American Burn Association 1988 Presidential Address
“We Can See So Far Because …”

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"If I have seen further (than you and Descartes) it is by standing upon the shoulders of Giants."
— Sir Isaac Newton
Letter to Robert Hooke 1675

These words convey my feelings about the truly impressive advances in burn care that have occurred by the 20th anniversary of the American Burn Association. The annual Federal expenditure for research in cancer, heart disease, and stroke is more than 15 times higher than that for trauma and burns. This despite a loss of many years due to injury greater than cancer, heart disease and stroke combined. Nonetheless, in no field of medicine and public health during the past 20 years have advances in survival and overall morbidity been so great as they have in the care of the severely burned patient. Despite billions of dollars of research, the outcome from solid cancers, such as breast, colon, lung and other visceral tumors, has been unchanged for past 30 years. Coronary artery bypass grafting has improved quality of life, but it is not clear that it has really influenced overall mortality. Even the current promotion of aspirin in preventing myocardial infarction does not make it clear whether aspirin really prevents infarction or merely delays it. CT scanners, intracranial pressure monitoring, and MRI devices have not changed the outcome from head injury. On the other hand, the number of burn deaths in the USA has decreased from 15,000 in 1970 to 6,000 in 1986. The size of burn that permitted only a 50% survival has increased from 30% of the body surface to over 70% of the body surface. Hospital stay has been cut in half, and patients are back to work and school sooner than ever thought possible. Ninety percent of the patients admitted to many burn centers return to their pre-burn physical and social situation within a year of their burn.

These changes did not take place overnight, nor did they occur through the efforts of a very few. Why have these changes occurred, and who brought them about? Who are the people listed in Figure 1 as Past Presidents of the ABA? What did they do? Why are there Evans, Allen, Artz, Moyer, Fox, and Lindberg awards? The joy of a young specialty is that all but three of our 19 past presidents are still with us, and all of them are still actively

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Advances in medicine rarely come from "breakthroughs," despite the almost daily reporting of them by the media. Rather, many people make many tiny steps that in aggregate lead to major changes. The many changes that came during the tenure of our past presidents have been in several specific areas.

Burn Institutes and Burn Centers

The realization that burn victims should be cared for in a special facility first occurred to Syme, who operated a whole hospital for burns in Edinburgh in 1848. It took another 100 years and three major U.S. wars (Civil War, WWI, WWII) before the military, who knew that 4-10% of battle injuries were burns, established a treatment and research institute dedicated to the study of burn injury and its complications. In 1947, the U.S. Army Surgical Research Unit was founded under the command of Colonel Edwin Pulaski. He was followed by Colonel Curtis P. Arzt, the first President of the ABA. Dr Arzt was a small, gregarious man with an elfish smile, a wry sense of humor, and the ability to inspire in all those around him their best efforts. Because Dr Arzt clearly recognized the need for a multi-disciplinary team to care for the burned patient, he has also been remembered through the Curtis P. Arzt distinguished service award to a non-physician ABA member.

In 1961 Dr Arzt passed the USASRU command to Colonel John A. Moncrief, your third President. Jack Moncrief put Tyrone Power to shame as the prototype handsome soldier. Far more important than that, he was a charismatic leader, a gentleman and a gentle man who became the role model for dozens of young academic surgeons. Because of ill health Colonel Moncrief retired in 1968 and left the helm of the Surgical Research Unit, soon to be called the United States Army Institute of Surgical Research (USAISR), to a capable young Colonel, recently back from Viet Nam, Basil A. Pruitt, your eighth President. Dr Pruitt, with his regal military bearing, his half-inch hair wafting in the breeze, and his incisive mind is living proof that even a bureaucracy as cumbersome as the military can keep a superb leader at the same duty station. Dr Pruitt celebrated his 20th year as commander in 1987. To this trio, we must add our 12th President, Dr Arthur "Dick" Mason. Dr Mason has served as the civilian Director of Research at the USAISR for 32 years. Dr Mason’s quiet manner, quick wit, eloquent ideas, his computer-like brain, and his scrupulous intellectual honesty have served the burn community immeasurably. Under the leadership of these four giants the USAISR has published over 875 peer-reviewed scientific papers and untold chapters and books.

The USAISR must be given major credit for the revolution in burn care that has occurred in the past 30 years. It deserves the credit for three reasons. First, for its immense research productivity. Among the major research contributions of the ISR are a better understanding of the physiology of burn shock and the development of the Brooke Formula for resuscitation; the early recognition

Fig 1. Past presidents of the American Burn Association 1969-1987

making contributions to our specialty. Realizing that many readers are relatively new to burn care, and in honor of the ABA’s 20th anniversary, it seems appropriate to review some of the dramatic improvements in burn care, and to review the roles that the ABA and its members, especially our past presidents, have played.

I saw my first burned patient as an intern at Parkland Memorial Hospital in Dallas in 1964. At that time we were all proud of the advances that had been made in the two decades since WWII. Harvey Stuart Allen, for whom our award given to "a distinguished scientist who has made a lifetime of contributions to burns" is named, had introduced petrolatum gauze and bulky dressings for burn wounds in hopes of decreasing edema and absorbing exudation to keep the wounds clean. While neither goal was achieved, the dressings were in common use and had gained great favor with the military who provided them pre-packaged for use in the field. Resuscitation was now generally successful for all but the most severe burns. The first power-driven dermatome, the Brown electric, conceived by Dr Harry Brown while he was a Japanese prisoner of war taking care of burn victims in the Philippines, was in routine use. This dermatome enabled even an inexperienced surgeon to take consistent skin grafts in widths up to three inches. That year there was a report by Tanner and Vanderput of a device that would enable the broad expansion of skin grafts by cutting small slits in them. Patients with large burns often died in the second to fourth week with negative blood cultures; it was previously thought they had died of "exhaustion." It was now known that despite negative blood cultures, they were dying from gram negative bacterial burn wound sepsis. Pseudomonas aeruginosa, previously thought to be only a saprophyte, had become a deadly pathogen, and a rapidly increasing formulary of new antibiotics had had little effect on overall survival. The numbers of gram positive cocci had decreased, but the vacuum was filled with gram negative rods, for which treatment was still meager.

1969 Curris P. Arzt MD
1970 Boyd W. Haynes MD
1971 John A. Moncrief MD
1972 Robert M. McCormack MD
1973 Charles R. Baxter MD
1974 Bruce G. MacMillan MD
1975 John A. Boswick MD
1976 Basil A. Pruitt MD
1977 William W. Monforo MD
1978 Alan R. Dimick MD
1979 Duane L. Larson MD
1980 Arthur D. Mason Jr MD
1981 Charles E. Hartford MD
1982 John F. Burke MD
1983 Francis C. Nance MD
1984 P. William Curreri MD
1985 J. Wesley Alexander MD
1986 Martin C. Robson MD
1987 Joseph A. Moylan MD

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that burned patients died from sepsis, not metabolic collapse; the characterization of burn wound sepsis; the development of Sulfamylon (mafenide) cream used topically to control bacterial colonization; and more recently, continued in-depth studies of the endocrine system and of the hypermetabolism of the burned patient.

Second, it served as the prototype burn center, providing excellence in patient care, teaching, and research. During Viet Nam, the USAISR became the benchmark for survival for adults with major burns, and they proved that severely burned patients could safely be transported long distances if their initial care was proper.

Third, wars seem to make quantum leaps in trauma related research, perhaps not because of the many casualties, but more likely because of the impressment of large numbers of intellectually curious bright young surgeons. Korea and Viet Nam brought to the USAISR a river of hand-picked "yellow berets," such as myself, who were able to serve their country and to advance medicine at the same time. The USAISR has spawned 15 department chairmen, 60 Professors, 25 Associate Professors, and 24 directors of major burn centers, a record unrivaled by any institution celebrating only its 41st birthday. Despite its original research, this roster of alumni is the USAISR's greatest achievement. In our lifetime each of us will be lucky if we make one important individual contribution, but if we train several people who each make one and then train others, our impact grows logarithmically.

Three burn dedicated hospitals for children were conceived in the early 1960s by the Shriners of America. The Shriners also had the foresight to provide extensive research space and financial commitment to research, in addition to clinical care. The first directors of all three of these hospitals have served as President of the ABA.

The first Shriners Burn Institute opened in Boston with Dr. John F. Burke, 14th President (1982), as its director. Dr. Burke's achievements are legion: he was among the first champions of early burn wound closure, and he presented unprecedented survival of massively burned children brought about by using early excision of the burn wound, laminar flow isolators, and immunosuppression so that fresh allograft could be used as a proctected temporary wound cover. In addition to his myriad metabolic and physiologic contributions, in collaboration with Ioannis Yannas at MIT, he developed a synthetic collagen mat that serves as a template for host macrophages to make a "neoderms" leaving a durable, permanent cover when overgrafted with thin epidermal grafts.

Dr. Bruce MacMillan, sixth President of the ABA (1974), was selected to be the director of the Cincinnati Shriners Hospital. Dr. MacMillan was trained at the USAISR, and he was joined in 1966 by another young USAISR surgeon, Dr. Wesley Alexander, who became your 17th President in 1985. Under the guidance of these two leaders more than 400 scientific papers have materialized from the University of Cincinnati and the Cincinnati Shriners Hospital. Like Dr. Burke, Dr. MacMillan was a pioneer in early burn excision and grafting, and Dr. Alexander has been a giant in helping us understand the effect of infection on white blood cells and the activation of complement by the alternate pathway.

Dr. Duane Larson, ABA 11th President (1979), took the helm at the Galveston Shriners Burn Institute. Dr. Larson, the second plastic surgeon to become ABA president, raised our consciousness toward the surviving burned patient, and forever changed our practices. We better understood hypertrophic scarring and were introduced to the "dreaded myofibroblast who never sleeps." The role the myofibroblast plays in scar formation remains controversial, but not the contributions of Dr. Larson. Physical and occupational therapists became members of the burn team on admission rather than at discharge, and pressure treatment of scars, and dynamic splinting techniques developed in Galveston have been widely accepted.

The superb care provided these specialized Centers brought the realization that those caring for the burned patient needed special skills that could only be maintained by constant use, and that concentrating people with these skills in specialized facilities was cost effective. In 1947, Everett Evans, in whose honor our "award to a non-American scientist for burn research" is named, established a four-bed burn research unit at the Medical College of Virginia with support from the Navy. Although some may dispute it, the unit at Richmond is generally considered to be the first civilian burn facility in the U.S. The current ABA directory lists 186 self-designated burn care facilities in the United States, with 35 of them having 15 or more dedicated burn beds.

Resuscitation

In 1952, Dr. Evans published the first successful surface area/weight formula for computing fluid replacement in the seriously burned patient. He was joined in Richmond the following year by Boyd W. Haynes, ABA second President. Dr. Haynes, known to us all as B. W., continued Evans' work and became a major contributor to our understanding of fluid requirements following burns. Dr. Evans measured the decreases in plasma volume after burning and then doubled that amount for resuscitation. The Evans Formula recommended 1 ml. whole blood and 1 ml. of saline per kgm per percent TBSA burn. Using the Evans formula as a model, based on their extensive clinical experience with soldiers at the USAISR, Drs. Artz and Moncief modified it to give plasma rather than whole blood, and to increase the amount of crystalloid to 1.5 ml. while decreasing the amount of colloid to 0.5 ml. This modification became widely known as the Brooke Formula. It became the standard for the next two decades. In the 1960s, Charles Baxter, ABA fifth President (1973), working with the support of G. Tom Shires, this year's Harvey Stuart Allen Awardee, developed the "Parkland" or "Baxter" formula. Based on careful measurements of the red cell, plasma, and extracellular spaces, Dr. Baxter learned that colloid molecules do not remain intravascular during the first 24 hours. Thus, his formula recommends giving only crystalloid during the first 24 hours and

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colloid thereafter. The Baxter formula has been adopted by the American College of Surgeons, and, its ease of use, and the readily available, inexpensive fluids used have ensured survival without renal failure for thousands of burn victims initially seen in unsophisticated treatment facilities.

Infection Control

"Stuff" — everything from red wine to swine semen mixed with resin and bitumen — has been applied to burns. These nostrums either had little effect or they ceased severe systemic toxicity. It was not until the 1960s that effective nontoxic, antimicrobial agents were found. At the USAISR, Colonel Robert Lindberg, the microbiologist for whom our prize for the "best research paper by a non-physician" is named, devoted his life to the study of pseudomonas sepsis and the development of Sulamycin (mafenide) cream, which for many years was known as "Lindberg's butter." At the same time Dr William Monafa, our 9th President (1977), working with Dr Carl Moyer, for whom the "best research paper by a resident in surgery" is named, reported remarkable infection control using 0.5% silver nitrate solution in cotton dressings. Soon thereafter, Dr Charles Fox, at Columbia, for whom the "traveling fellow" award is named, compounded many combinations of silver and sulfan in hopes of providing a cream with the advantages of both silver and sulfan without their disadvantages. He succeeded with the 100th combination he tested, known then as CF-100 (Charlies Fox 100) which was to become the most widely used topical agent in the world — silver sulfadiazine.

The development and use of topical antimicrobial agents prevented, or at least delayed, infection in the burn wound. Survival improved for moderate burns, but, unfortunately, there was really little impact on survival for patients with burns larger than 50% TBSA. Paradoxically, these agents also increased hospital stay, as better control of the bacteria led to slower eschar separation from the granulating bed which delayed the patient's grafting procedures. However, at present, in conjunction with the early excision of deep wounds, topical agents delay infection while the patient is between operations, thus contributing in a major way to survival.

American Burn Association

Dr Alan Dimick, in his 1978 presidential address, chronicled the first 10 years of the American Burn Association. The fear of nuclear holocaust with its potential millions of burned casualties prompted the military to take an uncommon interest in burns following World War II. In 1953 and 1954, small seminars on burns were sponsored by the U.S. Navy in San Francisco. A national burn conference was held at the USAISR in 1955. Through the organizing efforts of Irving Feller (first Treasurer of the ABA), Edward Vogel, B. W. Haynes, and Bruce MacMillan, the National Burn Seminars were begun. The first was held at the USAISR in December 1959 with 13 surgeons attending, representing nine medical centers. The National Burn Seminars continued at regular intervals, as outlined on Table 1. The meetings lasted a day and a half with round-table and panel discussions. The attendance continued to grow, and by the Dallas seminar in 1966, the idea for a national organization representing all burn team disciplines was born. Dr Baxter, the host, appointed a committee to develop plans and bylaws. Curtis Arzt was Chairman and the other members were John Boswick, John Kinney, John Moncrief, Bruce MacMillan, and Robert McCormack. On October 26, 1967, the day before the Eighth National Burn Seminar in Birmingham, AL, the committee met to finalize the constitution and bylaws of the new organization. It was one of the first medical organizations to recognize all the members of the burn care team. It was to be called "The American Burn Association" and there would be physician members and non-physician associate members. The first officers were selected — the President was Curtis Arzt, the President Elect was B. W. Haynes, the Vice President was Jack Moncrief, the Secretary John Boswick, Treasurer Irving Feller, and Bruce MacMillan was Chairman of the Program Committee.

Table 1. Burn Seminars 1959-1967

<table>
<thead>
<tr>
<th>Year</th>
<th>Place</th>
<th>Host</th>
<th># Present</th>
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</thead>
<tbody>
<tr>
<td>1959</td>
<td>Brooke</td>
<td>Vogel</td>
<td>13</td>
</tr>
<tr>
<td>1961</td>
<td>Richmond</td>
<td>Haynes</td>
<td>28</td>
</tr>
<tr>
<td>1962</td>
<td>Ann Arbor</td>
<td>Feller</td>
<td>22</td>
</tr>
<tr>
<td>1963</td>
<td>Galveston</td>
<td>Blonder</td>
<td>35</td>
</tr>
<tr>
<td>1964</td>
<td>Cincinnati</td>
<td>MacMillan</td>
<td>54</td>
</tr>
<tr>
<td>1965</td>
<td>Chicago</td>
<td>Boswick</td>
<td>56</td>
</tr>
<tr>
<td>1966</td>
<td>Dallas</td>
<td>Baxter</td>
<td>82</td>
</tr>
<tr>
<td>1967</td>
<td>Birmingham</td>
<td>Dimick</td>
<td>207</td>
</tr>
<tr>
<td>1968</td>
<td>ABA formed — No meeting.</td>
<td></td>
<td></td>
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<tr>
<td>1969 (ABA)</td>
<td>Atlanta</td>
<td>Arzt</td>
<td>336</td>
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</tbody>
</table>

Since that modest beginning, the growth and development of the ABA has been nothing short of spectacular. Membership at the time of the first meeting was 300 and there were 336 attendees. There are currently nearly 4000 members and a meeting attendance of 1700 (Figures 2 and 3 indicate the growth of the meetings and the organization). The meeting itself has swelled from 1.5 days to 3.5 days, and now includes 16 special interest group meetings and 29 breakfast discussions. At the original meeting there were 70 papers presented at two parallel sessions, one "research" and one "clinical." In 1988, there were 184 papers presented in four parallel sessions in addition to three plenary sessions.

For an organization only 20 years old, the ABA can hold its head high. It clearly has become the national forum for education and dissemination of current research in burns. We own 51% of the stock in our official journal, The Journal of Burn Care and Rehabilitation, which was listed in the Index Medicus last year. Our Standards for Optimal Care of the Burn Patient have been adopted by the American College of Surgeons. Standards based on these guidelines are sure to be federally mandated within

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the next few years. We have compiled a directory of self-designated Burn Treatment Facilities. We have also made burn care "respectable" as a discipline. There exist several burn fellowships, the burn nurse shortage is no worse than in other areas of the hospital, and the dramatically shortened hospital stay and improved functional and cosmetic results no longer make the burn ward a place to be shunned.

Yet we still have fundamental goals to achieve. Burn care is not yet "glamorous," and there still exists a deprecating tone in the voices of some surgeons who still feel that "It's only a burn; anyone can take care of that . . ." This is the heritage we have left ourselves by many years of permitting burn wounds to separate spontaneously and by our willingness to be satisfied with haphazard grafting. We are gradually changing the archaic attitudes of our colleagues, but it will still take time. The Federal government has already determined that it will pay proper reimbursement for "outlier" DRGs only to "burn centers." Next year, I am told, the government is going to use our Directory of Burn Care Facilities as its guide. Very soon, however, the government will require that burn care facilities be accredited. We and our patients likely will be best served if we accredit them ourselves, rather than waiting until an unknowledgeable bureaucratic committee does so for us. We still need national stand-

ards for burn nursing and therapy, guidelines for burn fellowships, and better education for emergency room and community hospital personnel.

All of our Presidents have been strong leaders. Some are best known for their basic research, and others have guided our course toward the above achievements. Dr. Robert McCormack was the first plastic surgeon to be President of the ABA in 1972. He legitimated us in the plastic surgery community and in his presidential address he exhorted us to consider the burn victim as more than just a statistic. Dr. John Boswick, a founder of the ABA and its first secretary, was also one of the organizers of the International Society for Burn Injury (ISBI). He carries our banner to the ISBI and to the World Health Organization. Dr. Boswick has also served as the Secretary General of the ISBI for the past 10 years. Dr. Charles "Ed" Hartford's questioning mind always required us to prove what we spoke. His Presidential Address in 1981 reminded us that topical agents really hadn't had the impact that we had hoped, and he urged us to carefully begin gathering data so that we didn't get led down the same garden path with our enthusiasm for early excision and grafting. Francis "Carver" Nance served on our Board of Trustees for 12 of our 20 years and helped in a major way to bring us recognition among the other academic societies in the United States. Alan Dimick has provided major influence for us in the federal arena, acting as liaison with the Coalition of Burn Center Hospitals, and working at the national level with Congress.

Physiologic Response/Monitoring

The development of intensive care units and their associated technological revolution have provided precise information about the metabolic and pulmonary response of our patients to their burn injury and often associated smoke inhalation. Progress has been sufficiently rapid in this area that a whole new specialty has evolved — critical care. At some point in the near future, payors and hospital administrators will require critical care board certification for anyone caring for patients in intensive care units. Although the American Board of Surgery initially resisted granting certificates of special competence in surgical critical care, in 1986 they established a certificate attained by written examination. In 1992, certification will also require the examinee to have completed a special fellowship in surgical critical care. Burn fellowships, along with trauma and general surgical critical care fellowships, are recognized as legitimate pathways toward eligibility for the surgical critical care boards.

Despite the information explosion describing the altered physiology of the severely burned patient, we still haven't learned what to do about it. While space does not permit listing of all the physiologic contributions made by our members and past presidents, there are three areas which come to mind where we have successfully intervened to change outcome.

In the 1960s about 50% of all burned patients devel-
oped stress ulceration of the stomach and duodenum. These so-called Curling’s ulcers were a devastating source of GI hemorrhage and perforation, and they were a leading cause of death. Gastric acid secretion was usually normal, so antacids were not used. Only as we began to understand that the defect was not in abnormal acid production but in the gastric mucosa itself, damaged by back diffusion of H+ ions, ischemia, and inadequate mucosal cell proliferation were we able to intervene. Provision of adequate nutrition, gastric pH monitoring and acid neutralization with antacids and histamine blockers have made these ulcers now of historical significance only. At the University of Washington, we have seen only two stress ulcers in the past 2300 admissions, both in patients untreated prior to transfer to our center.

Starvation is characterized by progressive lethargy and a decrease in metabolic rate. As tragically learned in Ireland, death usually occurs at about 60 days. In the 1960s the burned patient often died from pneumonia and multi-system failure at about 20-30 days. Although not so apparent then, these patients, with a metabolic rate about twice normal, actually died of starvation. Technology brought us the means to provide nutrition, both through central veins and with small nonirritating intestinal feeding tubes. Dr. P. William Currieri, the 16th President, provided the first formula to calculate the impressive caloric needs of the burned patient based on body surface and size of burn. Most of us still use the Currieri formula in some modified format. Starvation is now rare; in fact, a more common problem is overfeeding with patients continuing to eat vigorously after discharge and returning to follow-up with a portly waddle.

Many of our leaders have helped us understand the pathophysiology of smoke inhalation, but treatment for the most part still remains symptomatic. Dr. Joseph Moylan, 19th President, however, in a classic blinded clinical study, showed that steroids increased mortality and infectious complications in burned patients with smoke inhalation. Since that study, steroids have been universally condemned for use in the burned patient, not only for smoke inhalation, but for nearly all other purposes as well.

Early Wound Closure and Early Reconstruction

The pioneering efforts of our pioneers in the 1950s and 1960s have already been discussed. At that time all of the excisions were block excisions including skin and subcutaneous fat down to the investing muscle fascia. When other surgeons attempted these awesome procedures they soon became discouraged because of poor graft take, unimproved mortality, and the greatly intensified surgeon time that was required. When topical agents appeared, most burn surgeons breathed a sigh of relief, and whisked early excision back into the closet.

In 1974, Zora Janzeckovic from Yugoslavia presented the Evans Lecture at the ABA meeting. She described her technique of progressive shaving of eschar until a punctate bleeding bed was reached. Graft take and final appearance were excellent. A new era in burn care had begun.

While it is not entirely clear by what degree intensive care units have improved patient outcome, there is little question that improved monitoring capabilities in the operating room have enabled burn surgeons to now achieve one of our primary goals — timely wound closure. Despite the obvious philosophical advantages of rapid wound closure, at first, results improved only slowly because surgeons needed first to develop considerable experience to learn how deeply to excise the burned tissue. Too shallow an excision led to poor graft take, and too deep an excision permitted excessive blood loss and sacrifice of normal tissue. Nonetheless, early wound closure is now well established, and the new pioneers of this technique, which is now only becoming universal, have not yet had time to become ‘past presidents.’

In the patient with the major burn there has always been a tendency to save the patient’s life and let the plastic surgeons sort out the functional and cosmetic problems later. Even more unfortunate, many times this behavior extended to patients with less than life-threatening burns. My association with Dr. Loren Engrav, University of Washington Chief of Plastic Surgery, forever convinced me that this attitude was unacceptable. For the past ten years he and I have been advocates of “Early Reconstruction” or “Do It Right the First Time.” Another advocate of this plan became, in 1986, the third plastic surgeon to be president of the ABA, Dr. Martin Robson. Dr. Robson has made many scientific contributions, but he has also helped to elevate our consciences in taking advantage of plastic surgical techniques in the acute setting.

Advances in plastic surgery techniques have enabled patients to leave the hospital with extremities in place that a few years ago would have been lost. Wounds that would have remained unhealed for months can now be primarily closed. Hands now function when they previously would have been mitrers. Microvascular free flaps, toe to hand transfers, and the newer myofascial and myocutaneous flaps have all had major impact on previously mutilated parts. Tissue expansion is still developing as a way to bring unscarred skin to scarred areas.

By 1988 several conclusions about early wound closure can be reached. It is clear that early excision and grafting has not increased mortality as was feared by some. There is an increasing body of data to suggest that mortality is improving in centers that perform it regularly. Major improvements in mortality in the massive burn, however, still await our ability to not only remove the wound, but to permanently close it at the same time despite limited availability of donor sites. Hospital stay has been halved in centers that excise full thickness burns and deep dermal burns that will require more than three weeks to heal spontaneously. In our own center, patients needing major reconstructive procedures have decreased from 20% of discharges to approximately 5%. As a consequence of shorter hospitalization, a more durable skin cover, and little need for reconstruction, the patient’s time away from work or school has also significantly decreased.
It is clear that early and proper wound closure is here to stay. Furthermore, the time has come to stop talking about our successes in burn care by considering only survival. Our techniques now can assure survival of most of our patients. Their quality of life, however, is not yet so secure.

Prevention

In the past 20 years several critical legislative actions have had an impact on burn mortality. Flame resistant sleepwear have protected our children. The smoke detectors that are now required in all rental and new construction, as well as the widespread publicity and easy availability of inexpensive detectors for every home, are primarily responsible for the major decrease in mortality from burns since 1970. Several states now mandate a lowering of hot water heater temperature. A self-extinguishing cigarette bill may soon become law. From an education standpoint, the Stop Drop and Roll program is almost universally known by all school children.

Where Are They Now?

Except for Dr Fox, the giants for whom we have named our awards and three of our past presidents, Dr Artz, Dr Moncrief, and Dr MacMillan have passed away in body, but not in spirit. Dr McCormack is retired. Dr Curreri is a surgery department chairman. Dr Robson is chief of a plastic surgery division. Dr Nance is chief of surgery at a large private hospital, and Dr Larson is in the private practice of plastic surgery. Dr Boswick spends most of his time with his duties with the ISBI and as a hand surgeon. But, attesting to the allure and challenge of caring for the burned patient all the ten other past presidents are still active on a daily basis either doing research or actively caring for burned patients.

The Future

In the next ten years ten new presidents will address us. In 1998 the 30th President might also consider reviewing the past ten years. Although I can't even accurately predict what will happen tomorrow, it is far safer to predict ten years hence, since I am less likely to be held accountable. I predict that in his or her Presidential Address the President will make comments about the following:

1. Once again there will be quantum leaps in burn care compared to cancer, cardiovascular disease, and AIDS despite billions of dollars expended on the latter diseases.
2. Papers about early wound closure will talk about advanced surgical techniques and no longer debate its value. Lasers will permit precise excision, so that no viable tissue is sacrificed. A computerized burn depth indicator will be widely used to guide the surgeon in patient selection for excision.
3. A permanent skin substitute has become widely available. It will likely be a synthetic dermis which can be seeded with the patient's own rapidly grown, cultured epidermal cells.
4. Genetically engineered growth factors are being used to speed healing but results are not as good as hoped. The lag phase has been decreased in the compromised host, but only a few days difference in healing time is found in otherwise normal patients. However, a reliable and painless donor site dressing with incorporated growth factors is widely used.
5. Pain will be controlled by new drugs that interact with the endorphin system. Hypnosis and relaxation therapy will be in common use.
6. Twenty-five new generations of antibiotics have had no impact on anything, save the development of new microorganisms that can only be killed with a sledge hammer.
7. In addition to burned patients, patients with serious wounds and those with severe skin sloughs, such as Toxic Epidermal Necrolysis, will be treated primarily in burn centers.
8. Nearly all deep burns are cared for in burn centers because the Government will only pay for burn center care for burns. The burn centers will have to be accredited by the ABA, and all burn center directors will have to have passed their critical care boards.
9. There will be a national burn nursing and OT/PT curriculum.
10. The "magic bullet" to stop post-burn edema and hypermetabolism is still "just around the corner."
11. Invasive intravascular lines have been replaced by cutaneous sensors.
12. Several small steps in preventing hypertrophic scar have been made.
13. The immune system abnormalities have been reversed.
14. The ability to provide a closed wound and a normal immune system have halved mortality again.

The past may be ours, but the future is yours. Into your hands the torch is passed, and I rest secure, knowing upon whose shoulders our future generations will stand in order to see so far.

References

2. Special thanks and acknowledgement to Dr Gerald Kaplan, curator of the MacMillan Burn Library at the Alta Bates Medical Center in Berkeley, for providing the early programs of the Burn Seminars and the ABA meetings.