

# Blazing the trail for the next generation of biomedical researchers

by Denise M. Henderson

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## **Working in a Very Small Place: The Making of a Neurosurgeon**

by Mark Shelton

Random House/Vintage Books, New York, 1989  
315 pages, paperbound, \$9.95

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I was browsing in a very large bookstore known for its wide selection the other day. In particular, I was looking for a book on the anatomy of the brain. I would have settled even for a Time-Life book on the nervous system. But all I could find under the science and health sections, were books on holistic medicine, including things like acupuncture.

The acupuncturists claimed that they could cure trigeminal neuralgia, also known as tic douloureux, a condition in which the fifth cranial nerve sends spasms of pain throughout the entire left or right side of one's face. However, one reads in *Working in a Very Small Place* that many of those who finally wind up in the clinic of Dr. Peter Jannetta, the book's protagonist, had tried acupuncture to cure their excruciating, omnipresent pain.

This is another indicator of how far we have descended from the 1960s, when Dr. Jannetta, as a research assistant at the University of Pennsylvania, first made the observations which led him to the hypothesis that many nerve disorders, like trigeminal neuralgia and hemifacial spasm (an uncontrollable tic on one side of the face), are caused by the compression of tiny blood vessels on the nerve at the stem of the brain. As author Mark Shelton emphasizes several times, Dr. Jannetta's breakthroughs occurred during a period of scientific and technological progress: "It is possible to consider Jannetta's work in the context of this march of technology as being somehow almost inevitable, because if Jannetta has had one major collaborator, it has been technological advance. Before the advances of the postwar era in anesthesia and pharmacology, only the superstars of the specialty could

work successfully in the cerebellopontine angle. The development of self-retaining retractors with malleable paddles eliminated much of the trauma to the cerebellum; the microscope changed forever what the surgeon could see; something as seemingly prosaic as 'shadowless' lighting sources gave the neurosurgeons of Jannetta's time a clearer view of what they were doing than their teachers had had when they were learning."

In fact, the material with which Dr. Jannetta is working, is itself a product of the space age: Teflon cushions are inserted between the offending blood vessel and the nerve to relieve pressure. Jannetta's success rate in the case of trigeminal neuralgia is almost 100%, with few instances of hearing loss, always a danger in these procedures; his success rate in hemifacial spasm cases is equally high. Jannetta is now attempting to expand his work into several other areas, including the possibility of relieving high blood pressure by this method, although that is a longer-term project.

## **'Someone has to be the lightning rod'**

But, as Shelton stresses, Jannetta is responsible for much more than these particular innovations. At Presbyterian-University Hospital and the University of Pittsburgh Medical School, Peter Jannetta has created a teaching program in the field of neurosurgery which promotes research and development among its residents. Jannetta has instituted a requirement that its neurosurgeons in training spend a year in research. "Sometimes," says Jannetta, "someone has to be the lightning rod. Someone is going to be at the center of things. That's sometimes the only way that things can change."

In other words, Dr. Jannetta has kept alive the spirit of the Kennedy era, when research and development and their results—from Tang to Teflon—were a daily part of every American's life; when teachers stopped their classes so that their students could watch the latest space launch; when the average man in the street would look up at the Moon and say, "Someday my kid is going to live there."

That spirit of innovation is what allowed Dr. Jannetta to

make his breakthroughs, just as it allowed the creation of and ability to successfully use the artificial heart as well as a thousand other new capabilities in medicine.

Mark Shelton captures this spirit very well, in describing both the day-to-day operations of the neurosurgery department and the broader implications of its work.

Dr. Jannetta's weekly schedule includes many components. On the days that he operates, he usually operates on several patients at once. As a specialist, he can leave the initial cutting to his residents and concentrate only on seeking out the blood vessel which is pressing on the patient's trigeminal nerve or in the case of hemifacial spasm, on the eighth nerve. These operations are extremely delicate due to the danger of damage to the auditory nerve in particular, and one of the dangers of operating at the brain stem is loss of hearing. At Pitt, there is a special team dedicated to monitoring the patient's hearing via an electrode attached to the auditory nerve, with short bursts of sound delivered to the nerve at short intervals to note any changes in the patient's hearing. It is this team's responsibility to warn the surgeon if the monitor indicates that he is moving the auditory nerve too much.

Jannetta also attends in-house conferences on cases of patients who have died of brain disorders for which there currently are no cures, and he attends the weekly seminars at which residents present detailed papers on areas of work related to neurosurgery. As well, there is a time reserved for discussion of cases where something went wrong, either during the operation or during the recovery period.

One of Dr. Jannetta's roles as chief surgeon is to emphasize to the residents that they can't assume that they can cure every disorder that they see, that is, that they are not God. Along with that, Jannetta emphasizes the need for research in new directions and tries to ask his students the questions which will encourage them to seek solutions for longstanding problems in the field.

This is a unique look at one of the most difficult of the medical fields and how it has developed over the past century.

The United States is now facing a very broad economic crisis. Although the medical profession may not understand the full implications of that, without steel plants—formerly the basis of Pittsburgh's economy—and auto plants and an export trade based on scientific and technological progress, there is no economic base to support the remarkable work being accomplished at places like Presbyterian and many other medical institutions around the country.

Yet, that is no excuse to replace advanced surgical techniques with acupuncture or other "alternative medicines"; and it is certainly no reason to buy what Hillary Clinton, in what seems to be her ignorance, is trying to sell, i.e., a health plan based on potentially "downsizing" the types of programs for which Jannetta is responsible and possibly decreasing the numbers of patients who would have access to such care.

## On the frontier of vascular neurosurgery

by Janice Chaitkin and Gabriele Chaitkin

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### **The Healing Blade: A Tale of Neurosurgery**

by Edward J. Sylvester  
Simon & Schuster, New York, 1993  
240 pages, hardbound, \$22

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This book is a good antidote to the grimly pessimistic euthanasia propaganda which poisons our news media. It is a daring witness for the right to life against all odds; a celebration of the power of the human mind. Edward Sylvester, a professor of journalism at Arizona State University, draws the layman into the subject of neurosurgery—especially vascular neurosurgery—by focusing on Barrow Neurological Institute (BNI) and its director, Dr. Robert Spetzler, one of the world's leading vascular neurosurgeons. Sylvester spent countless hours at BNI in Arizona, following several cases over three years.

Especially noteworthy features of the book are its lucid descriptions of complex medical procedures and of the structures and functioning of the brain. Very helpful for the layman is the depiction of the brain and its main arteries on p. 20, shown here.

Very simple and effective, for example, is Sylvester's description of the "circle of Willis," a major thoroughfare for the blood to the brain: He asks the reader to hold up his arms, press them together and hold the fingers up forming the palms into a circle. There you have your "circle of Willis," the only circular flowing stream of blood in the body, and the main infrastructure for blood supply to the brain. The fact that it is circular is important, he says later, because if one of the delivering arteries is shut off, the other side can provide blood for all of the brain. In this way, he is able to show the high adaptability of the brain, and how nature has come up with some astonishing solutions to potential problems.

While detailing some of Dr. Spetzler's most challenging cases, Sylvester relates the history of neurosurgery and its pioneers. He also introduces us to modern technologies, such as the intraoperative microscope, which was only introduced in the 1960s, the special clips to close off aneurysms, and the three-dimensional monitoring field, especially helpful for the