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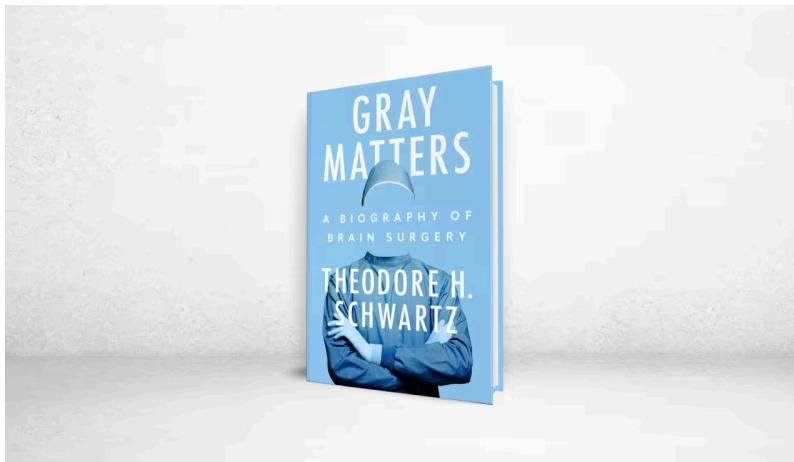
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‘Gray Matters’ Review: A Brainy Vocation

Stamina and focus are the true superpowers required of neurosurgeons. Their tools are less critical than the minds in control of them.

By John J. Ross

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The arcane doings of neurosurgeons are something of a mystery, even to their fellow physicians. Theodore Schwartz’s “Gray Matters,” a fascinating glimpse behind the curtain, begins as any tale of neurosurgery must, with Harvey Cushing (1869-1939), widely acknowledged to be the father of neurosurgery: American-trained neurosurgeons can all trace their educational lineage back to Cushing, within six degrees of separation.

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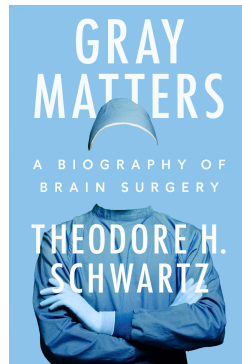
Cushing had unparalleled gifts of stamina and focus during long and tedious procedures. Dr. Schwartz, a

Gray Matters: A Biography of Brain Surgery

By Theodore H. Schwartz

Dutton

512 pages



neurosurgeon at Weill Cornell Medicine, suggests that these may be the true superpowers required of neurosurgeons—who, despite their brainiac reputations, are not more intelligent than other professionals. Cushing was a solid, but not exceptional, student at Yale; his immense experience and carefully honed clinical judgment may have

been more important for his success. (As the rueful medical joke says, “Good judgment comes from experience; experience comes from bad judgment.”) The basic tools of today’s neurosurgeon, bipolar cautery and suction, are simple, but they are “less critical than the mind and muscles controlling them.” According to Dr. Schwartz, the neurosurgeon of today typically hits his stride only after seven years of residency and some five of independent practice.

Cushing, who spent most of his career at the Peter Bent Brigham Hospital in Boston (now Brigham and Women’s Hospital), left a complicated legacy. He was a paragon in the operating room, where his hypervigilance and meticulous technique reduced the operative mortality of neurosurgery from 50% to under 10%. But outside it, he was the prototype of the toxic male surgeon, neglecting his wife and family, belittling trainees, and leaving nurses in tears. One resident, a survivor of the bloody futility of Gallipoli, said that the battlefield was less stressful than the year he spent with Cushing.

Cushing’s most illustrious pupil was Walter Dandy (1886-1946), although their relationship owed more to Sophocles than to “Dead Poets Society.” “Dandy was Cushing’s Oedipus, who sought affection through figurative patricide,” writes Dr. Schwartz. “The more Cushing abused and ignored Dandy, the more the younger surgeon’s zeal grew to show up his master.” Dandy outdid Cushing on multiple fronts. Unlike the painfully slow Cushing, Dandy was a fast and efficient surgeon. (He captained the Johns Hopkins baseball team and, in the 1940s, patented a protective cap for hitters, the first widely used predecessor to batting helmets.)

Dandy pioneered the removal of tumors of the third ventricle, the deepest and most inaccessible part of the brain. This had been a no-go area for

neurosurgeons; even Cushing was leery of it. Dandy also invented ventriculography, a crude, dangerous precursor to CT and MRI scans: Spinal fluid was removed and replaced with air, so an X-ray could reveal “the contours of the ventricles as air-filled silhouettes. If a tumor was distorting them, the air cast would reveal it.”

“Gray Matters” is not simply a history of neurosurgery. Dr. Schwartz has written a book that is part memoir and part biography of his profession. Common problems, such as head trauma, gunshot wounds, brain tumors and strokes, are illustrated through the stories of real patients. Some cases are Dr. Schwartz’s own, tweaked to protect anonymity; others are of historical figures and celebrities, whose stories are told using previously disclosed information. He covers huge amounts of territory, including the deplorable case of Eva Perón’s lobotomy, the brave new world of brain-computer interfaces, and the ominous implications of cutting-edge neuroscience for conventional notions of free will.

In addition to the high points of a life in medicine, he shares the lows: as a medical student, knocking a deck of Kodachrome slides onto the operating room floor; as an intern, mistakenly administering a syringe of potassium chloride, with near-fatal results; as a young attending physician, performing an aneurysm clipping gone dreadfully wrong; as a middle-aged man, helplessly watching his father suffering a debilitating stroke, a disease he treats on a regular basis.

But the most engaging part of “Gray Matters” deals with Dr. Schwartz’s specialty, that most terrifying of cancers, glioblastoma multiforme. According to Dr. Schwartz, neurosurgeons often face a “Sophie’s Choice calculation” when they operate on brain tumors: “whether to remove too little, which may limit longevity, or to remove too much, which may cause paralysis or speech difficulties.” As a result, Dr. Schwartz and other surgeons who operate on brain tumors “sometimes require that our patients be awake in the operating room so we can map out the parts of the brain dedicated to creating and deciphering language.”

Such recognition that different areas of the brain control differing body functions has been around at least since the 19th century. The distressing 1874 case of Mary Rafferty of Ohio, whose exposed brain the physician Roberts Bartholow stimulated with electrodes to investigate limb movement (“to see

what would happen,” says Dr. Schwartz wryly) led to some of the earliest professional regulation of experimentation on human subjects.

The modern use of brain mapping in neurosurgery was largely developed by Wilder Penfield (1891-1976). After medical school at Johns Hopkins and the obligatory stint with Cushing, Penfield made his way to Canada and founded the Montreal Neurological Institute. Penfield trained the first African-American neurosurgeons there, at a time when they were unable to gain admission to programs in their native country. Researching the localization of brain function, Penfield mapped out the motor and sensory cortices of the brain on awake patients, finding that vast amounts of cortical real estate are dedicated to moving our hands, lips and tongues.

For Dr. Schwartz, this is only to be expected, as human beings “tell stories, and we make things.” Dr. Schwartz has spent his career using his hands to make brains healthier. Now, he uses the power of stories to shed light on the mysteries of the mind.

Dr. Ross is a hospitalist at Brigham and Women’s and the author of “The Longevity Bible.”

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