CHAPTER

1

Presidential Address—The End of the Beginning (Again!)

H. HUNT BATJER, M.D.

Ladies and Gentlemen, Members, and Special Guests,

I am deeply honored to have had the opportunity to represent you as the President of The Congress of Neurological Surgeons (CNS). Working with past and current leadership of this organization has been one of the most extraordinary opportunities anyone could ever imagine. The energy and commitment of the CNS Executive Committee should make each of you proud and comfortable in the knowledge that our future as neurosurgeons is in great hands. But let me make one point clear—We need you to come forth and join in the effort. Too often we see the same names appearing again and again doing the work for our specialty. This problem follows logically from two principles taught to me by my father, Henry Batjer: 1) There is an unlimited amount of work to do but only a limited number of people willing to do it and 2) There appear to be two types of people in the world—those that are willing to work and those that are willing to let them!

Organized medicine and organized neurosurgery function as a meritocracy—step up to the plate and offer your talents. The service to your specialty and to our patients' health is an extraordinary high calling. Some of my most enjoyable times, have occurred while serving with this Executive Committee, such as last summer when two miserable specimens (Dr. Barrow and Mr. Willard) were humiliated on the golf course by two finely tuned athletic machines (Drs. Hadley and Batjer). In addition, this year, I had the opportunity to travel widely on behalf of this organization. I made two trips to Japan, one trip to Australia, and one trip to New Zealand, and attended an innumerable number of meetings in Washington and other North American cities.

I have truly enjoyed getting to know you and to understand the difficulties you face. I have learned that we face many of the same problems. The key in the future will be to attack them with the appropriate mix of national, state, and local strategies. I hope I have represented you well.

The CNS has grown remarkably in stature during its first 49 years of life. We have evolved a unique partnership with the American

Association of Neurological Surgeons. Our specialty interfaces with many outside entities, including all three branches of the Federal Government, State governments, regulatory bodies such as the FDA and HCFA, and other medical organizations. The "spokesperson" for our specialty comes in two forms: 1) Through the Joint AANS/CNS Officers under the signature of both Presidents and 2) Through the Washington Committee under the signature of Katie Orrico or its Chairman. This dynamic partnership affords bipartisan leadership and representation in all of our public interfaces and assures that your interests and those of your patients' will be well served.

I would like to especially thank and acknowledge several people:

1) My parents, Henry Batjer and Eleanor Stanlis. Without their presence, my course on this planet would have been problematic from the start! Their support and guidance over the years can never be repaid. I can only hope to do as well as a father and a professional.
2) The Batjer girls. Janet, Hannah, Devon, Hunter, and Ashley have spent much of this year alone. Their love and understanding have been the highest possible incentive to get home!
3) My colleagues at Northwestern. These fine people have absorbed substantial extra burdens during my absences this year and I will never forget their support.
4) Kemp Clark. Dr. Clark was the Chief of Neurosurgery at University of Texas Southwestern when I began my training on his service. His recruitment efforts, which included this year's Honored Guest, set the stage for the development of one of the truly outstanding programs in this country.
5) Charles Drake. I had the extreme pleasure of spending a clinical fellowship on Dr. Drake's service in London. I am sad for all of the young neurosurgeons who will not have the opportunity to listen to his wise and honest perspective. I will always miss the smell of his pipe tobacco and the sound of his grumblings in the back of the room as controversies were being discussed.
6) Duke Samson. Dr. Samson became my mentor during my internship and I continue learning from him to this day. He is a master surgeon and master surgical educator without peer. No one significantly influenced my life more than this year's CNS Honored Guest.

THE "M" WORD

I would like to use this brief time to put into perspective our current unique vantage point. We find ourselves at the simultaneous close of three critical periods of time: 1) The second millennium, 2) The 20th century, and 3) The decade of the 1990's.

In order to better understand our current position and opportunities, it is of interest to study each of these three remarkable epochs and analyze what features set the stage for success or failure. To do this, we must study the environment at the *beginning* not the end of each. As these three periods of time began, we must ask what was the relationship between *intellectual expansion, technology, and the political environment?* Were these factors acting synergistically or antagonistically?

I hope to provide a brief snapshot into the medical, surgical, and political environments of the beginning of each of these remarkable periods and contrast them with our current environment as it goes forward into the 21st century and third millennium. My focus, therefore, will be on *the beginning* of these epochs to better understand the issues of the day and hopefully demonstrate a repetitive cycle of problems that intermittently stifled growth, only to be overcome by an unrelenting force that pushed for new knowledge. I hope to share with you a reason for my own extreme enthusiasm for our future and explain why this moment in time is truly "The End of the Beginning."

TRANSITIONS

The athletes and former athletes among us know very well the meaning of a "transition game." This designation refers to the ability to rapidly switch from a defensive posture to an offensive attack. Through his extraordinary abilities, Michael Jordan created great awareness of how brief a transition game can be and how successful the outcome is if careful strategic planning and superior talent are brought to bear. As neurosurgeons, we deal daily with transitional moments in the operating room that could also be termed "turning the corner." As we perform the early phases of dissection of a complex large basilar artery aneurysm, the anatomy often looks as if it cannot be reconstructed meaningfully. However, as the masters have taught us, there are certain transitional strategies, which when implemented, seemingly make solutions appear before our eyes. In the case of the basilar aneurysm, it often occurs as we begin to mobilize the P1 segment origin and dissect the back wall. A similar circumstance occurs in the treatment of intracranial arteriovenous malformations. The initial dissection occurs in the subarachnoid space as we map out all of the afferent and efferent vasculature. This critical phase helps resolve the Gordian knot but must cease and transition into the subpial dissection at a moment intuitive to the experienced surgeon, as the battle will only be won in the brain. How to implement transitional thinking to economic and political upheaval and change is less intuitive to physicians.

As I review key historical moments, including the present in this perspective, we should examine the *transition strategies* applied by physicians, scientists, and surgeons to determine if they leverage their opportunities to maximize the future advances or fail to seize the moment. For most advances relevant to the surgical neurosciences, a synergy between intellectual exploration, technological advances, and political climate must be present. I will use these three yardsticks as we examine the previously mentioned points in time to illustrate why we are incredibly advantaged at this moment.

THE BEGINNING OF THE SECOND MILLENNIUM

The beginning of the second millennium in the year 1000 AD marked an optimistic emergence from the Dark Ages. The Dark Ages are classically described, as noted in Figure 1.1, as the period of time from the fall of Rome to the Goths in 476 AD to the year 1000. On the other hand, the Medieval world was still mired in the "age of faith," which extended from the fall of Rome to the fall of Constantinople in 1453 AD. An extraordinary heritage of neurosurgery had been developed through ancient civilizations in which Neolithic man had learned to perform surgery on the nervous system. Clear evidence of trephination can be found in pre-Columbian society in the former Mesopotamia, ancient Egypt, and ancient China. An extraordinary period of intellectual growth occurred in the final centuries before Christ. Roman and Greek societies fostered extraordinary inquiry and growth through the teachings of Pythagoras, Hippocrates, Socrates, Plato, and Aristotle. These intellectual developments, as related to medicine and surgery, continued through the teachings of Galen around 200 AD. Extraordinary deductive reasoning had been developed during the time of Hippocrates around 400 BC relating to trephinations for skull fractures, epilepsy, blindness, and headache (1, 5, 7). Remarkably, students were taught to avoid the temporal region for fear of damage "to the artery." Surgeons were taught to leave a small shell of bone to protect the dura, as the inevitable suppuration would naturally extrude this last bit of bone. Greek and Roman physicians were also taught not to remove bone over the cranial sutures due to adherence of the underlying dura. Among other technical problems, progress in neurological surgery was precluded by a lack of anesthesia and instrumentation.

In a very real sense, these remarkable societies were "The First Beginning" of neurosurgery. Unfortunately, progress ceased when the Roman Empire fell. This remarkable moment in time initiated what can be called the Neurosurgical Dark Ages. This era persisted for a variety of reasons through the Renaissance and into the 19th century. The fall

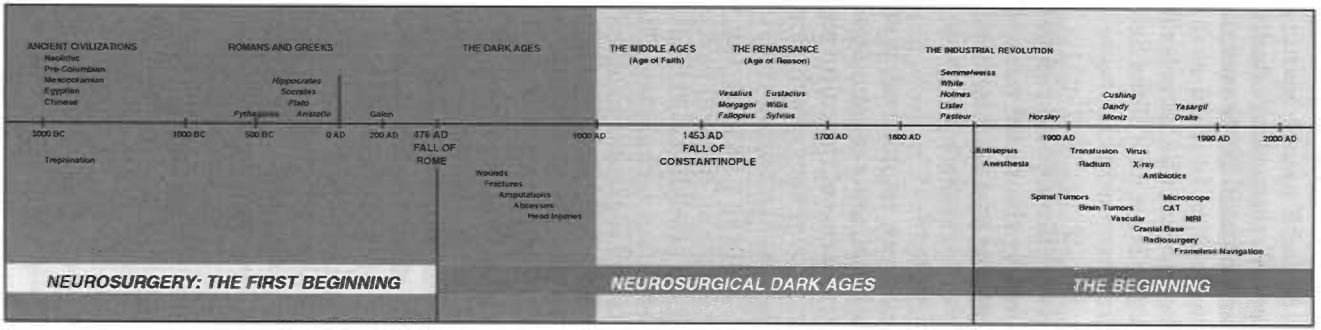

FIG. 1.1 Timetable reflecting societal progress with medical implications from the time of ancient civilizations to the present.

of the Roman Empire and the commencement of the Middle and Dark ages heralded an "Age of Faith" where man no longer learned by his own observations. Interest in the sciences declined as teachers focused on the magical and the unnatural phenomena. As Roman institutions fell, law and medicine were some of the first to go. Physicians and patients had to fend for themselves, and non-clerical physicians ceased to exist. As we approached the beginning of the Second Millennium, an interesting series of regulatory agencies were established such that physician's fees were very high and defined by ordinance. Punishment for malpractice was severe. Physicians' rights and penalties to be incurred were often defined by the social rank of their patients. Physicians were of very low status and not highly educated. Medical procedures largely consisted of exorcism and the internal and external application of plant substances.

As the Church became more established, it attempted to maintain a link with the intellectual past, and the conquerors gave deference to the church of Rome in the traditions of the culturally superior peoples they had conquered. This fortuitous event clearly rejuvenated the care of the sick but without the substantial scientific roots of the Roman and Greek past. For example, St. Benedict forbade the study of medicine (5). Physicians ultimately became an integral part of monastic life. Most of the well-developed surgical procedures of the past were abandoned and were replaced by cauterization techniques. Pharmacology abandoned all experimental aspects and regressed to herbalism and folk medicine. Medical procedures consisted of prayer, the laying on of hands, the use of holy oil, exorcism, and the use of sacred engravings. Surgical procedures were confined to the treatment of wounds, fractures, amputations, abscesses, and head injury. In general, the surgical principles dictated "cut it out or cut it off." These regressive medical times were partially explainable by increased reliance on the Church for teaching. The healing mission of Christ was felt to include "Miracle Cures" and people felt powerless to help themselves.

Western European peoples emerged from the Dark Ages with a spirit of optimism that belied the misery to come from war, plagues, and famine. Thus, one can perceive that at this moment in time, the beginning of the Second Millennium, there was *very little opportunity* for early progress, particularly in the surgical disciplines. Intellectual growth that had been such a fixture of Roman and Greek societies had stopped. Technology remained a substantial limitation and the political climate of the day favored mysticism over science.

THE BEGINNING OF THE 20TH CENTURY.

The beginning of the 20th century found a remarkably different world. The world of neurosurgery had clearly emerged from its own Dark Ages.

Remarkably, with one important exception the Renaissance did not impact our discipline in a favorable way. While the intellectual, academic, and artistic gifts of this remarkable era will be an integral part of life for civilized man as long as there are civilized people, the only major benefit to the neurosciences occurred in the 14th century when a ban on human dissection was eliminated. This single event prompted prolific anatomical studies by Vesalius, Fallopius, Eustacius, Willis, Sylvius, and Morgagni. Detailed information about the nervous system now emerged from the primitive understanding elucidated by Hippocrates.

Two other seminal events positioned physicians and surgeons optimally at the beginning of the 20th century: *antisepsis and anesthesia.* Previous surgical ventures were limited in scope due to the necessary brevity of the procedures (lack of anesthesia) and the inevitable suppuration. The remarkable work of Semmelweiss, Holmes, Lister, Pasteur, and others clearly launched the surgical world as we now know it. Just before the turn of the century, Victor Horsley removed the first intraspinal tumor. Educational programs in surgical disciplines were receiving significant attention as the 20th century began. There was increasing regulation and standardization of medical curricula as well as surgical training. Regarding surgery, however, these curricula focused largely on *duration* and *not content,* a circumstance that arguably exists today.

Therefore, remarkable scientific development had occurred and political structures were nurturing of the sciences and medicine. At the turn of the century, the only deficit was in technology, but this changed quickly. These ingredients, together with the training of intellectual horsepower stimulated by progress in the late 19th century, set the stage for a century of spectacular growth in the neurosciences. This synergy, unimpeded by minor technological problems and a rapid crescendo of decades of world conflict, resulted in a rapid crescendo of cascading events, such as the understanding of transfusions, identification of viruses, x-ray, radium, and ultimately antibiotics. In retrospect, it seems remarkable that the major red blood cell types were only reported in 1901 by Lance Steiner and routine testing before each transfusion commenced in 1908. In 1941, Florey and Chain clearly established the therapeutic value of Flemming's penicillin.

As one views the episode of growth beginning at the dawn of the 20th century in perspective, progress occurring over typical five-year intervals of time would have required centuries in ages past. In this "century of neurosurgery," Horsley's advances were rapidly followed by Cushing and Dandy, spurred on by the creation of angiography by Moniz in 1927 (6). The microsurgical era represented another technological

advance capitalized upon by the genius of Yasargil and Drake in recognizing immediate applications. As the 1990s approached, refinements of the principle of electrosurgery (4) and spectacular new neuroimaging, including computed tomography (CT) scanning and magnetic resonance imaging (MRI), set the stage for an extraordinary optimistic decade.

THE BEGINNING OF THE 1990S

In spite of the apparent assets and synergies existing in 1990, political difficulties entered the equation. Cost for medical care were rising at an alarming rate, and in the United States, the presidential election of 1992 framed the debate of how to pay for health care. In 1990, the matrix of industries comprising health care consumed 14% of the gross domestic product and this was felt to be too much. These resources totaled $670 billion per year, which translated to $2,566 per citizen (2). While the Clinton administration proposal to restructure health care in the US failed, numerous forces were concurrently working toward cost containment. This resource-based methodology, utilized through the Health Care Financing Agency and remarkable expansion and penetration of managed care organizations of various types, dramatically reshaped surgical health care. Clearly, the targeted issues of these governmental and private agencies were "expensive technologies" and "expensive procedures." Remarkable arguments surfaced in the Medicare debate that clearly involved societal ethical mores. End of life issues were targeted as 30% of total Medicare budgeting that was consumed during the last year of life, with one-half of that sum used in the last 60 days of life. Hospice structures were developed in order to contain these costs and advance directives were strongly promoted. These initiatives were only marginally successful in curtailing costs. The consolidation of managed care enterprises as well as federally driven reductions in Medicare allocation to the surgical disciplines significantly interrupted an overall increase in health care expenditures for a relatively brief period of time. However, these initiatives did nothing to curb the bloated and growing administrative costs associated with health care, which now consume more than 20% of the health care dollar. The lack of synergy between intellectual development, technological development, and political climate limited the true neuroscience growth potential of the decade of the 1990s.

THE BEGINNING OF THE THIRD MILLENNIUM

So where do we find ourselves today? In the United States, health care represents one-seventh of the US economy and totals $1 trillion per year. Due to a variety of factors, 44 million Americans do not have health insurance coverage (often by the individual's choice). Hospitals

are now being hit by the provisions of the Balanced Budget Act of 1997, and many of our greatest institutions are in immediate danger of insolvency. Graduate medical education may become a yearly federal budgetary football. Patients feel out of control and are striking back. Employers are unhappy about rising healthcare costs and their unhappy employees. Health maintenance organizations are being clobbered by increased liability from their unhappy clients, while escalating costs make them less attractive for employers. I can only imaging Marcus Welby studying the formula for Medicare Physician Reimbursement (Figure 1.2) How would Dr. Cushing react to the "bullet points" of Evaluation and Management documentation guidelines?

Our learned medical societies (including the CNS!) and our finest institutions have been thrown off course by these upheavals. Of necessity we have had to focus on the enormous threat to fiscal survival for physician practices and hospitals. Our academic centers have faced extraordinary risk through Physicians at Teaching Hospitals (PATH) audits in which the Office of Inspector General could arrive and confiscate ten of millions of dollars under the guise of "fraudulent billing based on ambiguous and unbelievably complex documentation guidelines. Our advocacy efforts have focused on how best to control loss, or worse, on how to control *rate* of loss! These multiple factors threaten the two most important facets of specialty care—Quality and Access.

RBRVS: Components

$$\text{Payment} = CF \times [RVU_{wk} \times GPCI_{wk}] + [RVU_{pe} \times GPCI_{pe}] + [RVU_{mp} \times GPCI_{mp}]$$

wk =	Work = 50%
pe =	Practice Expense = 46%
mp =	Malpractice = 4%
GPCI =	Geographic Practice Cost Index
CF =	Conversion Factor = $34.73 for 1999

FIG. 1.2 Resource-Based Methodology at its Finest!

Needless to say, resources have been redirected from research and technology into the defensive actions noted above. The direct result has been stagnation from an intellectual and technological standpoint during the 1990s.

So what is there to be happy about? In the words of Henry Batjer, "Things seem to get sonofabitcher all the time!" The beginning of the next century and the next millennium do not imply "the beginning of the end" for the neurosciences. History teaches us that progress and growth come in fits and starts, and require synergy of intellect, technology, and political structure for meaningful advances to be made. In perspective, we have been static for a trivial period of time.

We are now poised and optimally positioned for unbelievable forward advances, particularly in the arenas of neural-regeneration, tissue salvage, gene therapies, prevention, stem cell implantation, skeletal remodeling, and safer intracranial and spinal navigation with functional road mapping. We have exactly the right people in the right place at the right time. Neuroscientists among us, together with our colleagues from industry, have created extraordinary new tools. Our current societal and political environment is intolerant of mediocrity. We are at center stage.

HOW DO WE DO IT?

I am not the kind of guy who would rail about our problems and obliquely point to a bright future without some tangible suggestions.

Value What we Bring to the Table

Figure 1.3 illustrates a screw. This is a very good screw and sells for less than 25 cents at the local hardware store a short drive from all of our homes. Figure 1.4 illustrates another screw. This is also a very good screw and sells for nearly $1000. Our industrial partners have been remarkably successful in differentiating the product or service they bring to the market place in the eyes of the consumer. These differentiating characteristics have translated to increased value of that product or service. We have clearly failed to capitalize on the remarkable service we bring to the public, and we can no longer accept this. We deal with diseases of critical public health importance and we treat an organ that has extraordinary value to even the mystical societies at the first millennium. Let us take these assets to the market place.

Fiscal Responsibility

We must run our practices with a heightened sense of cost control, balancing true business principles with compassionate care. Medicine and neurosurgery are not classical businesses but without attention to

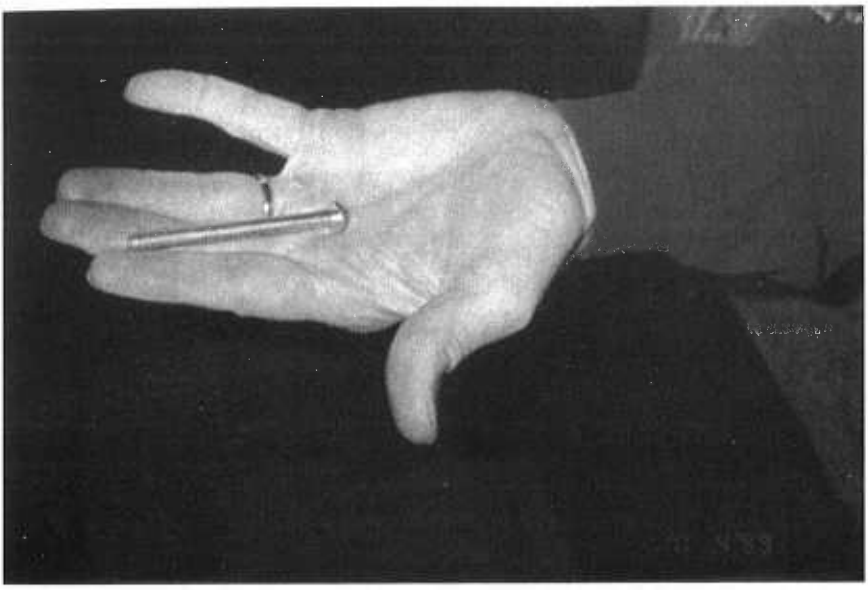

FIG. 1.3 "A screw"

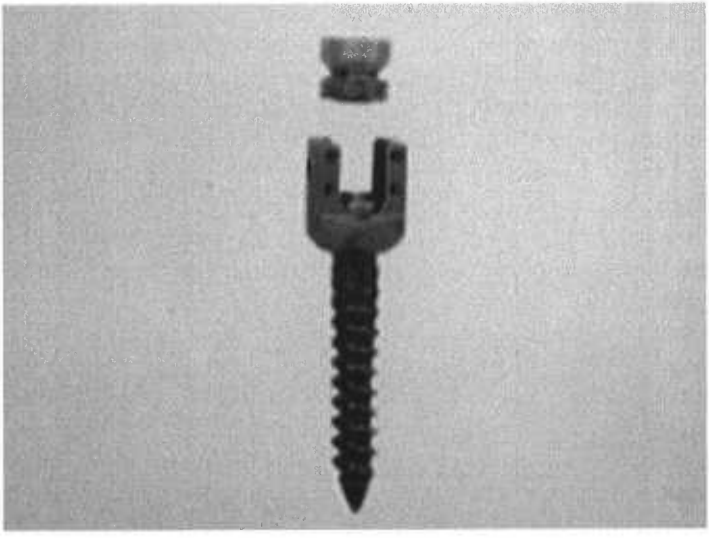

FIG. 1.4 "An instrument"

business principles, our practices will fail. No money, no mission. However, if we run our practices as true businesses, we violate the "The Oath of Hippocrates." If we ask ourselves at each patient encounter "Is this how I would treat one of my own family members?" the result will be *better access* and *better quality of care.*

Keep Your Eye on the Ball

We must navigate interesting, frustrating, and rapidly changing financial and political realities to ensure survival of our practices. Regardless of how well we navigate these uncertainties, if we fail to serve the public by advancing the science and practice of medicine with tangible benefits and minimizing human suffering, we will be viewed by history as failures (and we should be). Ladies and Gentlemen, here is *The Ball.* Let us check our report card. Figure 1.5 illustrates a glioblastoma multiforme in a 57-year-old man. How will this gentleman fare under my care compared to how he might have fared under Dr. Cushing's care in the 1930s? Figure 1.6 illustrates a large stroke, which represents the third leading cause of death in this country. How many victims of this disease are caught before irreversible damage is done? Do they recover quicker than they did in previous decades? Figure 1.7 illustrates a fatal hypertensive cerebral hemorrhage. Are we not able to measure and treat high blood pressure? Figure 1.8 represents a severe subarachnoid hemorrhage from a ruptured aneurysm. We have beautiful and sophisticated technology that allows precise and even perfect anatomical treatment for the offending lesion. It is difficult to feel terrifically satisfied knowing that only one-half of the victims of this disease recover their premorbid state and occupation. I find it fascinating that some of our clinical scholars and surgeons are at this moment teaching neurologists, primary care physicians, and neurosurgeons that we should not preemptively strike this disease, treat unruptured aneurysms, and *prevent* subarachnoid hemorrhage! I wish some of these therapeutic nihilists could get to know some of the families of the patients I treat. I wonder if these physicians are capable of "feeling their pain." Figure 1.9 shows a ruptured giant fusiform basilar trunk aneurysm in an 18-year-old girl. How do you feel about our strategic and technical solutions to this problem? (3) Figure 1.10 illustrates a brain injury from a gun shot wound. Figure 1.11 illustrates a thoracic spine fracture resulting in a paraplegia. I personally feel that the final two conditions are more sociological in nature than neurological. However, we as neurosurgeons have pivotal roles to play. The maximum advantage we can bring will be in the arena of prevention. How many of our members actually participate in their local chapters of Think First? We have documented evidence that getting the message to young children changes behaviors. This is our responsibility and we must get the message out. We must do better.

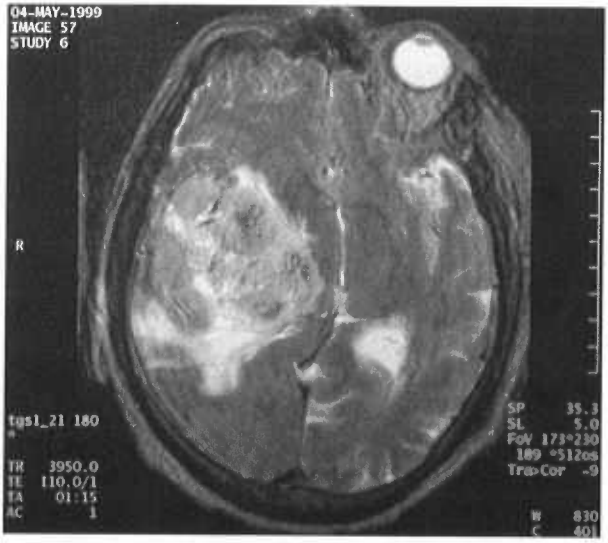

FIG. 1.5 Glioblastoma multiforme

FIG. 1.6 Large dominant cerebral infarction

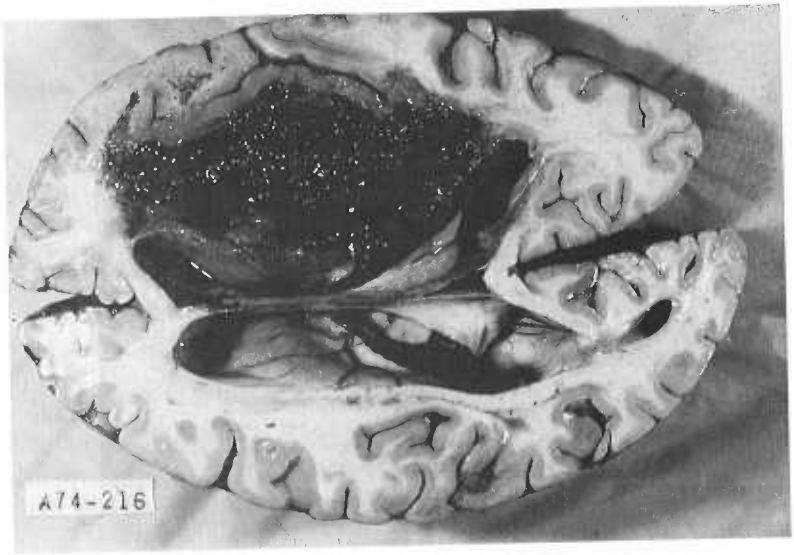

FIG. 1.7 Fatal Gangliar hypertension hemorrhage

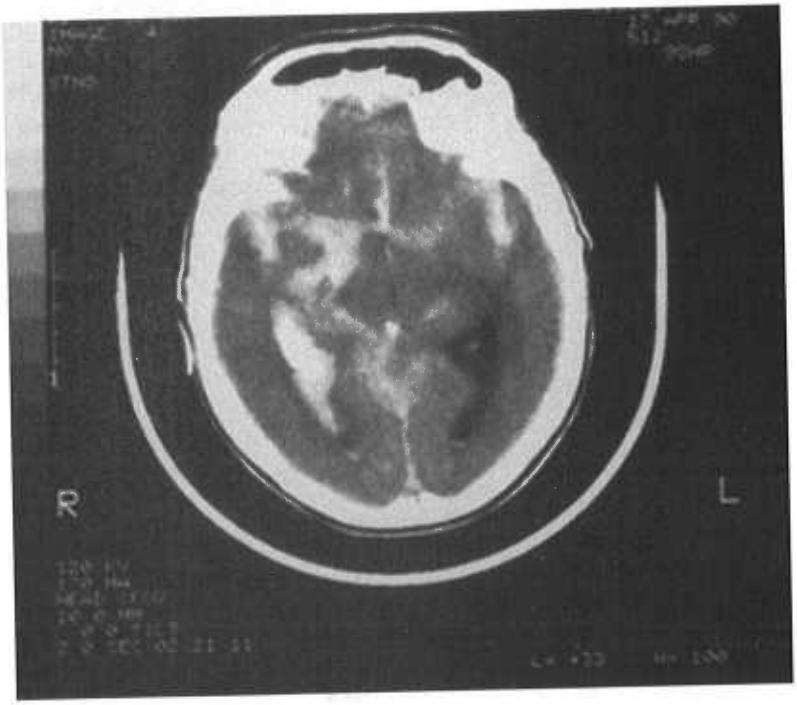

FIG. 1.8 Severe SAH

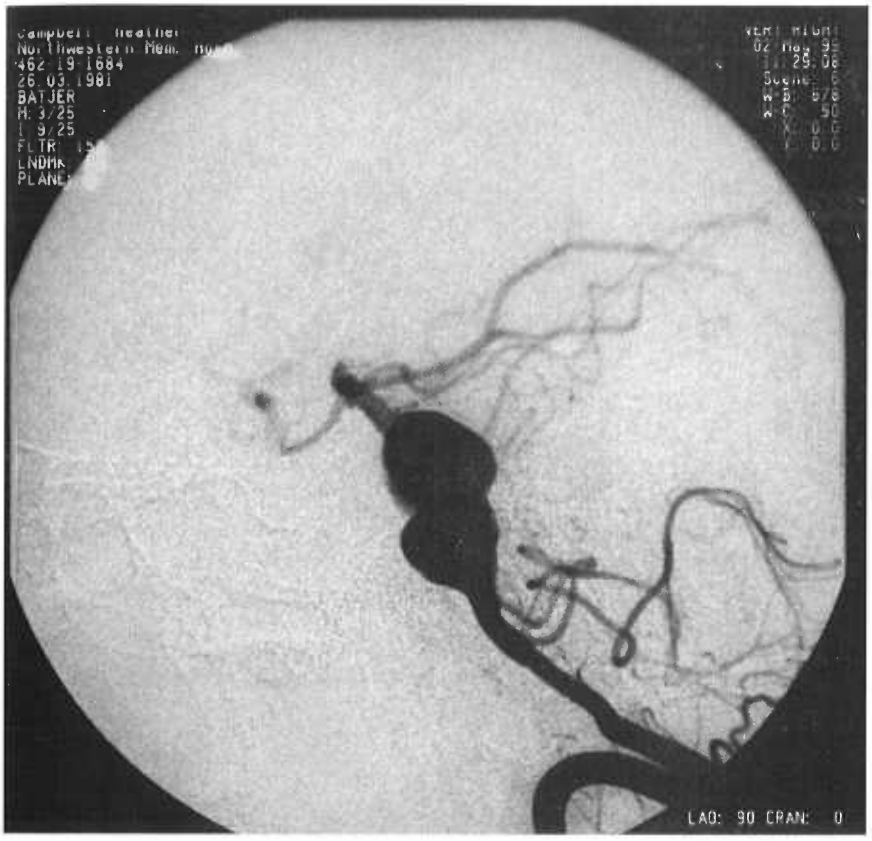

FIG. 1.9 Giant fusiform basilar trunk aneurysm

These cases recall a less than terrific coach I once had who stood before our high school basketball team and stated "Men, this is no time to rest on your laurels because you do not have any."

Invest in the Future

We must commit the necessary people, time, and resources to our key diseases. Our strongest weapon is the creativity of our young members. We must give them time and resources. This will cost money and we must *do it.*

Training Programs

In many ways, our training strategies do not differ substantively from our predecessors of the turn of the century. Our programs still focus on service rather than education and we have been unsuccessful in providing a critical outpatient experience while under pressure from hospitals

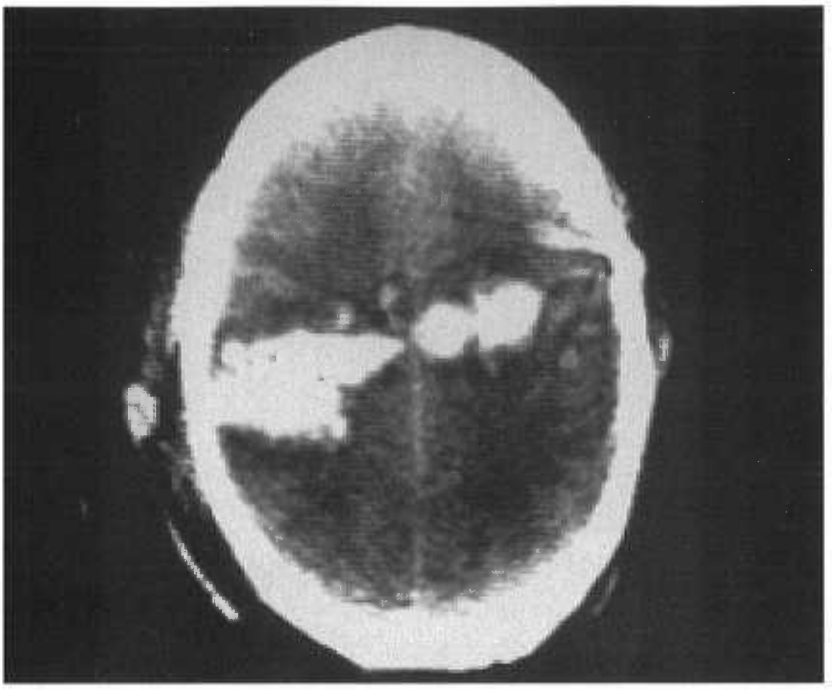

FIG. 1.10 GSW to the brain

and managed care organizations to minimize the days of hospital admissions. "The one size fits all" strategy is clearly anachronistic. We must critically rethink how we teach our young neurosurgeons knowing that we have a very finite resource that is increasingly under political pressure. In the next year, graduate medical education funding could become a line item on the federal budget subject to political whim. Let us go forward and alter our training methodology to optimally train our residents for the job they will in fact be doing, not the job their professors are doing. We need to strive for education, not indentured servitude.

Don't Wait

Do not wait to see how the next century and the next millennium will treat us. We will not get lucky. We must attack the future.

General Patton found himself positioned at precisely the right place at precisely the right time with precisely the right instrument. At this moment, we share many of those strategic advantages. We are poised for a true *Renaissance in Neuroscience* using the creative and intellectual horsepower that we have assembled which can harness and direct

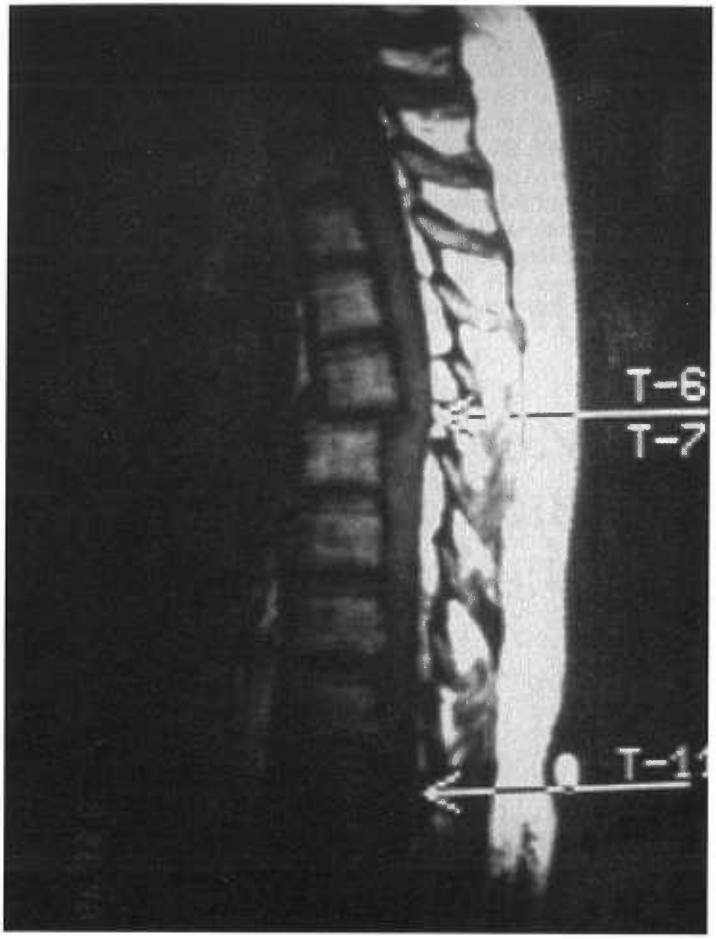

FIG. 1.11 Thoracic spine fracture, dislocation

the marvelous new technologies that have emerged. If we do this right, we will have launched a new golden age of better care, fewer diseases, and quicker and more complete recoveries. If we keep our eyes on "the ball" and focus on the long term goal of improving the public's health, we too will soar like eagles into an unimaginable future and be remembered as "the best there ever was" and "the best there ever will be."

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