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**ORATION: Daktari: The Emerging Endangered Species**

I would like to thank the Worcester District Medical Society for offering me the opportunity to deliver the 183rd Annual Oration. Furthermore, I consider it a very special honor to have the privilege of delivering the first oration to be given in our new home here in Mechanics Hall. I commend Dr. Morse and his committee for pursuing our location dilemma and finally selecting such a beautiful and historic place.

Legend has it that Sir William Osler, one of the great fathers of modern medicine, once remarked to a graduating class of medical students that 50 percent of what he taught was incorrect but, unfortunately, he was unable to tell the graduates which 50 percent that was. If anything, this little story testifies today to the dilemma of modern medicine and its related specialties. To some extent it also testifies to my dilemma in attempting to select an appropriate subject to present to such a diversified and distinguished specialty group as we have here in the Worcester District Medical Society.

Having researched as many orations as I could locate since the first oration delivered in 1795, I was able to find only one that dealt strictly with specialism. This oration was given by a Dr. Albert C. Getchell and his title was "Specialism in the Practice of Medicine". I was intrigued by the variety of the subject material and the chronology of events all of which were excellently reviewed in Dr. John Massarelli's oration published in May of 1973. Likewise, I was surprised to find that a few of the orators accepted their commitment lightly for some of them never showed up for delivery of their oration; some totally unprepared; a few postponed; others died and one, a Dr. Emerson, was in Siberia without a substitute. Although I have never visited Russia, I have traveled extensively in Africa and Dr. Emerson's excursion led me to think seriously of traveling to some such exotic place at the appointed time. In any event, I have not fled the country and in fact, am very happy to be right here in good, old Worcester, U.S.A.

Since I have been fortunate to have spent considerable time traveling in Africa, I have a feeling that when Dr. Edward Kilroy originally approached me about delivering the oration, he had an idea that my speech would have African overtones with native dancers on stage and jungle drums in the background. I am sure he looked forward to seeing a slide on the twenty minute mating excursion of the lions or an open revelation and answer to the baffling questions of why does the female ostrich's legs turn pink when she has sex on her mind. To be truthful, I have accomplished some research on the subject but felt that in the long run, I should adhere closer to my surgical specialty and present interest, which happens to be emergency medicine.

What is today's cure is tomorrow's poison and in order to keep abreast of the changing scene in clinical medicine, we physicians as specialists and practitioners of this noble art must constantly be akin to updating and improving our knowledge. Today there is no field so relevant to change as in emergency medicine.

Emergency medicine is medicine's newest specialty and is less than ten years old. Who would have thought, twenty years ago, that emergency medicine would develop into an individual specialty? In the past, as a practicing surgeon in the hospital, the emergency ward was always

under the control of the general surgeon although he might not always want to admit responsibility. However, from personal experience as a general surgeon, I have enjoyed being an integral participating force associated with the drastic changes taking place.

You might characterize the past ten years for emergency medicine as a "decade of contrasts". In 1968 there were very few emergency services that were under the medical direction of full-time specialty trained and/or experienced physicians. To create enthusiasm for medical staff coverage of the emergency ward in the hospital resulted in a major problem involvement. Outside the hospital, paramedics, as well as medics, were likewise involved in the throes of these changes. An effective preventive approach to skill deterioration of the paramedics was constantly promulgated along with educational advancement in the teaching of technicians, nurses and physicians. Through continued education of all personnel, most states have now legislated mandatory programs of certification and recertification. Much of this responsibility for education rests with the emergency physician and his specialty peers who must be involved with all aspects of these programs. Hence, I have chosen emergency medicine as the main theme of my oration.

For those of you who speak Swahili know that the word *Daktari* in my title, means Doctor, Can this emerging upcoming *daktari* survive along with the newest of medical specialties, or will he continue as an endangered species vying for survival in the dense jungle of medicine?

What I propose to do is to take you on a quick airplane flight through past centuries. I will touch only on the tall peaks from which we may see a panoramic view of the epochs through which emergency medicine has evolved. I conclude with my assessment of where we now stand and the future survival of the emergency physician and his specialty.

Having been deeply involved in emergency medicine for the past ten years as a surgeon both part time and more recently full time, some of the experiences I relate are my own and others from personal research, association and contact. If by chance some of the dates are incorrect, or important events overlooked, I trust that my colleagues will forgive me.

## **Evolution Of Emergency Medicine**

Emergency medicine dates back to the time of Adam and Eve. Emergency medical services were certainly needed when Cain, son of Adam and Eve, attacked and killed his brother, Abel. It has been stated that Abel would have probably survived had he had access to our present modern mobile ambulance unit, our well trained Emergency Medical Technicians and an adequately equipped and staffed hospital Emergency Department. Thus, in the time of Adam and Eve, the seed of emergency medicine was planted. The species began to grow and *Daktari* was born.

From this early day in primitive man, we can trace the evolution of emergency medical services as the earliest known *Daktari* learned his first lessons in emergency medicine by way of treating injuries, accidents, bites of beasts and serpents all of which were not appreciated for a long period of time. Later on, rapid advances in emergency medicine came in times of war. Thus, we look at the French wars during the Renaissance with Ambrose Pare, The Crimean War with Florence Nightingale, the horse drawn ambulances of the Civil War with Clara Barton, the World War I Letterman ambulances, the bush planes, ships and parachutes of World War II and the helicopters of the Korean and Vietnam Wars, all of which played an important part in the development of emergency medicine.

Magic in healing is regarded as the lineal ancestor of modern medicine. Both religion and medicine took origin in magic in what is labeled as "Spiritual Protoplasm" by Jane Harrison. Out of this spiritual protoplasm of magic has evolved the priest, the philosopher and the physician.

From the midst of antiquity emerged the first figure of a physician - Imhotep - god of medicine in the stone age, who was a philosopher as well as a physician and a friend and guide of the King of Egypt. His name and reputation lingered for 2500 years after his death. One could only succeed in those days by powerful magic, be an expert in reciting incantations and skillful in making amulets, then using medicine to contend with the disorders. Hence, it came about that diseases were due to spirits. For thousands of years, records show that the Egyptians had a rich pharmacopoeia derived from animal, vegetable and mineral kingdoms. Then, in later years, in the time of early Greek medicine, specialism reached a high degree of development. Herodotus, a respected Greek physician, remarked that the country was full of physicians who were literally specialists, "one treating only the diseases of the eye, another those of the head, the teeth, the abdomen or the internal organs".

In 2000 B.C. came the famous Hammurabi Code, a body of laws, civil and religious, many of which relate to the medical profession. It was obvious from the enactment of the code that the medical profession was highly organized with detailed regulation of the practice, a scale of fees laid down and penalties enacted for malpractice. Emergency medicine was well on its way but not noted as such. I quote two paragraphs from the Code:

- #215 - "If a doctor has treated a gentleman for a severe wound with a bronze lancer and has cured the man, or has opened an abscess of the eye for a gentleman with a bronze lancer and has cured the eye of the gentleman, he shall take ten shekels of silver.
- #218 "If the doctor has treated a gentleman for a severe wound with a lancet and has caused the gentleman to die, or has opened an abscess of the eye for the gentleman and has caused the loss of the gentleman's eye, one shall cut off his hands.

A masterpiece of documentation of early medicine was written by Ebers in 1500 B.C, a superb document. At that time, surgery was not highly developed. but the knife and cautery were freely used. The treatment of emergency medicine with its pharmacological remedies was noted in Pliny's Natural History. Many of these were listed as derived from man but the majority were from animals such as the elephant, lion, camel, crocodile and at least seventy-nine from the hyena (a mysterious and ugly animal even today).

Then, in the ninth century, came the Hippocratic Oath which laid down the qualifications for the study of medicine. Throughout his writings, one finds an enrichment for life, and care and sympathy for the common man. Nowhere is this better expressed than in one phrase, "Where there is love of humanity, there is love of the profession". Physicians who sponsor and administer medical school admission committees would do well to review his writings further brought out, for example, in the qualifications for the study of medicine. "Whoever is to acquire a competent knowledge of medicine ought to be possessed of the following advantages: a natural disposition; instruction; a favorable position for the study; early tuition; love of labor; leisure". Over the years, we have all encountered practicing colleagues who did not live up to these qualifications, even though for twenty-five centuries, this has been the "Credo" of the profession and in many universities it is still the formula with which men are admitted to the Doctorate. As far back as 620 A.D., the Chinese were practicing acupuncture on an outpatient basis with inoculation of small pox in the eleventh century.

The earliest known surgical procedure is that of the extraordinary practice of trepanning. Neolithic skulls with discs of bone removed have been found all over the world. It was done originally to allow the confined demons, who were originally believed to be the causes of the diseases, a ready method of escape. Although a few emergency physicians may be brave enough to attempt trepanning, most of these procedures are carried out by neurosurgeons. Recently, I

attended a symposium on emergency medicine in California at which time a neurosurgeon was speaking on the over usage of x-rays in head injuries. His statement was, "Do not x-ray skulls unless you have good clinical evidence to warrant the procedure". With tongue in cheek, he made this statement sitting behind a 7 million dollar malpractice policy with 19 other neurosurgeons in the country being sued for over 39 million dollars.

Speaking of neurosurgeons reminds me of the story of the woman who wanted her husband to have a new brain. She decided to visit a famous Beverly Hills' neurosurgeon and told him her story. After a few moments thinking about the situation, he thought he could help her and ushered her into the bathroom in his office. There he pointed to three different brains on the shelf. He said, "This one here will cost you \$2000 a pound; it happens to be the brain of a poet. This one here will cost you \$5000 a pound - a brain of a physicist. This one here will cost you \$27,000 a pound. It's the brain of a neurosurgeon." "My!", she said, "How come this last brain is so expensive compared to the others?" "Well". he said, "Did you ever stop to think how many neurosurgeons it takes to make a pound of brain!"

Continuing on in the evolution of emergency medicine, it wasn't until after World War I when surgeons, after analyzing their overall results, discovered, with alarming concern, the inappropriate treatment of fractures. Following this finding, regional trauma centers were established in the major medical areas throughout the country, with support from the American College of Surgeons Committee on Trauma. Dr. Charles Scudder of Boston was a pioneer in this work, along with Dr. Robert Kennedy, both of whom became leaders in the treatment of trauma and transportation of the injured. Thereafter, various publications were forthcoming from 1939 to 1960 on the management of soft tissue injuries and fractures. One outstanding publication from the American College of Surgeons, and edited by Dr. Kennedy, was entitled "Emergency Care of the Sick and Injured": Not until 1966, did the National Research Council show their interest by publishing a booklet entitled "Accidental Death and Disability; the Neglected Disease of Modern Society"

With the government recognition of the need for better treatment of the emergency patient, there developed in the hospital setting, within the last twenty years, a marked advance in the organization and direction of professional and paraprofessional personnel. For the smooth running of an emergency department, this is paramount and will be with us for the next decade. Many demands have been created by the forces directing the professional and paraprofessional personnel which in turn have required proper accountability and responses.

Dr. David Wagner, in one of his recent lectures before the American College of Emergency Physicians, stated that now every day of our lives we all deal with four functioning components of medicine, namely - clinical care, education, research and administration. Many of our problems in emergency medicine, and in medicine in general, have resulted from the many changes and developments in these four components. This leads me to briefly review for you what has happened in the past and is happening today, in order to dramatize these changes and how they will affect emergency medicine.

Very little developed in emergency medicine between 1945 and 1965. Only a limited supply of money was offered by the government until Dr. Kennedy pointed out the need to upgrade emergency medicine and develop better facilities and professional care in the treatment of trauma. The government then came forward in 1955 and started pouring research dollars into medicine. At that time, anyone who could submit a research proposal, properly accepted, could obtain a grant. These monies continued to pour out until 1964 when two very significant developments occurred. One, medicare for the elderly, and two, medicaid for those unable to

pay.

At this point in time, research dollars stopped and clinical dollars began pouring into the medical schools. However, as with all dollars offered by the government, two constraints were applied to the giving of this money to the medical schools. These consisted of requiring medical schools to produce more doctors, especially family physicians, and with this increased production of physicians, to decrease the time it took to produce them. We all know what has happened. The medical schools are now turning out over 13,000 medical doctors with an increase in medical students admitted each year to medical school. If this keeps up, by 1982 we will have an overabundance of physicians with one medical doctor for every 450 people in this country. This may be critical for medicine and especially the emergency physician. Should this pattern continue, we may find ourselves manpower crazy in the next decade. What has happened to nursing in the past ten years may well happen to medicine. No longer do we have a problem in nursing personnel.

Another problem created along with numbers is increased specialization. Every medical student today graduates as a specialist. Rightly or wrongly, this is the way it is; and now comes the advancement in emergency medicine specialization which has proceeded with a rapidity that is unprecedented in medical history. Over 150 emergency trained physicians are now graduated each year from approved three year residency programs and more are being approved each month. Whether or not this interest will continue remains an unanswered question.

To further complicate these rapid changes in specialization, we must also deal with superspecialization and certification. Today, everyone wants certification in something. This is not limited to physicians. Nurses want it, paramedics, technicians and others. There are now 22 different specialties with emergency medicine vying for acceptance as the 23rd specialty this year.

Along with the inflow of dollars and demand for increased specialization, there results an increased demand for services. The public is constantly applying pressure to the hospitals and emergency wards by its increased demand for services. The motto is "more health care for everyone." Today, the public has come too much to rely on the emergency department for its routine and episodic care needs. Twenty years ago, what patient would have dared venture to the emergency room for treatment of a routine headache, sore throat or fever of two hours duration? The quality of care that patients receive in today's emergency department has markedly improved in accessibility timeliness and effect.

If all this be true, it is then a justifiable right of the patient to be seen by a physician who is appropriately trained or experienced and has demonstrated a satisfactory level of capability in emergency medicine. Thus the push for emergency medicine as specialty.

Most modern and well-equipped hospitals today are staffed by fully qualified physicians. By gradual evolution, the medical staffs are overcoming the politics of both organized medicine and hospitals and developing an implicit trust and respect of emergency medicine as a separate and adjunctive discipline.

Following the increase in demand and services there is, of necessity, an increase in demand for payment of these services. One thing leads to another and this increase in demand for payment has markedly increased our personal debt, locally, statewide and federally, in both Medicare and Medicaid. Statistics will warrant an emergency department receiving about 500 emergency room visits for every 1000 population. Out of this number, you can expect 40-50 ambulance calls and one to two transfers to tertiary care hospitals. Whether these statistics will hold up also remains to be seen.

Since all services demand payment by some method, this is carried out by cost contracts with each hospital who negotiates with third-party payers. Physicians negotiate separately, either with the hospitals or directly with the third parties. Until recently, when costs became astronomical, contracts were readily acquired and if costs zoomed upward, they were simply passed on to subscribers. Now this has ceased with inflation, so with spiraling costs, it is not unusual to note a \$500 a day expense in a medical school hospital. If not already accomplished, training of residents in the emergency department will no longer be allowed to be added to costs. Hopefully this may change for the benefit of the hospitals and the training programs. Most contracts provide for inpatient payment and leave the ambulatory setting a debatable financial problem. With cutbacks in ambulatory care, the emergency physician may well note a drastic reduction in the number of patients with its ensuing effect on the specialty. Furthermore, should not the family practice specialist receive the same compensation for the same treatment in his office that the emergency physician receives in the hospital setting? This, in itself, has created a physician demand for payment for equal services.

Because of the increased demands for emergency treatment and because about 10 percent of patients seen in the emergency department result in admission to the hospital, with anywhere from 15-50 percent of hospital inpatients being first examined in the emergency department, all hospitals have come to realize that the emergency department is a major source of inpatients. Hence, they are very anxious to foster the development of an active emergency department.

As a sidelight in the development of specialization and demands for educational development, we are now witnessing the production of a new species of practitioner the nurse practitioner - who is utilized in many ways and especially in the emergency department. Here, again, medicine finds itself with little input and traveling in different directions from the nursing profession. If we look at our hospitals today, there is very little input by the medical doctor toward the education of the nurse and who should control who has created a physician-nursing dilemma.

Now comes the question of developing some sort of solution to our many problems. Just what have we done to help straighten out this system of professional relationship and professional training, especially as it relates to trauma and emergency medicine. In the emergency ward over the past ten years, our patient-doctor relationship has changed. Where there were originally only two medical doctors concerned with trauma, the first and second responder, there are now some five responders from the undifferentiated emergency room medical doctor to the undifferentiated medical doctor specialist.

Because of spiraling costs, an attempt was made in 1978 by the government to place a 9 percent ceiling cost on all increases, but this was not passed successfully. It is difficult to believe that we can continue with such increased health costs. The maximum amount of money in percentage of gross national product ever spent by any sophisticated society is 11 percent. In the United States, we are now spending over 9 percent for health care. With these facts before us, I am sure that President Carter and Senator Kennedy will again bring this matter before the Congress in 1979. Cutting hospital costs directly is then one solution.

Peculiar as it is, our medical system rewards superspecialism. Rightly or wrongly, compare the cardiac surgeon with the family practitioner. Today, the differential is much less than it was 25 years ago but there is still a vast difference. We have been living with the concept "Big is Best" but perhaps in the future this should change. Hence, there is some emphasis on despecialization.

Many hospitals have found that if you set up a program to follow patients in your own emergency room after their initial treatment, rather than sending them to the OPD or shift for

themselves, your compliance rate of returning for follow-up rises from less than 30 percent to over 60 percent. Furthermore, if you can substitute medically trained secretaries to take the place of the highly specialized nurse in appropriate positions, you can lower your costs substantially.

In an attempt to adopt other solutions, the professional capabilities of the professional staff need to be completely reevaluated. From my own experience, the emergency physician needs to sit down with his own staff and review the multitude of questions that require an open, honest answer with the complete cooperation of all personnel. An equitable distribution of the workload is a must for the most efficiently run medical department, whether it be for physicians or nurses. From a capability standpoint, a physician covering the emergency department can handle up to a maximum of 6,000 routine emergency visits per year. The number drops drastically if urgent patients are involved and much less if life threatening or seriously ill patients are counted. Consultation capabilities with specialists are required in about 30 percent of cases seen in the emergency department with about 12 percent requiring a surgeon and 12 percent an internist; the remainder divided among other specialists.

Teaching is another capability required by the emergency physician with increasing responsibility and more hours involved to provide satisfactory education. It is astounding to learn that in many medical schools, advanced life support techniques are taught purely on an elective basis. Would you believe that a medical student today, at his own election, can graduate from medical school without knowing how to establish an airway, control hemorrhage or perform cardio-pulmonary resuscitation, or diagnose and manage tension pneumothorax? I trust that this would not be so at the University of Massachusetts Medical School here in Worcester. In 1973 the American Medical Association listed a core of skills essential for every physician regardless of his specialty. It certainly seems plausible that competency in these would be required for graduation from medical school. Efforts by the American College of Emergency Physicians, in the last two years, have stimulated medical schools to require certification in cardiopulmonary resuscitation for graduation.

The term Emergency Medical Services was not used before 1965. Following the 1966 Health Services Act, the term became permanent. A turning point in the treatment of the trauma patient followed the passage of this act with every state developing a Council on Emergency Medical Services, along with the development of Emergency Medical Systems. Since this development, a whole new system of emergency care has evolved with categorization of all resources.

Since most physicians today have been involved one way or another with a hospital emergency department, they soon learn just how effectively the emergency department operates and their ability to handle different cases. Because of the variety of patient difficulties which may be suddenly thrust at the hospital's doorstep, categorization has become a necessity. Categorization was originally promulgated with a primary objective to design an organized system that gets the patient to the most appropriate resource, the one best able to provide the care and treatment needed in a timely and effective manner. Categorization is made a desirable and necessary prerequisite by insuring that each patient has a reasonable chance of getting to the hospital facility best able to meet his or her needs. It is now a well-established rule that all hospitals be categorized into one of four major services:

- Comprehensive Emergency Service or Department:- treats anything and everything coming its way.

- Major Emergency Service: - able to handle the vast majority of medical and surgical emergencies but with limited resources in certain specialty areas.

- General Emergency Service: - akin to the average community hospital emergency service.
- Basic or Routine Emergency Service: - with standby resources somewhat equivalent to a first aid station.

In addition to categorization, each hospital must have an organized transfer protocol, thereby enabling the complex but stabilized patient to be transferred to the appropriate facility. Once categorization is completed, the hospital is then in a position to participate in the growth of emergency medicine. If they desire, they can participate in one of the new residency programs and can develop a full-time complement of well-trained emergency physicians.

From my own experience, the traditional residencies in medicine, surgery pediatrics and anesthesia, do not train physicians adequately for definitive care of critically ill or injured patients. I would tend to agree with the new four-year program at the University of California, whose purpose to train the physician in resuscitation, emergency care for life-threatening conditions and intensive care, so that the graduate can staff hospital emergency departments and intensive care units, be director of the emergency department intensive care unit or pursue an academic career in emergency medicine.

In large, well-run institutions, there is need for both a trauma service and emergency medical services. A trauma service is not a necessity in most community hospitals. If one is present, there need not be antagonism between them. The emergency service for years has had the enviable task of sorting out to which service should you admit the multiple organ damaged patient. Those of you who treat the injured patient or even the very ill patient, have at one time or another been involved in the so-called game of "ping-pong". The comment being made, "You're right, Doctor, that is a very ill or injured patient but don't put him or her on my service". Indeed, it is a luxury for a hospital to have a single trauma service capable of orchestrating the multiple superspecialty needs of the traumatized patient.

However, with both services present I am sure that the hospital will experience an improvement of critical patients along with enhanced interest by students and residents for teaching purposes.

Another plus for progress in emergency medicine is contained in the organization of the University Association of Emergency Medicine which involves an academic group of teaching physicians. They are working to allow a more rapid evolution toward ultimate recognition by the academic community of the specialty of emergency medicine. Further recognition of the specialty board in emergency medicine is expected to be an accomplished objective by the end of 1979, thereby insuring quality control in emergency medicine. One of the most difficult things to demonstrate is to show to our honorable medical fathers that emergency medicine encompasses an identifiable body of knowledge which has true scientific validity recognized by the profession but not necessarily possessed by all physicians.

I would be remiss if I did not point out another phase of medicine so vital today but yet strange for most physicians, and that is plain medical politics. Emergency physicians as hospital based physicians deal everyday with the realities of politics. They are forced to negotiate with the administration, the staff, the government and third parties to meet their daily needs. In order to Survive, they are required to utilize their negotiating capabilities. To utilize this expertise demands a strong leadership in order to demonstrate in health planning that the emergency physicians are astute, experienced and politically aware professionally and who recognize the



need for leadership to produce positive changes in healthcare programs and policies. Younger physicians, especially, should become involved in Society affairs and make their own commitment in medical politics.

Finally, it has been stated many times that once there is an adequate supply of family physicians, the need for the emergency physician will drastically decline. My own personal opinion does not coincide with this thought. There may be time for adjustments but as long as we have hospitals, we will have emergency departments and as long as we have emergency departments, we will have a need for emergency physicians to staff them. Have you ever stopped to think how our own patients define their own emergency and in all probability, they will continue to do so. If we find a great resurgence in the numbers of family practitioners so that the emergency department encounters fewer patients, it may well be unfeasible, financially, to continue to staff emergency departments on a fee for service basis. If this be true, the need for the emergency physician will still remain with the necessity for developing some other funding mechanism. As the public increases its demand for more sophisticated and readily accessible emergency care, the practice of emergency medicine will become even more clearly defined. ACEP has now dedicated itself to the establishment of the emergency physician as a career-oriented and Board Certified specialist. By 1981, it has recommended that the directorship of facilities with greater than 15,000 visits should be vested in a Board Certified Emergency Physician; by 1985, at least one on-duty emergency physician should be Board Certified.

Resting here in the bosom of our great institutions, surrounded by sophisticated equipment and superbly trained personnel, served with stabilized patients by competent paramedics who blanket the urban environment with the mantle of advanced life support, the exciting opportunities afforded the specialty of emergency medicine are truly unlimited and unappreciated.

In conclusion, let us look forward to the decade of the eighties. Will emergency medicine withstand the crucial test of these years? Will the increased production of physicians and paraprofessional personnel change the present advancing course of the emergency physician and his specialty status? Will the increasing cost of hospital and medical care enhance the development of National Health Insurance thereby reducing the usage and growth of emergency department services? These questions and many more will be left to be answered in the oncoming decade. In the interim, a new emerging species has evolved and blossomed forth as the Daktari of tomorrow under the guise of the newest of specialties, Emergency Medicine.