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Occupation: Brain Surgeon

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By Harriet Jackson Scarupa

Dr. Gary C. Dennis stands above the anesthetized patient and shines a circle of light on her shaved head just above her right ear. Gently, as if in blessing, he rests the fingers of his other hand on the illuminated spot.

Beneath this spot — beneath the layers of tissue and muscle and bone — lies the abnormality that threatens the patient's life and already has caused her excruciating pain. This particular abnormality is an aneurysm on the carotid artery, a ballooning out of the wall of this major blood vessel deep within the brain which has been caused by a congenital weakness and aggravated by hypertension and the stresses encountered in 45 years of living.

Like a weak spot in an inner tube, the aneurysm threatens to burst and if it does — spewing blood into the brain — death is the almost certain outcome.

And so the patient now lies in operating room #7 in the basement of Howard University Hospital awaiting the surgery that will rid the aneurysm of its potentially lethal power. Here she will undergo microneurosurgery, an advanced form of brain surgery which involves the use of a high-powered microscope and specialized, miniscule, precisely handcrafted instruments to perform delicate and complicated procedures that were unheard of even 15 years ago.

With one of these instruments, a tiny version of the pliers sold in an ordinary hardware store, a stainless steel clip about a centimeter long will be placed around the neck of the aneurysm, cutting off its blood supply and mercifully preventing its eruption.

Performing this intricate maneuver will be the afore-mentioned Gary Dennis, a 34-year-old neurosurgeon who has been chief of the neurosurgery division at Howard University Hospital and College of Medicine since January 1984 and whose youthful demeanor often causes him to be mistaken for a medical student or intern.

Despite his youth, or more likely because of it, Dennis has come to his post well grounded in the latest neurosurgical techniques, technologies and research findings. Notes Howard University Hospital's medical director, Dr. Vincent Roux, who assumed *his* key hospital post at age 34: "Neurosurgery itself in the past 10 to 15 years has made significant advances in microneurosurgery and microvascular surgery as well as in other new approaches to the neurosurgical attack on diseases. Dr. Dennis is one of our people who was trained in that era. So he brings to us a lot of new techniques. He is also academically superior and dedicated to Howard University, having been a part of it. When our distinguished chief of neurosurgery who had been here for many, many years [Dr. Jesse Barber; see box] was ready to step down and we needed to find a replacement, Dr. Dennis, frankly, was the best replacement we could find."

The specifics of Dennis' training include earning a B.A. in psychology from Boston University, an M.D. from Howard, serving a surgical internship at The Johns Hopkins Hospital and a neurosurgery residency at the Baylor College of Medicine Affiliated Hospitals. It all adds up to 13 years of formal academic preparation, preparation for a profession many consider one of the most demanding and stressful on earth.

For, in operating on the brain, neurosurgeons operate on the body's master organ, that which controls everything about us that makes us human, that which controls everything that keeps us alive. Even with the burgeoning storehouse of medical knowledge, the brain remains the least understood organ of the body. In the words of veteran Howard neurosurgeon Dr. Jesse Barber: "To my way of thinking the brain is one of the major last frontiers of human knowledge."

Not only is the brain the least understood organ in the body, it is also the most unforgiving. When you operate on the brain, even a small mistake can be devastating, leaving a patient paralyzed or blind or mute or disfigured or weakened or radically altered in personality, abilities, consciousness . . . and usually irreversibly so; for brain cells, unlike some other kinds of cells, have no powers of regeneration. (Some recovery of function is possible, however, if other cells take over the work of damaged brain cells.)

No wonder those whose job it is to operate on the brain are constantly attuned to what Dennis characterized as "an awesome responsibility." No wonder most people tend to look upon the brain surgeon with awe.

"There *is* a mystique about brain surgery," Dennis agrees. "There's a mystique because people don't have a clear concept of what brain surgery is. They think it's very romantic, very elegant. And sometimes it is elegant. But it's definitely not romantic. It's a lot of hard work; there's a tremendous amount of responsibility; and there's a lot of stress."

A closer look at the activities of operating room #7 illustrates what he means. It also illuminates the starring role of the brain surgeon in the operating room drama. And it reveals more than a little about Gary Dennis, M.D., in particular.

A "Routine" Operation

At precisely 7:40 a.m. the patient had been wheeled into operating room #7, a glass-enclosed space with a gleaming black and white pebble patterned floor. A half hour later that space is abuzz with activity.

The anesthesiologist and his assistant check the readings of their sophisticated machines. Some machines monitor the dosages of various anesthetic drugs. Others monitor such essentials as the patient's heartbeat and blood pressure and

the volume of fluid in her brain. One machine, the ventilator, actually breathes for the patient.

Dennis and the resident in general surgery who is assisting him adjust the angle of the patient's head which is held in the vise of a Mayfield headrest, a contraption reminiscent of some medieval torture device with its three sharp points imbedded into the scalp. It's after tightening this vise to prevent the patient from making any involuntary movements that the neurosurgeon had focused his circle of light on her head and had gently touched the spot where he will make his incision.

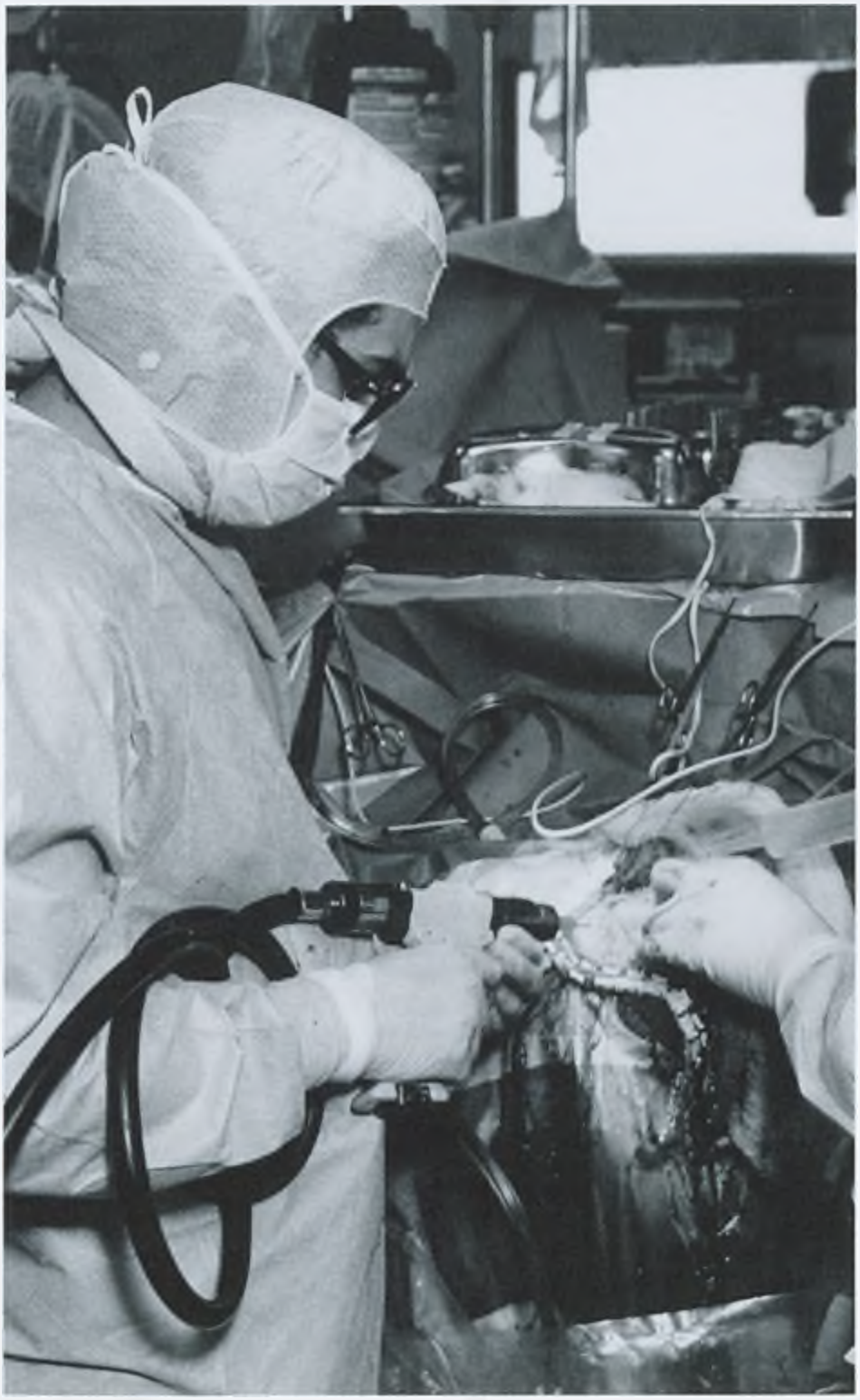
The anesthesiologist and his assistant proceed to hook up thin white, blue and transparent hoses which are attached to machines which coagulate blood, cauterize tissue and suction out secretions (blood, saline solution, spinal fluid).

Dennis then adjusts the two operating room lights. He checks the placement of the huge grey Zeiss microscope, which easily looks as if it could double for a prop in a science fiction movie, as it is wheeled into place. This is the sign for the surgical technician to hook up the microscope to a videotape machine whose monitor is anchored high up in the corner of the room.

One nurse preps the patient's head with an iodine scrub, followed by an alcohol scrub. Another wheels in a nitrogen tank which will be used to power the drill and saw Dennis will use to cut through the skull. A third nurse, the scrub nurse, carefully lays out shining instruments on a table which is then wheeled into place beside the operating table and cranked up beside it.

Towels, then blue cloths, and finally plastic sheeting fashioned with a special pouch to catch secretions are draped over the patient until all of her that can be seen is an elliptically shaped portion of brown scalp about eight inches long.

Dennis and the surgical resident leave the room to wash their hands once more.



They don new sterile scrub suits, gloves, face masks, head coverings and footcoverings, their eyeglasses, taped to a small expanse of forehead, providing the only visual relief in their eerily mummified forms.

It's been two hours since the patient was wheeled into the operating room.

Finally the operation is about to begin. For Dennis, though, this moment has been prefaced by hours of study of the patient's medical history and the angiograms (X-rays showing the blood vessels in the brain) which tell the story of her agony. The angiograms are hanging in the operating room now in front of a lighted viewbox, with the aneurysm revealed as a tiny, innocuous looking bump on the cordlike artery.

The first thing Dennis does seems so simple the proverbial third-grader could do it as well. The neurosurgeon takes a purple magic marker and with it draws a curving line to show the path of his incision, indicating with crosshatch marks where he'll wire the portion of skull back into place after he's removed it to reach the aneurysm. The scrub nurse hands him a scalpel and with this sharp knife, following the line he has drawn, he cuts through the layers of tissue and muscle until he reaches the skull.

As the blood spouts out, he places small, white, plastic-covered clips parallel to the incision line to help control the bleeding. A hissing sound and acrid smell fill the air as the cautery does its work singeing tissues to further control bleeding. The coagulator and suction device, operated by foot pedals, join in the task. With a bulb syringe, Dennis squirts a saline solution into the wound to irrigate it, then retracts the flaps of the wound and temporarily sutures them to the scalp so he can better see what lies ahead: the bony white of the skull.

Throughout these procedures conversation has been sparse, confined mainly to Dennis' requests to the scrub nurse ("Let me have the pick-up please."), the resident ("Let me have a little more suction.") and the anesthesiologist ("Could you increase the setting on the cautery?"). There is time, though, for him to make a few terse explanations to an observer about what he's doing and why. Sample: "I made the incision here because it's behind the hairline. That way it won't show. It's more important with a Black patient that the scar be well hidden because when Blacks heal the tissue often isn't the same color as the other skin so [the scar] can be unsightly."

It's now been three hours since the patient was wheeled into the operating room.

With the skull now exposed, Dennis is ready for the next steps that will bring him closer to the aneurysm. A nurse hands him an ordinary looking hand drill and with it he makes a hole about a centimeter in diameter in the skull. The drill has an automatic stop which prevents it from touching the soft tissue of the brain as is true for the power drill, hand saw and power saw he will use later. Turning the drill, he makes first one, then two, then three holes, leaving a small shower of bone particles in his wake. These he cleans away with squirts of saline solution and by activating the suction mechanism. Next the scrub nurse hands him small gobs of a substance that resembles the overflow from a white candle. This is bone wax which he uses to temporarily plug up the holes.

With a straight-edged piece of metal as guide, he takes up a small chainlike hand saw to connect two of the holes he's drilled. Sawing between the other holes is easier, much easier, because he relies on the quicker power saw, fueled by the nitrogen tank which has stood at the ready.

Finally, almost casually, he lifts the resulting three-by-four inch flap of bone and sets it aside on the instrument table where it will remain, wrapped in sterile gauze, until it is time to be wired back into the skull. He will do this by lacing wire through the tiny holes he's already made with the power drill.

As he sutures the tissues on each side of the gaping space where bone used to be, he talks strategy: "We do this [the suturing] to keep the covering of the brain snug. If it's snug, there's less chance of a blood clot developing. A blood clot is a real risk in this type of long, tedious operation . . . All the things we're doing right now are things that will make closure faster and easier."

Then under Dennis' direction, the resident in surgery chisels away bone from the temple area, an area protected by muscle, in order to clear a pathway and free the view. Another squirt of saline solution washes away the bone particles. A clamp which helps retract the brain away from the arteries is hooked into place. Dennis activates the suction device to drain spinal fluid from the cistern at the base of the brain in order to soften the brain and make it even more retractable. Drugs, which slowly have been dripping into the patient's bloodstream, aid in the process. If the volume of the brain is reduced, Dennis explains, it will be easier to get at the aneurysm and there will be less chance of damage from all the probing he must do.

Dennis pauses a moment to put on new sterile gloves and replace his blood-splattered glasses with 3½ power loupes, special manifying glasses set into metal headgear. With these, he is ready. Ready to confront the brain.

It's been four hours since the patient was wheeled into the operating room.

With a scalpel, the neurosurgeon carefully opens up the dura, the tough whitish protective covering of the brain. Ahead lies the brain itself. To one onlooker the portion of brain that can be seen resembles a greyish, convoluted raw chicken gizzard—certainly a curious-looking repository for the fabled mind. Dennis, of course, views it differently. "This is the frontal lobe," he says, pointing and looking down intently,

with all his faculties seemingly focused on what lies before him. "It controls the ability to move. The right frontal lobe has to do with personality. . ."

As he speaks nurses roll the huge microscope into place above the operating table. Dennis replaces the loupes with his regular glasses, taped afresh to his forehead, and sits on a high stool to peer through the microscope. He adjusts the microscope to focus on the space adjacent to the optic nerve, the area where the angiogram shows the aneurysm to be. Meanwhile, the image of the area looms into view on the overhead monitor, giving everyone in the room a view of a portion of the brain's intricate expanse.

"The aneurysm is right up in here somewhere," Dennis mutters, probing the area gently with one of his microsurgical instruments. He stops, momentarily frustrated. "The microscope is too low; I'm going to have to look higher." His voice is so faint it's as if he's communing with the brain itself.

Finally, finally, six hours after the patient was wheeled into the operating room, Dennis locates the aneurysm.

It's so small, this tiny skin-encased balloon, smaller than a baby's smallest fingernail, that it's difficult to believe it could do any harm. Gently, insistently, Dennis continues to probe, lifting the tissue surrounding the aneurysm to free it so he can maneuver a clip around it. He picks up the clip with his tiny pliers and tries it. It doesn't fit. He tests several others, temporary clips, before finding the clip he will use to make the permanent repair.

Holding it with his pliers, he slowly and carefully manages to get it around the balloon. But he isn't completely satisfied. "I need to get more of the aneurysm in the clip," he mutters. "More of the aneurysm." He asks the scrub nurse for a second clip, successfully fits it around the tiny bulge that has remained and the aneurysm collapses. The patient shouldn't feel the clips because the brain itself feels no pain. The blood vessels and covering of the brain *do* and that is why Dennis has taken such care to place the clips so they won't rub against anything that could hurt.

As the neurosurgeon doublechecks the microscope's view of the clipped aneurysm with the image projected in the monitor, he murmurs a weary "It-should-be-all-right-now." His voice seems to echo the fatigue of everyone in the room. Or maybe it's that after all that has gone before — after that sterilizing and cutting and drilling and sawing and singeing and suctioning and suturing and probing — the actual clipping of the aneurysm seems anticlimactic.

What remains to be done is to reinforce the repair by placing tiny bits of sterile muslin [cotton fabric] around the clips to encourage the formation of scar tissue, to make sure all the bleeding has stopped, to treat the adjacent nerves with antispasm drugs — and to put everything back together again.

Once the wound is dry and there seems no sign of abnormal bleeding, the tension in the room seems to lift. The anesthesiologist puts on one of Dennis' favorite tapes and the strains of Mozart accompany the operation's finale. Dennis stitches the dura back together, wires the bone flap into place and inserts temporary rubber tubes into it to drain away any excess blood that may leak out after the head is closed. He mixes plastic bone, a substance used traditionally by dentists, and with it fills the holes in the skull, then stitches up the layers of muscle and tissue and finally wraps sterile dressings around the patient's head.

Eight hours after the patient was wheeled into the operating room, the operation has come to an end.

Attendants move her to the surgical intensive care unit where she will be closely monitored for several days.

"I feel we did a good job," Dennis remarks as he heads for the hospital's ground floor snack bar for a cup of soup before he checks with his secretary about any messages and begins hospital rounds. "It wasn't an aneurysm that was extremely difficult to clip. The anatomy was well-defined and the blood vessels were good so I think the patient should do well."

All in all, it had been a routine operation. But, when the brain is the site, even a routine operation involves risks. "There's about a ten percent risk of mortality or stroke," Dennis says. "And then there's risk of damage to the optic nerve and to the third nerve which controls the eye movements. There's the risk of brain infection, such as meningitis; of further bleeding into the brain or outside the brain; of problems with the anesthetic agents, the endotracheal tubes [which connect the patient to the ventilator], things like this. And because this particular patient had a history of hypertension and liver disease, all these risks were greater."

The trauma of the operation may cause brain swelling for a few days, he explains. And this swelling could precipitate problems of weakness or numbness or difficulty with thinking. But generally these are temporary conditions which recede as the swelling does. "Most patients will eventually feel fairly normal after such an operation," he says. "There may be some small lingering headaches from the trauma of the operation, itself, but the severe, agonizing headaches will be gone." And, of course, the patient will no longer be in the thrall of that potentially erupting balloon.

Behind and Beyond Operating Room #7

That aneurysm surgery is now considered routine is evidence of the dramatic advances that have been made in neurosurgery of late, thanks largely to improvements in diagnostic and surgical techniques, particularly the use of the CAT-scan and the surgical microscope.

A CAT-scan (for computerized axial to-

mography) is a series of X-rays assembled by computer; it is sometimes referred to as a CT-scan. Explains one of Dennis' key mentors, Dr. Robert Grossman, chairman of the department of neurosurgery at Baylor College of Medicine: "The CAT-scan—and now the nuclear magnetic scan—has made it possible for the first time to get an anatomical slice of the brain so it's exactly as if you have a brain sliced in front of you. So obviously, it's now much easier to know exactly where the pathology is. The microscope has made it possible to do things with much greater delicacy. We're able to suture together tiny little blood vessels from the scalp into the brain, for instance, and can operate on deep structures in the brain now, so-called stereotaxic surgery. . ."

The result of all this is that brain operations are far less dangerous today than they were in the past. "Before we used the microscope the mortality rate for aneurysm operations was anywhere between 30 and 50 percent," illustrates Dennis. "Now with low risk patients — those with few symptoms and hardly any medical problem [other than the aneurysm] — there should be less than five percent mortality. But unfortunately many of the patients we treat [at Howard] have many associated problems. Most who have aneurysms, for instance, are hypertensive and that makes the operation more dangerous. But still, generally, they do well."

Last year, Dennis performed 97 operations. This year, he probably will surpass that number. During the same week he did the aneurysm operation, he repaired a weakness in the spinal cord of a newborn. (The baby was born with the spinal cord protruding outside the body and ending in a big lump.) He also removed a ruptured disk, assisted in clipping a vetebral artery aneurysm and put a halo brace (so called because it looks like an angel's halo) on a young boy who had broken his neck in a sliding board accident (and who, miraculously, wasn't paralyzed).

The following week he was scheduled to perform another aneurysm operation, do two shunt operations and a morphine pump operation. The shunt operation is performed to treat hydrocephalic children, those born with dilated ventricles because of the abnormal accumulation of spinal fluid in the brain, a debilitating condition which causes their heads to be grotesquely enlarged. The operation involves inserting a shunt in the head to let the fluid out and diverting the fluid into another body cavity, usually the peritoneal cavity, where it is reasborbed into the circulatory system.

The morphine pump operation, which Dennis is developing in collaboration with Dr. Robert DeWitty, an oncologist at Howard's Cancer Center, is an experimental method used to control pain in terminally ill patients. A catheter is permanently inserted beneath the skin of the patient just above the spine. It is attached to a pump which pumps pain suppressant into the spine and is refilled every two weeks. The two men are also using the technique to experimentally contain pain in head and neck cancers, only in this case the catheter is inserted inside the head.

It is a week after that quiet drama was played out in operating room #7 and Dennis is sitting in his office in the hospital and wearily reviewing some of the other types of operations he routinely performs. Despite his weariness (he's been up all night clipping another aneurysm), his words tell a gee-whiz tale that easily could be entitled "The Marvels of Modern Neurosurgery."

He speaks of sewing torn peripheral nerves, of removing ruptured disks in the neck and back; of removing tumors on nerves, the spinal column, blood vessels, the brain; of removing subdural hematomas (blood clots under the brain's dura) and other types of blood clots; of repairing the damage and/or alleviating the pain caused by gunshot wounds and head injuries; of reconstructing skulls that have been bashed in for one reason or another.

Matter-of-factly, he describes two of the advanced types of microneurosurgery he does. One is extracranial and intracranial bypass surgery. "That's where we take a blood vessel from the scalp and make a hole in the head and dissect out a blood vessel over the brain surface so we can increase the blood flow to the brain," he explains. "It's a way to prevent patients who have had a minor stroke from having a major stroke by increasing the circulation to that part of the brain."

The other procedure involves removing pituitary tumors transsphenoidally. "You enter the sinus behind the nose this way [he demonstrates, making a weird face as he stretches his upper lip up and out] and use the microscope to magnify things so you can operate directly under the brain. You make an incision in the lip and elevate everything and go right on the floor of the nose, right back through the sinus—that's where the pituitary gland is."

In the realm of the experimental, he speaks of collaborating with Dr. Alfred Goldson, chairman of Howard's radiotherapy department, to perform intraoperative radiation therapy on patients with malignant brain tumors. Howard has pioneered in this method of treating cancer by beaming high doses of radiation directly on the cancer site while the site is fully exposed for surgery. (The customary procedure is for radiation to be beamed through the skin and for it not to be administered at the same time as surgery.)

Intraoperative radiation therapy makes it possible to deliver a larger amount of cancer-destroying radiation at one time than is possible with more conventional procedures. And it makes it easier to shield or move aside healthy organs and tissues from the deadly beam. [See, "The Cancer Scourge: Howard's Role in Cancer Research and Treatment" in the April 1980 issue of *New Directions*.]

Hovering somewhere between the realm of the routine and the experimental in neurosurgery is the use of lasers to remove brain tumors. Howard University Hospital purchased a CO_2 laser at Dennis' request and he has been the first at the hospital to use this dazzling new bit of technology for brain surgery. He'd learned how to perform laser surgery from some pioneering neurosurgeons in California where he had been chief of neurosurgery at Kern Medical Center in Bakersfield and clinical assistant professor of neurosurgery at the University of California at San Diego before he came to Howard.

"The laser makes it easier to remove tumors which are relatively inaccessible," he explains. "By directing the laser beam you can vaporize the tumor — Poof! It disappears into the air — without even touching the tissue. You direct the beam through the microscope and use a hand manipulator to direct the light. With the microscope we program the laser (it has a memory) so that we can choose different powers and depths of penetration. So we can remove a thin layer of tissue from nerves or from blood vessels we could not remove manually without significantly injuring that nerve or blood vessel. With the laser, I've been able to really sneak some tumors out of some precarious situations — wrapped around the carotid artery or the optic nerve."

But the laser is not trouble-free. Precautions have to be taken while using it in the operating room to prevent damage to the eyes of the patient, members of the operating team and any onlookers, and to prevent the oxygen from the endotracheal tubes from igniting. Nor should the laser be looked upon as a magical or mystical object. "The laser does not replace the good technique and judgment of the neurosurgeon," Dennis emphasizes. "Nor will it replace the knife. It's just another tool."

Dennis also seems to be wary of the tendency to become so enamored of modern medical technology that one loses sight of the needs of the recipient of that technology: the patient. "I think you should treat each patient as if the patient were your relative," he believes. And sometimes, despite the new technology, despite all the neurosurgeon's training and study and consultation and caring, a patient doesn't make it. Sometimes a patient deteriorates as a result of neurologic surgery. Sometimes a patient dies. How, Dennis is asked, does he deal with this potential eventuality? He answers as if it's a question he's been wrestling with for a long time:

"I think you have to be honest and fair about what you're capable of; to never promise or guarantee anything which you are not capable of guaranteeing; to always be certain that the patient and the patient's family are aware of all the risks and all the alternative methods of treatment; to inform the family immediately of your findings about any problems as they occur; and to be perfectly honest at all times so that the seriousness of a problem, the implications of the complications, are understood.

"But no one ever understands truly what it means until something bad actually happens because then your emotions come into play. Even though we can explain or rationalize what has happened, we can't stop the feelings — whether as physicians or as patients or as family members."

In a career that includes having performed or assisted in more than 1,000 operations, there have been times when what looked like a simple surgical procedure has gone badly. And other times when what looked like a near-impossible surgical procedure has gone well.

Recently Dennis had to clip an aneurysm in a hypertensive, 278-pound woman whose brain already had swollen alarmingly. She clearly seemed a poor candidate for successful surgery. "I struggled with her," Dennis recalls. "I thought of what Dr. Lefall [Dr. LaSalle Lefall, the much-honored chairman of the hospital's surgery department] says about the surgeon having to have 'equanimity under duress,' about how the good surgeon is one who understands this and is able to handle any complications that arise. At the end of the operation I felt totally exhausted, emotionally drained, disappointed at how inadequate man is in the face of tremendous odds.

"But when the patient responded favorably to my treatment I knew that it was worth it — the mental anguish, the stress, the anxiety . . ."

If being a neurosurgeon can sometimes cause such "mental anguish, stress and anxiety," to use Dennis' words, what kind of person would actually *want* this job?

Gary Dennis is a workaholic who goes nowhere without his beeper, a situation his wife and three young children seem to have adjusted to but which must cause strains at times. "Sure I always wear it," he says, "because I feel responsible and am responsible for the way the [neurosurgery] service runs and I want the patients to feel that I'm always there and I want the residents to feel that they never have to face anything alone, that I'm always there to guide them."

Dennis is also dedicated and energetic — at least that is the way colleagues and former teachers almost uniformly describe him. As for his patients, to some he is, quite simply, a savior. Consider the case of 17-year-old Sonya Oliver whose years of suffering seem to have come to a blessed end after Dennis successfully excised a cavernous angioma [tumor of blood vessels] from her brain in a risky, 12-hour operation.

Sitting in her room at Howard University Hospital on the day of her discharge, with only a delicate line of scar tissue in her close-cropped hair serving as a reminder

of the reason for her stay, Oliver recalls the way it used to be:

"For three years I would always cry about my head. I had seizures. I stayed dizzy. [At times] I became unconscious. I was walking in front of cars, didn't know anybody sometimes. I would get out of my head. I was depressed, stressed, mad because I couldn't think right, couldn't read right, forgot everything."

And she talks about the way it is today: "I have headaches now, but they're mild. He [Dennis] took away the main ones. I feel good. I walk around with a smile on my face. I used to walk around with my lips poked out. I used to be evil! Now I'm nice to people."

There's another side to Dennis/brain surgeon as savior as workaholic as boy wonder of the operating room and of the hospital's neurosurgery division, another side to this man who can be so laid back in an interview setting and who is described by one colleague as "looking like a teddy bear." And that is Dennis/brain surgeon as tyrant.

Because he works so hard himself and tries to be so well prepared himself, Dennis can sometimes be impatient, demanding, even harsh with others who don't quite measure up to his standards—whether it's his overburdened secretary who hasn't finished a particular piece of correspondence or a medical student who makes a mistake in discussing a patient's case.

One afternoon on teaching rounds he listened to five third-year medical students give presentations on "their" patients: two middle-aged women recovering from aneurysm surgery, a young woman who had lost her ability to speak and suffered from tremors due to complications following a seizure and two men with gunshot wounds — one now paraplegic, the other quadriplegic.

Standing in the hospital corridor outside the patients' rooms the students reported the results of the physical examinations

Jesse Barber:

Forerunner And Mentor

Dr. Jesse B. Barber finished Howard University's College of Medicine in 1948, graduating with honors, then did an internship and a residency in general surgery at Freedmen's Hospital. He wanted to specialize further. He wanted to be a neurosurgeon. So he applied to numerous neurosurgery residency programs in the northeastern United States. But at the time, the doors to such training were closed to Blacks.

Barber was forced to go to Canada to obtain neurosurgical training, specifically to the Montreal Neurological Institute of McGill University. In this, he was following in the footsteps of *his* mentor, Dr. Clarence Sumner Greene, who in 1949 became the first chief of the neurosurgery division at Howard and in 1953 became the first Black neurosurgeon to be certified by the American Board of Neurological Surgery. Greene died in 1957. [For more on Greene and his contributions, see Barber's article in the May 1968 issue of the *Journal of the National Medical Association.*]

In 1964 Barber became certified and for a number of years was the only certified Black neurosurgeon practicing in the United States. This fact plus the fact that he was chief of the College of Medicine's neurosurgery division for 23 years (1961-84) helps account for the unofficial mantle he has worn through the years as a role model for Black physicians-in-training interested in careers in neurosurgery. From his unique vantage point, Barber says he is "impressed by the vast increase in the number of Blacks in neurosurgery today" compared to the situation when he first entered the profession. But he adds that he is also worried that escalating challenges to affirmative action are once more making it difficult for minorities to receive training in neurosurgery and other highly specialized fields of medicine.

The increased number of Blacks in neurosurgery is just one of the changes he has witnessed during his long career. He has seen the field change in terms of what the neurosurgeon is able to do because of new techniques and technologies. And he has seen it change in terms of what the neurosurgeon no longer does.

"We used to do a goodly number of operations, destructive operations, for things like Parkinson's disease, so-called 'shaking palsy,'" he says. "But with the discovery and development of newer medications we don't have to do so many of these operations any more. The same is true of lobotomies and lobectomies (taking out lobes of the brain or parts of the brain) which used to be done for behavior modification or as a [highly controversial] psychosurgical procedure. So, neurosurgery is a fascinating, extremely broad and changing type of field. It may be even that 10 or 20 years from now what we are now doing to the brain in terms of treatment may be passé."

Barber says his initial attraction to neurosurgery "was based upon the fact that the brain controls everything and is from this concept the most important organ in the body." The mysteriousness of the brain also whetted his curiosity. "To my way of thinking the brain is one of the major last frontiers of human knowledge," observes the much-honored physician who is a former president of the National Medical Association. "Dr. Wilder Penfield, the father of epileptic surgery, whom I trained under in Montreal, was perfectly convinced that the brain is far more complex than outer space in terms of all its unknown features. He was convinced, as am I, that [because of this] in all probability the efforts and funding devoted to outer space would be much more productive and cost-effective if spent [on] studying, analyzing and treating the conditions of the brain."

Barber still is involved in neurosurgery, both as a practitioner and as a teacher, but his primary activities these days relate to his responsibilities as professor of social medicine in the College of Medicine. He sees a direct link between his focus in his new job and the specialty to which he has devoted so much of his life.

Social medicine, he explains, is concerned with the health care problems of large groups of people. It deals with societal influences on health care and as such represents a combination of medicine and sociology. He gives an example relating to his own field:

"A subdural hematoma is obviously a neurosurgical lesion, a blood clot on the brain resulting from trauma. The treatment for it is to open it up [the skull and covering of the brain] and take out the blood clot. As far as I'm concerned, a subdural hematoma is a societal disease mainly because ⅔ of the patients are homeless, jobless, often from the lower-income groups, often alcoholics, or addicts. So although it is a neurosurgical condition, its causation is related to the ills of society."

As professor of social medicine, then, he is involved with advocacy groups concerned with providing access to medical care for the homeless and is gathering and disseminating information on environmentally-caused illnesses.

Just as there seems a direct link between Barber's work as professor of social medicine and as neurosurgeon, so seems there a direct link between the work of Clarence Sumner Greene and Jesse B. Barber and Gary C. Dennis. Greene laid the foundation for the practice and teaching of neurosurgery at Howard. Barber and Dennis, each in his own way, have built upon it. □

they had given the patients and the medical histories they had taken. They also reviewed the patients' initial symptoms, the treatment they were receiving, their likely prognosis and the location of the lesion [area of pathology] in the brain or spinal cord that was responsible for their conditions. The students then entered the patients' rooms with Dennis to note any new developments and to observe how he interacted with the patients.

Standing in the corridor with his arms folded, rolling back and forth over on the sides of his shoes, furrowing his brow and looking skeptically out over his large glasses, Dennis played the role of demanding interlocutor to the hilt. A sample exchange between the neurosurgeon and a student:

Student: The patient is in a lethargic state. I couldn't get a full history.

Dennis: Have you thought of contacting her family?

Student: Yes, but I didn't have the time.

Dennis: (Exasperated) That's really a bad answer.

Later when the same luckless student misidentified the purpose of a drug the patient was receiving, the neurosurgeon's exasperation escalated. His words this time: "You need to read because you don't know what you're talking about."

Throughout the students' presentations, Dennis hammered out one question after another: "What about the cranial nerve exam? Why is the patient's mental status the way it is? Is she aphasic? How do you know? Did you read about subarachnoid hemorrhage? What is the treatment for spinal cord injury? What do you have to watch for? What pathological reflexes can you test for? . . ."

And sometimes he hammered out commands: "Tell me what is wrong with the patient *right now.*"

The rounds were scheduled to be held from 2 until 4 in the afternoon. They actually lasted until 5:45, ending with the students' trooping back into Dennis' office to show him that they understood how to read their patients' angiograms.

Obviously, presenting cases to Dennis can be "harrowing," observes Toni Miles, a graduate of Howard's M.D.-Ph.D. program. "He likes to terrorize students," she says. "But it's not a bad terrorizing. He wants you to know your information dead on, none of this hemming and hawing. Either be certain that you know what you know or admit that you don't know. He has no tolerance for the slipshod, the weak. He wants to see what kind of character you have in addition to learning all the neurological stuff. He can be rough. I've found most neurosurgeons tend to be rough people and I think that's because they are dealing with the brain and in that sphere of influence you don't have much margin to be sloppy. You have to be on top of everything all the time."

Even as a child, Dennis admits, he displayed "a competitive nature, attention to detail, and concentration" about what he set out to do. And he credits his mother for reinforcing these tendencies by insisting that he take piano lessons and practice diligently, by taking him, his two brothers and sister to museums and in other ways making sure they took advantage of the many educational and cultural advantages Washington, D.C. had to offer.

The encouragement he received at home was reinforced by the encouragement he received from his teachers in the District of Columbia public schools, which were still segregated during his elementary school days. Likewise, he received encouragement from his professors in the integrated, activist milieu of Boston University where he majored in psychology and worked part-time in a research laboratory at the medical school assisting psychologists and neurophysiologists who were studying the functions of certain parts of the brain. His job involved training monkeys, performing EEG's on them and stimulating their brains to see the effects of the stimulation on the tasks they had been trained to do. "It was there I learned neuroanatomy and became interested in the brain," he says.

But there had been some earlier experiences which may have steered him subconsciously towards medicine, in general, and a field of medicine centered on the brain, in particular.

His father, an engineer, had epilepsy and died in D.C. General Hospital from a blood clot on the brain after he fell on the street during a seizure. Dennis was 13 years old at the time. His mother, an administrative assistant in a government office, had been diabetic since childhood. "Therefore all of my life I was always confronted with illness and was interested in the pathophysiology of various diseases," he says. If his parents had been completely healthy, he surmises today, he might never have been attracted to medicine.

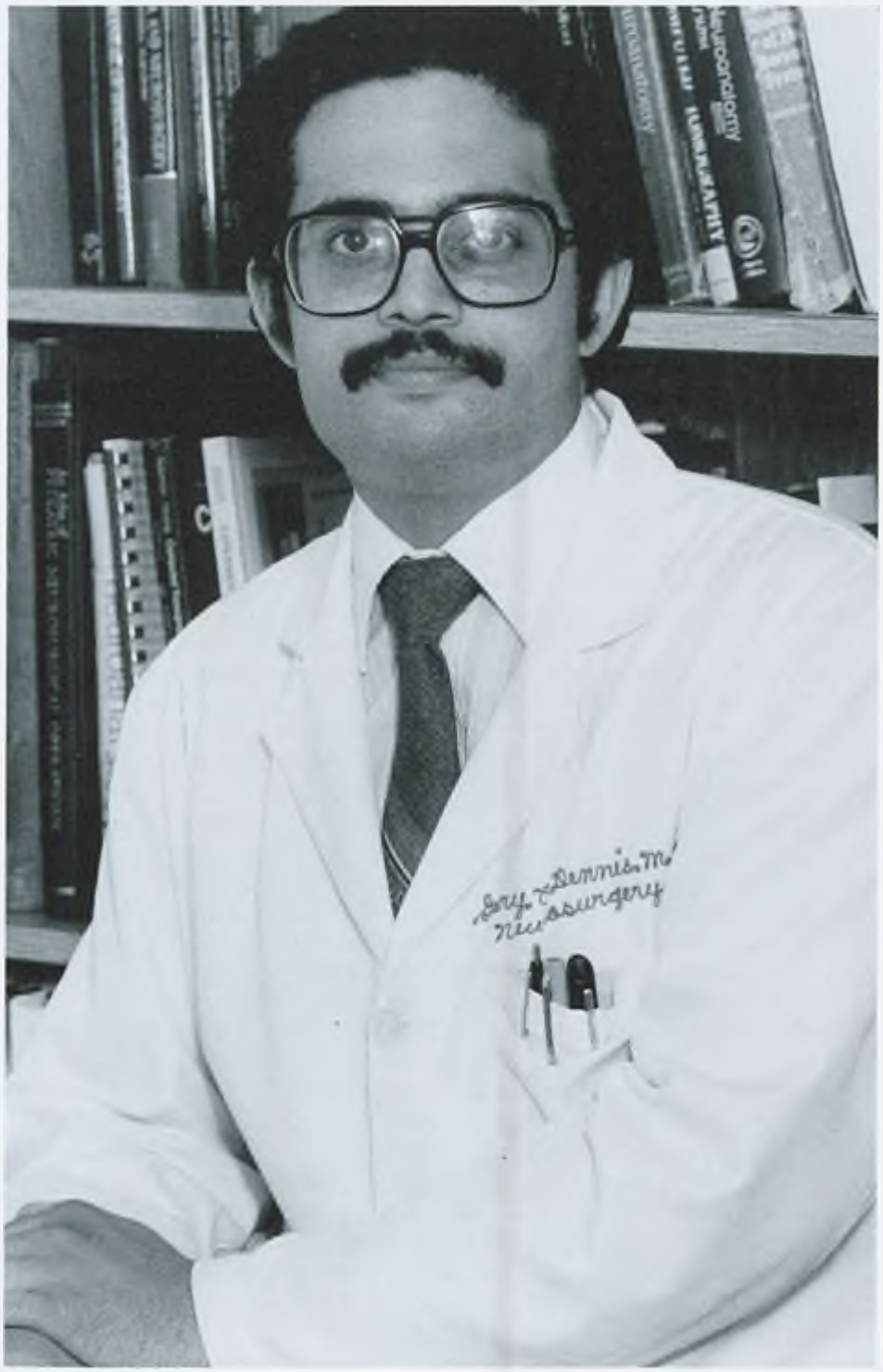
Then when he was 17 he was in a motorcycle accident and was treated for a concussion at Freedmen's Hospital (predecessor to Howard University Hospital) by Dr. Jesse Barber, the first Black neurosurgeon he had ever seen. "Being treated by him exposed me to what neurosurgeons do," Dennis says. "It wasn't as if lights went on and I said, 'I want to be that,' but I remember going to his office and seeing the machines and he and the other doctors in the office would explain to me what was going on. It seemed very interesting."

He was to come under the Barber influence again, of course, at Howard's medical school. "Initially I was interested in the neuroanatomical, biochemical basis of behavior and was thinking about becoming a psychiatrist," he says. "But when I came to Howard University I realized after a short period that I was more interested in the brain itself. The brain really is the root of all behavior."

At Howard, he says, the first preceptor he was assigned to was Barber. "His example was a striking one," Dennis says. "He was a very bright man, had a very clear concept of neurological disease and was able to influence people just by his presence as an example of how things should be done." On his part, Barber remembers Dennis in those days as "a top-flight student, very aggressive, very intelligent and with an insatiable curiosity, which is essential for a neurosurgeon because neurosurgery is a very complex profession that requires a thorough knowledge and understanding of the anatomy and physiology of the brain which is, of course, very complex."

During his second year in medical school, Dennis began assisting Dr. Bernard Sussman on research on subarachnoid hemorrhage (the kind of bleeding which makes aneurysm surgery necessary). Ironically, today Dennis as chief of Howard's neurosurgery division is technically Sussman's and Barber's boss. (Barber devotes most of his time and energy to his work as professor of social medicine in the College of Medicine but he continues to do a limited number of operations and to see some patients at the hospital.) The two other neurosurgeons in the division are Dr. Charles Mosee and Dr. Yonas Zegeye.

After graduating from Howard, ranking third in his class, Dennis spent a year at Johns Hopkins as an intern in general surgery where one of the things that was impressed upon him, he says, was that "in order to drive in the fast lane so to speak, you have to work hard all the time." That certainly proved good advice for the next four years which he spent as resident in neurosurgery at Baylor. There he learned the latest techniques of microscopic neurosurgery and honed his research skills under a man he calls a "neuroanatomical genius," Dr. Robert Grossman.



Baylor's neurosurgery program is the third largest in the country in terms of the number of cases it handles, Grossman points out, and this enables residents to be exposed to "a tremendous amount of surgical material." He describes the residency training program as a one-on-one enterprise between experienced neurosurgeon and neurosurgeon-in-training that is reminiscent of "the old craftsmen or the old guild." "This kind of training isn't done anymore except for surgical training," he remarks, fondness creeping into his voice. "We're the last of the old hand workers."

Dennis credits Grossman's recommendations with helping him to get his first job as chief of neurosurgery at Kern Medical Center. There his responsibilities included reorganizing the operating room, retraining the operating room staff in the newest neurosurgical techniques and serving as a resource person to area health professionals interested in improving neurosurgical care—all of which seems a fitting prelude to his current responsibilities at Howard.

When he received the job offer from Howard, Dennis says, he accepted it eagerly. "I have very strong feelings about Howard as well as about training Black physicians," he says. "I feel that Howard provided an excellent medical school education for me which prepared me well to compete with other physicians. So I feel a great sense of obligation to Howard because of this and also because of the opportunity it gave me to become a physician. As a way to fulfill that obligation. I would like to train other physicians and ultimately train other residents to become neurosurgeons."

As of December 1982, there was 3,726 neurosurgeons in the country, reports the American Medical Association. Of these, only 41 are Black, according to data gathered by the National Medical Association. Other figures given for the number of Black neurosurgeons vary somewhat from this, but the conclusion that can be drawn from the numbers is the same: there aren't many Blacks in this prestigious, high paying specialty. This simple fact explains why Howard University Hospital plans to launch a residency program in neurosurgery.

"We know that if there are to be significant numbers of Blacks trained in the medical specialties, basically we have to train them," says Dr. Vincent Roux, medical director of the hospital. "With integration, medical centers all over the country began taking increased numbers of Blacks into their postgraduate training programs. That peaked about six or seven years ago and, quite frankly, more recently the number of positions that are available for Blacks to be trained has begun to shrink again. Howard University has to continue the attitude that if a reasonable number of Blacks are going to be trained to take care of the needs of the Black community, both on a local, national, as well as international level, we have to do it here."

Roux and Dennis hope to see a residency program in place within the next two years. "We have both the quality and quantity of patients to provide adequate experience for a neurological surgery residency program," Dennis says. "Now we just have to establish a track record."

When you ask Dennis to look ahead, he cites establishing the residency program as one of his key goals. Another goal is simply "to be the best neurosurgeon I can possibly be." When you ask him to look back, he says: "I've been lucky. I've had good teachers. I've always had good examples. And I've always worked hard."

He doesn't anticipate slowing down any time soon. "Sometimes it's easy to sort of say, 'Gosh, I'm already there. I've made it and there's nothing more for me to do.' But, see, I'm never going to say that. I'm never going to say that." □