry a decree to set up an organization to establish the new school, Lord Nuffield stood up to speak and said that he had been thinking things over as he listened and decided that the sum he had given was not enough and that he had decided to increase his gift to two million pounds to be applied to the creation of four professorships—medicine, surgery, obstetrics, and anaesthesia. On the last named he was adamant. The University, so Professor Macintosh tells me, boggled over the chair in anaesthetics. Finding that Lord Nuffield was determined that it was a subject crying for research, so that it was all or nothing, the University gave in. Lord Nuffield followed up in October, 1937, with a further £300,000 for buildings at the Radcliffe Infirmary, for the professorial units and later created the "Nuffield Foundation" for more general educational purposes with ten millions. Lord

Nuffield's biographers, P. W. Andrews and Elizabeth Brunner, estimated his gifts all in all up to 1955 at about 27 million pounds.

What is one to say of such munificence! I suppose that today's value of the money given in the creation of the Oxford chairs would be somewhere between 6 and 7 million pounds. It is well that these extraordinary events, for extraordinary they were, should be freshly remembered because for the first time really adequate finance had been provided for something that would never again be quite a dream. It would give a false impression to the youngest in our profession to-day if they got the notion that this new Oxford scheme fell on a wholly gaping and dumbfounded world. What was most astonishing was the generosity of its donor. The proposals themselves had been the current ideals of several of the longer sighted men in teaching hospital circles, especially in the provinces. We had come to despair of its actual creation. And here at last it was. It can well be imagined that Hugh Cairns was very quickly in the thick of the further planning for the best use to be made of these wonderful new opportunities. Hugh was a born planner; the news that something important needed organizing was to him what the smell of powder was said to be to the war horse. We can be sure that he gave it the enthusiastic and energetic propulsion at which he excelled. Buzzard was a wise man in his own deceptively quiet way; to most people he was better known for his timely silences, as Lord Moran said of him. I feel sure that his services not only as a go-between but as a catalyst should not be underestimated, but that he himself could have put through a scheme like this would be completely out of character. Hugh Cairns' knowledge and experience of the American teaching hospital and professorial procedure was needed to draft it in detail, his vigour to put it through.

It is extremely difficult to apportion credit fairly when looking back over these happenings. Although I think that the account which I have given is correct, that Hugh Cairns was the real begetter of the final scheme, it would be very odd indeed if it were quite so virtuoso a solo performance as it probably appears or will appear to those who did not know who was who in those days. Hugh was always one to enlist advice and to get the right people, people with different knowledge and different influences, people who could help, on his side. We can be quite sure that this was the case—they would be few, these advisers and helpers—but they would know their Oxford. He himself would be the last to minimize the help he had had from others, for example, at the London from the Canadian, (Sir) Arthur Ellis, a man whom he held in great

respect, and no less from Sir Douglas Veale in Oxford.

It was a foregone conclusion that Hugh himself would be the first Professor of Surgery. He had everything in his favour, familiarity with Oxford since the days of his Rhodes scholarship, his links with Balliol. His interest in research was well known, his writings showed his desire for perfection, he was a good surgeon, his reputation and charm of manner could be counted on to make his entrance, intrusion even, into a quiet hospital welcome. As if all this were not enough, he had the additional advantage of being an Australian and therefore a man who would be particularly attractive to post-graduates from the Dominions, not so restrained by tradition. His appointment as the first Nuffield Professor of Surgery was announced in January, 1937. Professor Macintosh's appointment to the Chair of Anaesthetics (the first in the Commonwealth) was made known in February, of Professor Chasser Moir in April, of Professor Witts in November. G. R. Girdlestone was to be Professor of Orthopaedics. It was not until 1938 when accommodation had been built, that Hugh left the London Hospital to which he had given so much of his best. In no time his charming house in Charlbury Road was as familiar to overseas visitors as had been his St. Johns Wood home. Here again one might see Hugh in slippered ease making notes or listening to music while Barbara ironed the family washing, both of them in the drawing room, and such children as happened to be at home listened or talked or read.

The War Years

After too short a time in which to establish the new Nuffield units, a matter of months since he did not leave London until the spring of 1938, came the first definite threats of war and Cairns had to turn his mind to a different sort of planning, in 1939 for the E.M.S., an office that he held first, then briefly he and I jointly before he relinquished the civilian side in 1940 to me to throw himself heart and soul into the Army Medical Service. He had been for a few years already consultant to the Army Hospital at Millbank and had made a deep impression on the authorities. Cairns told the story of the extremely efficient neurosurgical service that he so wisely built up for the Army in his paper "Neurosurgery in the British Army 1939-45", written for the special supplement of the *British Journal of Surgery* (1947) which he himself edited. It is so complete an account of what happened that little need be added. I would like though to remind you of the great thing that Cairns did in creating the mobile neurosurgical units—not in providing the personnel which he skimmed off the then few civilian neurosurgical

centres leaving them to limp along as best they could—that was inevitable in such a war—but in giving them, or making available to them, diathermy and power suction and lighted brain retractors for use from Benghazi to the Rhine. Such luxury army surgeons had never had before. Do not forget that it speaks volumes for the respect and regard in which he was held by the War Office and the help that he had from a clever Director General, Sir William MacArthur, that he was able to get these things. No little because of them the units were able to obtain hitherto unheard of results in penetrating head wounds.

In February, 1940, the converted St. Hugh's College was opened as a Military Head Injuries Hospital and that again is too familiar a story to need retelling except that the youthful cream of British neurology, medical and surgical, worked there for longer or shorter times with Hugh. The acute brains of Sir Charles Symonds, D. Denny-Brown, and Ritchie Russell leading the medical, and Cecil Calvert the surgical division guided them faithfully and so well.

Frontal Sinus Injuries and Crash Helmets

In 1937 Cairns had already shown his interest in paranasal sinus injuries with dural tears. The meningitis, early or later, the cerebrospinal rhinorrhoea or the aerocoeles consequent to these injuries were beautifully described by him. In fact this 1937 paper is the best that he wrote on this subject though later he was to have so much more experience. It has the marks of leisurely writing that the havoc of war made impossible to achieve again. It has about it an aura of excitement, of creation as he built up his story with one case history after another. The accounts of his 13 cases left at the end a logical and satisfying picture of the way to recognize and to treat these conditions. We have to move on to the war years for the sequel to this paper and this took a different line. It was a vigorous attempt at the prevention of these injuries. Cairns, seeing so many of the Army's dispatch riders killed or maimed, carried out a vigorous campaign publicizing the advantages of the crash helmet in papers published in 1941, 1942, 1943, and 1946. In the 1943 paper he had Holbourn's assistance on the physics of brain injury and on the action of the helmets and the properties of the materials used in their construction. In the first year of the war three motor cyclists were killed each day, two of them Army riders. The first excitements of war and the blackout coupled sometimes with the recklessness of youth had led to this dreadful wastage. In the first 21 months 2,279 riders and pillion riders had been killed on the road. Here Hugh Cairns had a subject after his own heart,

a vigorous campaign could be waged, practical advice given, planning done, people helped. He did it very well indeed. The Army soon made the wearing of crash helmets compulsory (November, 1941). It was evident that the helmet, even if it was made of the better fibre type, was not a complete insurance against brain damage. But it reduced the number of skull fractures and by the helmet sliding along the ground with less friction than did the hairy scalp the force was spread over a longer period and the injury was less intense. That the crash helmet story is not yet ended is made plain by the discussion in the paper by Walpole Lewin and W. F. C. Kennedy (1956) published 15 years after Cairns' first communication. However, Cairns did a great work of benefaction to the motor cycle riders of these Islands and they should long bless him for the benefits of his advice.

I cannot tell in anything but the barest outline all the things that Hugh Cairns did during the war. Next to the crash helmet should come the penicillin story in which he applied the benefits of Howard Florey's industry and imaginative drive. Florey was as stubborn and indomitable as was Hugh himself. Obviously penicillin looked like being what the surgeons of the first world war had prayed for in vain. Florey knew that it would be needed in quantity—very well, it would be so provided and it was. Off Florey went with Cairns to North Africa and trials made in the Sicilian campaign proved so incredibly successful that a new phase in medicine had evidently arrived. It was characteristic of Hugh Cairns' careful mind that he was at once at work discovering the least amount of this new substance that would cure meningitis, how much would do harm. It was lucky no doubt that the amounts of penicillin available in the early months for clinical trial were small. This same care went into his work on meningococcal meningitis and again later into his partnership with Honor Smith on tuberculous meningitis. What was the minimum effective dose? How long did bacteriostatics or antibiotics stay in the cerebrospinal fluid? Would it go there if it were given intravenously, intramuscularly? And in what proportions? and so on.

All this time Hugh had been very busy at the head injury hospital, St. Hugh's College, and had some of the burden of the Radcliffe to carry also, though Joe Pennybacker was a tremendous help there. He was Hugh's prop and staff in Oxford where he had loyally transferred himself with his chief. The unit would have collapsed had he not been there.

Aftermath to the "Dream"

To jump several years ahead we may ask the question, "What came of the original dream?" A

basic desideratum was that the professors should not be much distracted by the teaching of undergraduates. At the Radcliffe Infirmary there had never been more than a handful of undergraduates and it was assumed that they would still be few, their numbers limited to the best on the original Hopkins plan of "Popsy" Welch's and Osler's day. But then came the war and a veritable deluge of students whose teaching had to be thickened by some valuable volunteer helpers such as Sir George Gask and Sir Arthur Hurst. Further, the war itself put a tremendous strain on a hospital with a depleted staff. The Radcliffe was in no worse case than others but the six war years were no time for the quiet pursuit of peace-time ideals. When the war was over many more medical students chose Oxford for clinical work, a turn that was not fully in keeping with Lord Nuffield's original desires, if I have understood them correctly. The magnificence (I use the word again) of his gifts was thrown somewhat into the shade by the awakening of the Government to the country's real educational needs. Through the University Grants Committee it began to pour money into our universities with the creation of whole-time professorships all over the place. And not only did it create chairs, it provided research budgets, not very fat ones, but much more than anyone had had before. We must conclude that the Nuffield plan was too good to be a lonely example. Oxford had made the model and it must be significant that Sir William Goodenough, whose Committee's report on the teaching hospitals roughed out the new plan for teaching hospitals, was a Nuffield man.

The new structure of the teaching of medicine is, however, different in a most important respect from the original "dream". It was concerned more with undergraduate than postgraduate training. In the Cairns' memoranda the training of picked men from our own and overseas schools who were to add by their brains and skills to that of the parent was a dominant feature. They were to have had opportunities in quietude both to learn and to add to knowledge without the small fry of an undergraduate school impeding the work of the laboratories. Perhaps it was a Baconian sort of dream after all, an unattainable one. I think that it would nevertheless have been carried through had it not been for the war. The bonds with workers in the ancillary and pre-medical subjects were never drawn quite tight enough nor did they get any considerable benefit from the new plan. But let us not forget how brightly the candle that Lord Nuffield had lighted burned in 1936 and later, with what enthusiasm the Nuffield professors had taken up their duties and carried them on until the war overwhelmed them. And when it was over we found ourselves living in a different

world with different needs and ideals not wholly reconcilable with those of 10 years earlier.

The Post-war Years

I have already mentioned the whole-hearted way in which Hugh Cairns had seized the new opportunities for the treatment of hitherto fatal intracranial infections. He continued this with the same enthusiasm in "Nuffield I", now with civilian cases. The big new development was the discovery that *M. tuberculosis* was susceptible to streptomycin. New hope could be offered to those with that hitherto disheartening disease, tuberculous meningitis. Nothing does Cairns and his associates more credit than the attack on it which they carried out. Perhaps this is the time to mention Cairns' flair for team work, for getting good people to work with him. It was characteristic. He was fortunate in this instance in having the help of the brilliant and indefatigable Honor Smith, and of Peter Daniel and R. L. Vollum. One has only to read again their papers from 1949 onwards to appreciate the immense care that had been taken to cover all points in the management of these cases. I might add a special word of praise for the endurance of all, not only Cairns' own staff but of those in the wards and in the laboratories in the day-by-day and months-long struggle towards success in case after case. I do not think that I overpraise Cairns when I say that he was the first to demonstrate the critically important part which neurosurgery could play in the treatment of meningitis and of the tuberculous type in particular, in the demonstration of spinal block and in devising ways of correcting it. It was at least path-finding work. Honor Smith's later work devised means of preventing its occurrence.

Cairns was becoming more and more interested in a quite different and more difficult subject, the psychological disorders caused by tumours and in an operative approach to mental disorder. His interest is apparent in his 1936 follow-up of Cushing's cases but five years later he and his associates leaped to the front by his description of "akinetism" (1941) as evidenced by a child with a cyst of the third ventricle. In this observation he had the help of R. C. Oldfield, of the Psychological Research Laboratory at Cambridge (now Professor of Psychology at Oxford), of Joe Pennybacker, and Donald Whitteridge (now Professor of Physiology at Edinburgh). It was an exceptionally powerful team. Their observation, so well and strikingly named, has not ceased to excite great interest. It made a great impression on continental neurology, judged by the references made in the discussion on consciousness at the Brussels International Neurological Congress (1957). Cairns carried his interest

in mental and personality changes caused by low level lesions to his Victor Horsley Lecture (1952) on these disturbances in diencephalic and brain-stem lesions, using a carefully selected group of cases, telling an interesting story. In the same year there appeared his description of bilateral anterior cinglectomy for mental disorders in 29 patients. In the psychotics, improvement was temporary but several good results were obtained in obsessional cases and anxiety states with bad effects on personality much less than those which followed classical leucotomies. His interest in psychology emerged again in his valuable paper with W. H. Mosberg on colloid cysts of the third ventricle and even more so when he turned his attention to hemispherectomy for hemiplegic epilepsy in children and young people—this the child of his Johannesburg pupil, Krynauw's, bright brain.

Conclusion

It has been impossible to do much more than sample Hugh Cairns' contributions to neurology and to surgery. It will have been observed that more attention has been paid to the work of his first 20 years than to his later and latest. This has been deliberate choice because choice there had to be. His beginnings are less familiar to all but a few members of the society under whose auspices this lecture has been so very properly founded.

His death, on July 18, 1952, soon after his 56th birthday cut him off when he was sailing on the full flood. All that he had done in the past was carrying him forward, it seemed, in a widening field. Hugh would never have lost control of his destiny. He was too shrewd for that, too practical. He left behind him an impressive achievement. Had he died 10 years earlier, at the war's end, we should still have had cause for admiration. But he was full of plans for the future when he died. How sorely we have missed his delightful presence these last years, how much he could still contribute not only to neurological surgery but in our national counsels on education, on university affairs, and in something else, the strengthening by his friendship of the ties of Dominion and international scientific relations. It must have been a joy to him to revisit the scenes of his youth when he returned to Australasia as the first Sims Professor in 1947-48 and later to Africa to spread the gospel of the correct treatment of tuberculous meningitis.

The man himself most of my audience knew; several have worked with him. They know what I mean when I speak of Hugh's sincerity, his charm, his industry, his physical strength, his mental vigour, his candour, above all perhaps a certain boyish naïveté and a sense of humour that would break

through even when he was looking his grimmest, driving his hardest. One forgave him even when he was driving a hard bargain—and he knew very well how to do that.

Of his charm it should be said that this was as natural to him as his delightful voice, and, though I think that he was conscious of them, he did not use these gifts, as is the danger, insincerely. He had too independent, too individual, too critical a mind to fall in with anything second rate. Though I cannot say that we invariably agreed, our differences were slight, I scarcely now remember what they were, we were one on everything that mattered. I should know because we conferred so fully on major developments. Those who met him in head-on

collision might well have different ideas of him, for he had a sort of puritanical belief in the rightness of his own causes. At times was he not a little insensitive to the views and claims of others? Maybe. He was kindness itself in all his traffic with me. I can only add to what I wrote in 1952 that I loved the man.

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