

†An expert in brain operations.

MAN OF BRAINS

THE Sterling Professor of Neurology at Yale's famous Medical School, Dr. Harvey Williams Cushing, no longer works the surgical miracles that carried his name around the world and peopled it with grateful patients. He is 67 and he thinks he is too old for the operating room. But his influence is likely to remain in the universe for many decades to come.

To Dr. Cushing's disciples—the scores of young men he trained to be brain surgeons at Boston's Peter Bent Brigham Hospital—his retirement makes it seem as though a great force had gone out of the world. It takes a strong man, a man of steel and ice to operate successfully on the human brain.

Those extraordinary Cushing operations! The most intimate of his associates find it impossible to say what it was, exactly, that made his technique so much better than that of anybody else. Precision, decision, intuitiveness—yes, but many other men have them, too. Cushing seemed to have every-

thing, plus. For twenty years there was hardly a Cushing operation that did not have its little knot of visiting surgeons on hand.

Cushing had one hard-and-fast rule about spectators. Few non-medical people ever were admitted. One of the few was Walter de la Mare, the poet, who pleaded that to one of his temperament a glimpse of the living brain would be a marvelous sight. Dr. Cushing let him into the operating room.

On the table the poet beheld a patient, fully awake, aware of what was going on, but with his scalp anesthetized with novocaine. A brain operation is certainly no sight for the faint-hearted. Down through the soft tissues sliced the surgeon. Drills gnawed the bones, saws split it. Crack! came the skull away from the dura, the tough inner sac enclosing the brain. With deft, silent strokes, Cushing cut the membrane, peeled it back, and the poet had his wish gratified.

The living brain is not such an inspiring sight as a poet might imagine. It is grayish, uninterest-

ing—a soft, pulpy, corrugated mass. Faced with the difficulty of keeping a patient totally anesthetized for the length of time required for a brain operation—sometimes as long as eight hours—Dr. Cushing developed the method of operating under local anesthesia. The method had other advantages; if the patient is totally out, under ether, he cannot cooperate. Moreover, his breathing or heart is apt to stop.

Dr. Cushing's operations relieved one of the cruelest, strangest diseases that torture mankind. Most often it strikes in the prime of life. A young business man, perhaps on the eve of success, finds suddenly that his powers are failing. First, it is incessant, splitting headache from which no drug will give more than temporary relief. Then he may get a little dozey, sluggish. His stomach will not retain food. Finally appears the symptom that sends him hurrying—sometimes hobbling, hitching or stumbling to the doctor: his eyesight begins rapidly to fail. The physician makes an examination, shakes his head. Brain tumor.

Inside the man's skull a little nest of cells has run wild. Multiplying all out of reason, they have escaped the control of whatever

mechanism it is that keeps things to scale in the body. They have formed a little alien colony, drawing nourishment from the common source but giving nothing in return. In the bony apartment of the skull there is room for only one tenant; the space is normally filled with the brain. Now this tumor, at first microscopic, then the size of a cherry, a walnut, an egg, an apple, demands room—seizes it. The brain tissue is crowded, squeezed, compressed, finally crippled.

For the victim there could have been no hope 40 years ago. When young Harvey William Cushing left Yale as a graduate in 1891 the current teaching was that diseases of the brain and nervous system were largely incurable. But the brain nevertheless fascinated him. In medical school at Harvard he learned all he could about it, which was little enough. Later he went to London and became a student of Sir Victor Horsley, the world's greatest nerve surgeon. He hurried over to Berne to learn from Theodor Kocher, the first man to cut out diseased thyroid glands. Then back to Liverpool to study nerves with Charles Scott Sherrington.

Dr. Cushing probably knew more about the brain and nervous system than any man in the country when he returned to America and became, in 1897, an assistant at the Johns Hopkins Hospital. He was meanwhile pursuing with such admirable zeal the new specialty of brain surgery that by 1912 his former professors at Harvard were taking notice, and invited him to accept a full professorship there.

To Harvard he went, with his family, his books and the beginnings of his "Brain Tumor Registry," now at New Haven Hospital and ultimately to become the property of Yale University.

This registry is more than a monument to his work. It contains the complete records of every brain-tumor operation Dr. Cushing ever performed, meticulously typed and filed away in steel drawers. In many cases the brain itself is filed with them, preserved in a glass jar. He always followed the careers of patients, and, if possible, obtained the brain at death. Surgeons for years to come may restudy these cases and see the brains.

In Boston—as Moseley Professor of Surgery at Harvard and Surgeon-in-Chief at Peter Bent

Brigham Hospital—Dr. Cushing really came into his own. By 1926 he was able to report that he had operated on more than 1,000 cases of brain tumor, a number he has since doubled, exceeding the score of any other surgeon by hundreds.

"Never have I seen him operate," one of his assistants of those days said to me recently, "without experiencing the same emotions you might have listening to great music. Over and over again in the operating room I realized that I was being privileged to see a genius at work."

There was nothing consciously spectacular about his operations. He dressed simply in gray, the custom at Peter Bent Brigham. He had no theatricality. But from the moment he entered, only one thing interested him—the operation. In his gown, hood, mask, and rubber gloves, he was a precise, concentrated, focused consciousness. His mind traveled like lightning ahead of his hands; each gesture had the planned, accurate quality of a move in a master chess game.

During the operations he practically never spoke to the distinguished surgeons who came to witness them. His remarks were only the necessary ones: low, quiet in-

structions to nurses or assistants; quick requests for information on the patient's condition; sometimes a warning to the patient that the next move would cause him a little discomfort.

Every operation has its little unexpected puzzles. Surgeons have various ways of meeting them. Some pause, ponder, or confer. Some grow flustered. Only Cushing's most intimate students could tell when he had struck an unexpected problem.

When the Russian physiologist Pavlov visited America in 1929 one of the attractions was a brain operation by Cushing. The patient on that occasion was a young man from Pittsburgh whose life had been despaired of by physicians in his home city. He was brought to the operating table with his entire right side paralyzed.

Cushing gravely introduced the patient to Pavlov, remarking, "You are now shaking hands with the world's greatest living physiologist." Twenty-six other visitors, some from Europe, were crowded into the theater to see the operation. It lasted four and a half hours. Cushing removed the tumor with a Bovie electro-surgical unit, which cuts by high-frequency electricity, a method especially

valued by brain surgeons because it cauterizes the blood vessels at the edges of the wound and controls hemorrhage. Pavlov was so delighted with the apparatus he later burned his name on a piece of beefsteak with it.

As for the patient—the next day a friend visited him in the hospital, and was astonished to find him not only still living, but cured of his paralysis. Today, the patient, completely recovered, occupies an important industrial position.

A year ago one of Cushing's grateful patients, Mrs. Hansi Glogau of Vienna and New Rochelle, New York, willed him her brain, upon which he had operated four times since 1926. When she died—in 1935—her son and three daughters notified Dr. Cushing at New Haven, and he promptly sent instructions, collecting the legacy. Mrs. Glogau had been the victim of a pituitary tumor, one of the bitterest, most stubborn afflictions, and one which Cushing had been among the first to study.

A nodule of glandular tissue about the size of a small pea, the pituitary is attached to the under side of the brain in a little bony cup called the *sella turcica*, the Turk's seat. Cushing developed

two ways of getting to tumors in this inaccessible place, both difficult, but not nearly so unpleasant as the disease.

The earliest operation was a laborious one; few surgeons, even Cushing-trained, cared to risk it. The newer method involves an incision through the eyebrow, up the middle of the forehead, and through the scalp to a point behind the ear. This leaves only an almost invisible vertical scar on the forehead when the wound has healed. The skull parts removed, the surgeon gently raises up the front lobe of the brain with a "brain spoon," and reveals the pituitary. It can be examined, the tumor removed, the brain resettled and the skull replaced, all under local anesthesia. Though only the

nerves of the scalp and skin are deadened, the patient feels nothing. Manipulation of the brain produces no painful sensation.

One of the high spots in Cushing's career was his war service. Of the many fine medical men America sent abroad, he is one of three who are today best known, the others being George Washington Crile of the Cleveland Clinic, and Alexis Carrel of the Rockefeller Institute for Medical Research.

It is a curious coincidence that books by all three—and such characteristic books!—should have been published recently, within a few months of each other.—*G. Edward Pendray, condensed from Today.*

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WISDOM IS ACTION

Two persons take trouble in vain, and use fruitless endeavors,—he who acquires wealth without enjoying it, and he who is taught wisdom but does not practice it. How much soever you may study science, when you do not act wisely you are ignorant. The beast whom they load with books is not profoundly learned and wise; what knoweth his empty skull whether he carrieth firewood or books?—*Saadi.*