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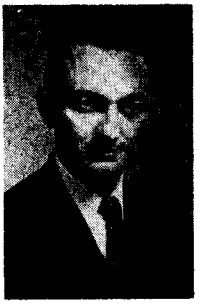
Special Lecture

Medical Student Research — The Birth of Ideas*

James R. Jude, M.D.†

I feel deeply honored to have been invited to speak before the annual meeting of the The Minnesota Medical Foundation. Since I was once in the position of receiving the benefits of the labors of this organization I truly know its worth. The immense growth in number and interest of the members of this Foundation to relieve the high cost of medical education is really an example that friends and alumni of less sophisticated schools can follow.

Many years ago while a student here I was stimulated by the fascinating investigations of Varco, Lillehei and Lewis into open heart surgery and specifically the work of Lewis and Taufic in hypothermia. Under the tutelage of Dr. Lewis, I investigated and wrote a report on an evaluation of the biologic effect on rats of rapid and slow rewarming from profound total body hypothermia. This investigation certainly was not world-shaking, but in some small way may have aided in the application of hypothermia to intracardiac surgery. It was in 1952 that Lewis and Taufic successfully closed, for the first time, an atrial septal defect in a human under direct vision by the employment of total hypothermia. Most of all my brief Medical School contact with the experimental laboratory showed me the value of research investigation and how it could shape a constructive critical analysis of the reported literature and sharpen one's daily observation into the nature of illnesses. It laid the ground work for me to seek a continued post-graduate education and pursue applied research that would satisfy an ever



James R. Jude

*Minesota Medical Foundation Day Lecture, September 26, 1966

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widening chasm of unanswered questions. During internship at Johns Hopkins I frequently was able to retreat from those exciting but hectic days to the Hunterian Laboratory. Not surprisingly my investigations were deeper into the biological effects of hypothermia. Years later, as a researcher, I have found that the stimulus of my student days has almost constantly driven me to find in every apparent answer to a thesis several new questioning avenues opened and begging for study. As a teacher I have, surrounded and stimulated by eager students, felt as did Helmholtz who in 1851 said: *"A teacher in a University is subject to excellent discipline, in that he is obliged each year not only to give at least an outline of the whole of his science, but also to convince and satisfy the clear heads among his hearers, some of whom will be great men of the next generation."*

Initiating some type of research activity in medical school would seem to be fundamental to the development of the inquiring mind—one ever seeking truth beyond the obvious. It has been seen that historically many of the great discoveries in medicine and science were made by men who initiated their work in their undergraduate students days. This observation led to a collective bibliographic research by Dr. William Gibson, Kinsmer Professor of Neurological Research of the University of British Columbia, who categorized these students and their medical and scientific contributions. He found the latter to extend over a wide range of subjects from anesthesia, where Humphrey Davy was considered to be the father of anesthesia for his work with nitrous oxide, to physics and optics, where Herman Von Helmholtz won acclaim for his invention of the ophthalmoscope. The student activities of these men frequently outlined the future of their life's devotion.

Robert Watt, renowned early 19th century bibliographer of British medical writings, and who was one who began his bibliographic research in his undergraduate medical student days, advised the medical students of 1812 that it is not from having spent a certain number of years at schools of medicine, and not from having repeatedly paid fees to the most eminent teachers, nor from the charm of degrees, diplomas and other academical honors, that diseases are to be cured, but that it requires real medical skill, acquired from diligent and unwearied exertion. This remains true today. Learning is hard, fatiguing work. As students of medicine, as in the development of all knowledge, we must go from the known to the unknown. So we must absorb the best of the knowledge of our teachers, of our readings of the literature, of our own observations, and hopefully syn-

thesize them all to a resultant state of learning higher than any of those that preceded, a result of our own research and discrimination.

THE STUDENT AND RESEARCH

To the uninitiated medical student plagued by a seemingly unending amount of material to be absorbed, and the fierce competition for class position, the idea of research usually seems impossible. In fact, the term becomes frightening and conjures up visions of working with mazes of test tubes filled with unknowns, peering into microscopes at strange cellular structures, studying complex mathematical formulas sprawled over the blackboard, or being deeply embroiled in open books on a desk invisible under more books, manuscripts, calculators, etc. Under the pressures of learning already imposed, the student usually blocks a thoughtful study of such concepts for lack of mental space to adequately comprehend them. The unknown always is foreboding. Of course, such research activity does exist and especially so for the doctor of philosophy who pursues such means to an end as his full-time life endeavor. However, the usual definition of research need not be considered so narrow for it is rather a careful search, a studious inquiry possibly but not necessarily by exhaustive investigation or laboratory experimentation. Most important is its aim for the revision of accepted conclusions in the light of newly discovered facts.

As undergraduates and, of course, later as practitioners, we should think of research as initially a constant critical awareness and observation of our surroundings, with a keep perception of perhaps chance relationship or circumstances that may lead us to a consideration other than the usually prescribed solution. A truly laboratory pursuit might or might not evolve from these mental inquiries, but this will depend on the individual and his particular drive in this direction. A major chronic problem in the pursuit of new discoveries has been the blind acceptance of the observations and conclusions of others. If we allow the past advances to seal our future knowledge expansion we would remain as in the sterile period of Medicine extending through the Middle Ages and preceding Andreas Vesalius and William Harvey, the Galenic period of Medicine lasting over 2,000 years and when the publishing of new ideas, controlled then by religious rigidity, often resulted in being burned at the stake. Such was the fate of Michael Servetus in 1553 who had at the age of 20 published his remarkable treatise on the lesser circulation in *"Restitutio Christanismi."*

The great advances in medicine have long been introduced by men who had that keen observing eye and mind, who were

not afraid to formulate and divulge opinions at variance with and advanced beyond their predecessors and teachers. It is not so strange that the beginnings of their work frequently occurred in their undergraduate days when their minds were free, fresh, agile, sparkled with imagination, and not yet contaminated by the pressure of time limitation, social and professional commitments or rigid standardization.

Three methods of approach to acquiring a medical knowledge may be taken by the entering student:

1. *The academic approach or pure book-learning alone*
2. *The same approach but with the addition of an inquiring, constantly questioning, attitude, and*
3. *The entirely passive approach.*

From my own student days as well as my observation of students both at Johns Hopkins and the University of Miami it is obvious that the great majority of students follow the academic course of reading, listening, and reproducing what others have presented. The student does this to the best employment of his mental faculties and generally this is quite satisfactory to get his medical degree and perform satisfactorily as a practitioner of healing. A few students on the lower end of the Bell curve of normal distribution follow the entirely passive approach and may slide through on the "coat tails" of their fellows. The end product usually matches the effort. An ever increasing number of students fortunately are complementing their academic enlightenment with an inquisitive, inquiring mind. These students are more than computers able only to return what has been programmed. They have an objective similar to that of the immortal Oliver Wendell Holmes who once stated, *"My aim has been to qualify myself . . . . not for a mere scholar, for a follower after other men's opinions, for a dependent on their authority—but for the character of a man who has seen and therefore knows; who has thought and therefore has arrived."* Such students are the future of medicine. They are the stimulus that keeps their professors eternally mentally young.

THE INQUIRING STUDENT MIND

Our medical schools certainly are correct in their major aim to the production of physicians of healing who will go out in society to prevent and treat illnesses of mankind; and it would appear that the means whereby such proficiency can be obtained would be the proper approach to knowledge acquisition by the

student of medicine. I feel that the development of and the encouragement and assistance to the deeply inquiring student mind in addition to the didactic book learning is the only way that this proper objective with maximum patient benefit can so be achieved. No two patients are exactly alike. The physician must, in application of his knowledge, think deeply and discriminate carefully.

The modern scientific treatment of illnesses, not to speak of pinpointing their etiology, was primitive and unfulfilled until the yoke of discourse without observation or inquiring research was tossed aside. As has already been mentioned, it has historically been the student who, before he joined The Guild of Physicians or Surgeons, was a rebel after the fact and did not accept on blind faith alone that which was presented to him. Thus Andreas Vesalius, (1514-1564), Johann Meckel (1724-1774), and Thomas Huxley (1825-1895) in their late teens and early 20's made and reported important observations on human anatomy as did William Harvey (1578-1657), Sir Astley Paston Cooper (1768-1841), Maurice Raynaud (1834-1881), John Bruce MacCallum (1876-1906), and Thomas Lewis (1881-1945) on the cardiovascular system and others in chemistry, digestion, infectious diseases, pathology etc.

LAENNEC AND THE STETHOSCOPE

René Laennec, born in Brittany, France (1781-1826), was typical of such men. His ancestors were magistrates, sailors, and poets of Celtic stock. His mother died in childbirth, and Laennec was educated first by an uncle who was a priest and then by an uncle who was a physician. France was unsettled in this period, and Laennec had opportunity to see a guillotine in front of his uncle's house take the lives of many Frenchmen. He entered medical school in 1795 at the University of Nantes at the age of 14 years. He was a naturalist, a Greek scholar, and played the flute. Laennec constantly lacked funds and his father disdained from aiding him until legally forced to do so. Laennec was an avid reader of Hippocrates and was always interested in investigations. He entered *L'Ecole de Medicine* in Paris in 1801. In 1802 at the age of 21, he published his first paper on a case of mitral disease. He subsequently wrote on venereal disease, suicide, amenorrhea, and the lining of the cerebral ventricles. Laennec went into practice in 1804, but financially was a failure. He maintained his investigational spirit and, recalling rather simple facts known for centuries, properly applied them in a practical situation to make his greatest contribution of the stethoscope in 1817. I believe Laennec's description of

his discovery is especially appropriate in its simplicity of observation, employment of known facts, and timely application; I quote from Forbe's translation of 1819,

> *"In 1816, I was consulted by a young women labouring under general symptoms of diseased heart, and in whose case percussion and the application of the hand were of little avail on account of the great degree of fatness. The other method just mentioned (ear to chest method of Hippocrates) being rendered inadmissible by the age and sex of the patient, I happened to recollect a simple and well-known fact in acoustics, and fancied at the same time, that it might be turned to some use on the present occasion. The fact I allude to is the augmented impression of sound when conveyed through certain solid bodies, as when we hear the scratch of a pin at one end of a piece of wood, in applying our ear to the other. Immediately, on this suggesion, I rolled a quire of paper into a sort of cylinder and applied one end of it to the region of the heart and the other to my ear, and was not a little surprised and pleased, to find that I could thereby perceive the action of the heart in a manner much more clear and distinct than I had ever been able to do by the immediate application of the ear. From this moment I imagined that the circumstance might furnish means of enabling us to ascertain the character, not only of the action of the heart, but of every species of sound produced by motion of all the thoracic viscera."*

Laennec died of tuberculosis in 1826 at the early age of 45, but will always be one of the best-loved researchers and teachers.

But Laennec and others were relatively few in number and of an era when medical science had its surface hardly scratched. Now after the brilliant enlightenment of the 19th and early 20th century into the basic sciences of physiology, biochemistry, anatomy, microbiology, pharmacology, etc., as well as the enormous progress in their application to the clinical sciences, we might mistakenly consider all progress an undergraduate student might comprehend to be complete. To be sure much is known on the organ and tissue level, but is it so at the cellular or the molecular plane? If we erringly consider medical advances to be plateaued we will have returned to a modern day standard similar to the long static era of *The Humoural Doctrine* when health was considered to be dependent upon a balance of cold, dry, moist, and hot humours.

Fortunately students today are flocking in increasing number to the group of the investigative spirit. Not that the past generation or two has been entirely remiss, but never before have we seen such a massive transfusion of youthful endeavor into an area sorely needing their ability and eagerness. Perhaps this has come about partially because of the post World War II social revolution with the emergence of the nationalistic spirit, the underdog, the vocal minority. Students of medicine today require and, yes, even demand of their professors, the answers to *why?* from *where?* to *what end?* by *what means?;* and when the answers are not available they need and want the time and means to find out for thermselves.

CHANGING CURRICULUM

Because of these student demands and pressing need for revision we are on the doorstep of sweeping transitions of medical school curricula. The basic and clinical sciences are being put into new and relative perspective. More and more time is being set aside for the inspired student to seek the answers which he has not been given. More than ever (and it always has been important) even those less inspired are being stimulated by their professors to seek investigative positions *during medical school* in their own school laboratories or those of other institutions, thereby to expand not only their quest for investigative results but also to broaden their social and geographic horizons. I mean by this latter the taking of free quarters, a summer or a year to study in another area of the United States or Europe, a past New England tradition which needs to be revived on a national scale. We must consider such intellectual and spiritual enlightenment for all students irrespective of class standings for as once noted by the great Leipzig chemist, Wilhelm Ostwald, pupils who became famous contributors were not those at the head of their classes, but were those who had not been satisfied with what had been given out routinely in the classroom. A student literally endowed with gray matter obviously is necessary, but the Dean's Admissions Committee usually takes care of that aspect.

The student in developing this investigative activity must not be considered a threat to his teachers, for he is rather synergistic with them. The ultimate result is the greater for them all and most important for the patient who frequently appears to be lost in research for research's sake. The teacher may lead to a long succession of great men and discoveries. Thus, Vesalius' pupil and successor, Fallopius, taught Fabricus, who in turn taught William Harvey, all who made initial great contributions

in their undergraduate student days. John Hunter inspired Edward Jenner and Sir Astley Cooper amongst others to their student discoveries. More recently Dr. Franklin P. Mall and Dr. Simon Flexner provided much of the stimulus for the undergraduate research of John Bruce MacCallum (1876-1906) at Johns Hopkins. Dr. MacCallum wrote six scientific papers largely on the anatomy and pathology of heart muscle before his graduation.

Where does this leave the student of the present? The endeavors of the young in the past had whole systems to define and commonplace diseases of which nothing was known. But was not to Edward Jenner (1749-1823) smallpox as much or more an enigma then is control of the immune reaction today? To Paul Langerhans (1847-1888), as a student, the microscopic structure of the pancreas was entirely a mystery, yet because of lack of knowledge about it he found answers and presented a graduation thesis of his discovery of the islets in the pancreas which ultimately resulted in insulin development many years later by Banting and Best. Here, by the way, is proven the fact that past centuries have no monopoly on undergraduate medical discoveries. Charles Best was a sophomore medical student working in the laboratory of Prof. F. G. Banting on depancreatized dogs when together they discovered the hormone insulin in 1921.

SOLVING TODAY'S PROBLEMS

We are indeed not short on problems, but need only constructive curiosity. We cannot be bound today by what even now appears to be a tradition and empiricism surrounding such formidable problems as those of heart disease and cancer, our major killers. Also the ever growing volume of debilitating problems of degeneration associated with our enlarging aged population must be alleviated if we are to make life's final years peaceful ones. Enlightenment is still forthcoming. Is medicine, as Lord Bacon puts it, *"a science which hath been more professional than laboured, and yet more laboured than advanced, the labour having been more in a circle than a progression."*? For example, is this the case in the cholesterol theory of etiology of arteriosclerosis? Has it been worked over in excess circles? Or may there be an alteration in metabolism affecting the blood vessel wall (such as e.g., cross-linking of collagen) that causes cholesterol, fatty acids and calcium to be deposited? Why, might we ask, do not veins become arteriosclerotic? Why, amongst so many other unanswered questions do malignant melanoma and other tumors kill some patients

rapidly and yet leave others apparently surgically cured only to reappear diffusely metastasized ten or 20 years later? The student is hospitable soil in which may germinate new ideas on such problems and that may grow to lead to an investigation which will provide answers, or at least an avenue to an answer.

Truly, refreshing unbiased opinions undaunted by a nihilistic attitude of hopelessness or unconcern are needed also in the expanding field of transplantation. Why does one patient reject a renal transplant immediately in spite of immuno-suppressive drugs and another allow its survival indefinitely? Some student may be so impressed with this obvious constitutional variance as to spawn a retreat to the laboratory to initiate a flowering lifetime for basic study of the immune mechanism.

The majority of medical problems seeking solution today are indeed more complex than even those of a generation ago. Research is also no longer a matter of the effort of a single person, of the lone wolf of research. Werner Forssman advanced our knowledge of normal and pathological functional physiology of the heart by alone showing the safety of intracardiac catheterization on himself. But his original discovery was developed and extended by the work of many physiologists, cardiologists and radiologists, and it was together with Andre Cournard and Dickinson Richards that he shared the Nobel prize in medicine and physiology in 1956. Also it has been through the cooperative sciences of engineering and physics that electronic and radiological engineers have been able to devise X-ray image intensifiers, pressure sensing transducers, and other advanced electronic equipment that have made it possible to apply and extend to the patient this forward step in our knowledge. Without all of their efforts advanced intracardiac surgery would have not resulted. Jonas Salk, although given credit by public acclaim for his polio vaccine, was in essence the leader of an enormous team of experts all pursuing the same safe, but immunologically potent virus. It is obvious that we are in an era of team work with the crossing of many disciplines. In the laboratory the internist, the surgeon, the physiologist, the chemist, the bioengineer, the biostatistician, and many other disciplines merge to work towards a common goal.

Even as we go through the basic science years and establish our basic fund of knowledge that will enable us to care for illnesses with the absorbed knowledge of past scientific accomplishment, the investigative soil is being prepared and trial seeds rooted. We may have had questions raised such as why our dissecting room cadaver had severe atherosclerosis of the coronaries and terminal aortic branches, but yet spared the

arteries of the upper extremity or why did we find that tumors of the central nervous system rarely metastasized throughout the body? Later in our clinical years while facing such pathologic entities in the living (or dying) patient as we water and fertilize these seeds, we may see some relationship that may send us to investigate to follow the injunction of John Hunter: "*but why think, why not try the experiment?*" The experiment may be further simple correlative observations, a library or chart search or complex laboratory investigation, but to walk we first must crawl.

MINNESOTA'S CONTRIBUTION

We are here at a great medical institution where the spirit of inquiry has been strongly sponsored. Because of this the University of Minnesota Medical School has become world known as a leader of leaders. The professors, past and present, and undoubtedly in the future, have given free rein to the inquiring student mind, stimulated the book-learner, and never been satisfied with passiveness. Because of this there have been contributed advances in knowledge of liver function, immunology, shock, and gastrointestinal and cardiac surgery to name only a few.

Ideas are born at any moment, even now. To the inquiring mind they abound in number in our every contact. Only a few observers will have the desire, ability, time, or finances to pursue the ideas with a full-fledged research endeavor. However, some practical contact with the methods of research, even though brief, have a lifetime value. For some they might surface submerged research ability and fulfillment and lead to an academic career. For the majority such contact will instill the full value of research in practical application of medical knowledge, and, in the development of the inquiring mind, guarantee good diagnosis and rational treatment in their years of medical practice. The patient will, in any case, reap the harvest. Occasionally brighter flames of research will remain alive even as they did for Robert Koch who after 10 years of rural medical practice properly categorized anthrax and 6 years later discovered the tuberculus bacillus.

HELP FOR STUDENTS

The Minnesota Medical Foundation in its assistance to worthy and needy students has made a monumental contribution to the mental and gastric tranquility of the student with constructive curiosity. Students have not always been so fortunate. Sir Weldon Dalrymple-Champneys in a paper before the Royal

Society of Medicine in London in 1955 on "*The Medical Student Through the Ages*" quoted a complaint of a poor student of Bologna in the 15th century: "*the time I should spend at lectures and in study I am driven to waste in begging from door to door, crying scores and scores of times 'charity, charity, dear masters', and getting the answer 'Begone, and God be with you.' I appeal both to ecclesiastics and laymen, and am mostly driven from the door, or perchance one may say 'Wait a bit' when I get a dirty scrap of bread which a dog would reject, or I may get fusty beans, bits of skin or gristle, or sour wine.*" Such was the lot of generations of those endeavoring to learn to help mankind. Even with our inflationary pressures, at least for 64 students, the outlook this year is not quite so grim.

From my own experiences I have been able to see what personal motivational profit and tranquility can evolve from a touch of undergraduate research. As a teacher seeing the ever younger students day by day with their evolving inquiring minds, their research activities, I feel I also remain a student with them. I cannot close with a better admonition to us all than that of John Masefield:

> "*Adventure on, for from the tiniest clue,*
> *Has come whatever worth man ever knew;*
> *The next to lighten all men may be you.*"

Commentary

International Health in World Affairs*

Kenneth E. Livingston, M.D.†

During the past six years, I have been involved in U. S. overseas assistance programs in health and education under the aegis of the Agency for International Development. Initially my assignment was clinical neurosurgery and post-graduate teaching. Later, it included participation in the organization of a medical school; and finally, it involved the development of an American type university with a liberal arts base.

K. E. Livingston

This sequence of assignment is interesting—the first stage involved the end product, the ready made neurosurgeon; the second involved the supporting base for neurosurgery, the medical school; and the third involved the broad base necessary for advance in many fields—social and economic development, as well as agriculture, engineering, education, and health. This sequence is, in fact, reversed, but it is unfortunately a typical approach to development problems, both for ourselves and our foreign colleagues. The nation of Iran is for ourselves and our foreign colleagues. Experience in Iran provides a good illustration.

In the 1950's Iran needed a large number of tractors to speed agricultural development. Supplying the tractors was not difficult—they rolled bright and shiny from the assembly lines of International Harvester, John Deere, McCormack, etc., but for several years, 30-50% of the tractors were useless because parts supply and maintenance were lacking.

This pattern applies also in the health field. In 1960, Iran had two neurosurgeons for a population of over 20,000,000. To provide a more adequate neurosurgical coverage it could be estimated in our terms of reference that Iran would need 40 neurosurgeons by 1970, with a goal of at least 20 by 1965. The training of the neurosurgeons was not difficult. It fact, by 1965

*From a report to the Staff Meeting of University Hospitals on November 25, 1966

†Assistant Professor, Division of Neurosurgery

more than 20 Iranian physicians had completed full neurosurgical training in teaching centers in the U. S., Canada, Britain and Western Europe and had returned to Iran. However, by 1965 only one city outside the capital boasted a neurosurgeon in spite of the fact that three Iranian medical schools and three other major cities had no neurosurgical coverage at all. Furthermore, it appeared likely that no more than half of the neurosurgeons returning to Iran would remain and be able to work effectively.

SHORTAGE OF TRAINED PEOPLE

Clearly other factors are more critical than the supply of the end product. The most obvious defect is the absence of the supporting base that permits the specialist in any field to function effectively. Here the essential element is not buildings or equipment, or money, but people. The priority of people applies at all levels—from problems of sanitation in the village, to those of health service, education, and research in the medical school. Problems of social development abroad are not soluble simply by supplying money and equipment, anymore than are the problems of poverty, racial tension, and delinquency in the underdeveloped sectors of our cities and countryside here in America. Overseas, as here at home, the development process is long and often difficult. A great or even an acceptable society is not to be achieved by instant legislation or appropriation, no matter how appealing the vision may be. It is a human creation which requires people and time. The process is particularly difficult and slow for countries having limited resources of trained people available for leadership. In 1960, at the time of independence, the Congo with a population of some 15,000,000 could muster only 19 of its people who had university level education. Ethiopia, with no university resources, was producing only 300 graduates each year from its secondary schools. In such stringent circumstances, western patterns of training people and organizing services have limited applicability—new ways to use the people available must be developed so as to produce the greatest possible yield from limited resources.

Clearly the most critical of all development resources is people. The level at which the process of development must begin, and the pattern which it must follow are determined, more than any other factor, by the numbers of trained people available, at various levels and by the capacity of the country's educational systems to supply them for the future.

One of the interesting facets of our experience in Iran, was the opportunity to live in another culture long enough to acquire some insight into its background and inner workings. The

typical turn-over rate for American personnel is two years, and the financing of most U. S. programs is limited by one and two year appropriations. Such a short time scale is not adequate for the problems to be faced. Over a period of six years we had an unusual opportunity to observe some of the complex processes of development, to make some assessment of U. S. efforts to assist others, and for a time, an opportunity to look at America from a distance, and in some degree "to see ourselves as others see us."

THE PERSIAN HERITAGE

In the American West, the "early days" go back 150 years. Persia's (Iran's) "early days" go back 2500 years to the sixth century B.C., and a rich civilization which undoubtedly contributed far more than we realize to the heritage which we trace to the Greeks. Three brilliant epochs stand out in Persian history—the great Achamenian empire with its magnificent ceremonial city of Persepolis, only 30 miles from Shiraz. Persepolis was destroyed by Alexander in 323 B.C.; second, the great Persian empire of the Sassanians from 200 to 400 A.D.; and third the glittering era of Shah Abbas at the end of the 17th century. Persia was conquered by Arab tribesmen in the 7th century and converted to Islam by the sword. Although it has continued to be Islamic, Persia has maintained her own identity both in political relationships and in religious structure. The Iranians (Persians) are Shi-ites, a separate sect of Islam, and are neither embroiled in or subservient to the Arab world. For example, Iran recognizes and carries on fruitful relations with Israel. During the Dark Ages in Europe, it was Persian scholars who provided the principal repository for knowledge, keeping the sparks alive to be rekindled in the Renaissance. At the time of Elizabeth the First, Persia was exchanging diplomatic emissaries with England. During the next 300 years, the aristocracy of Persia had considerable contact with Europe, particularly England, and France. In spite of this contact there was little reflection in Persia of the profound technological and social changes taking place in the west.

OIL FOR THE ALLIES

The impact of World War II provided Iran's first real exposure to Western technology, when the occupying Allies moved great quantities of war material from the Persian gulf through Iran to supply the Russian front. Following the war, under the aegis of the United Nations in 1946, Russia was induced to withdraw its occupation forces from the northern provinces.

The British then remained in a position of major influence largely as a result of their development from the early 1900's of the Iranian oil fields on the Persian Gulf. This situation continued until 1952 when pressure for the nationalization of oil reached a climax. In this upsurge of nationalist aspirations, the regime nearly toppled and the British were forced to withdraw. The British moved quietly across the gulf to develop a small bit of desert known as Kuwait, where they now have an oil operation whose output exceeds that of Iran. The high stakes in Iran, however, were strategic, and as the British withdrew, the United States proposed an acceptable compromise for the oil-issue—an operating consortium involving Dutch, French, British, Italian and U.S. companies. The status quo was restored and in 1953 the U.S. embarked on an ambitious program of assistance, involving money, equipment, and people amounting to more than one billion dollars much of which was in the form of military support.

CRITICAL CROSSROADS

A glance at the map gives a clear picture of the crucial position which Iran occupies at the crossroads between Asia and the West, and the importance of its role in the post World War II period when Russia was exerting such alarming pressures in Europe. Had Russia been able to acquire a position of influence in Iranian affairs, she would have had direct access to the great oil resources of the Middle East, and a warm water outlet on the Persian Gulf that would expose the eastern flank of Africa and the sub-continent of Asia. The effects of such Russian proximity on the turbulent Middle East, on the outcome of the Suez crisis and the revolts in Africa, and on the problems arising between India and Pakistan are frightening to contemplate.

Although postwar Iran had a thin layer of sophisticated and trained people at the top of its social structure, there were still massive problems of poverty, illiteracy, and ill health remaining to be solved, involving more than three-fourths of its population. The U. S. was able to play a major role in the course of Iranian affairs during the crucial 1950's for two principal reasons—first, because we had great military power which could counter Russian pressure, and second, because we also had great economic and human resources which we offered to commit to social and economic development. Our military commitment served as a shield against external pressures, providing the time necessary to begin the process of reducing human misery and unrest.

Much of our contribution during this 13-year period was discounted because it was clear that our presence in Iran was based primarily on strategic rather than humanitarian considerations—"the Americans are here not because of concern for us, but because of the Russian divisions on our northern frontier." However, even though basic programs in health and education have thus far only scratched the surface the process has begun, and the earlier fear that tensions in this area might trigger a world holocaust, has largely subsided. A *modus vivendi* has developed—Iran and Russia appear to be engaged in *rapprochment*, highlighted a year ago by the visit of the Shah and Empress of Iran, to the Kremlin and the Russian industrial complex. Coincident with the development of this more stable state, American assistance programs in Iran are drawing to a close.

CRISIS MOVES EASTWARD

Since 1960 the area of world crisis has shifted eastward to Asia. Earlier in Europe the crisis of Russian confrontation was balanced largely by the U. S. provision of money and equipment through the Marshall Plan. As the confrontation in Europe stabilized, the area of crisis shifted to the Middle East, particularly, Iran, because of its proximity to Russia. Here the factors needed to balance the confrontation moved toward the human side of development—to people and technical assistance. In Asia the need for emphasis on the human side of the equation is even more marked—here the numbers of trained people available in all fields are pitifully small, and the problems of human misery which make communism an acceptable alternative are even more massive.

The United States is now deeply embroiled in a major military operation in a tiny country of south east Asia, fighting an enemy we cannot easily define. We are engaged on the doorstep of a great power to which we do not speak, but which possesses almost unlimited manpower, a negligible supply line to the zone of conflict, and the bomb.

In the eyes of most of the world's people, the American colossus stands in the center of brightly lighted world stage, without a single major ally, engaged in a steadily escalating combat *against* Asians, while the U. N. under whose banner threatening conflict have been terminated in Africa, Asia, and the Middle East, stands in the wings. Each day that conflict continues, the U. S. expends more than the annual budget of the U. N., and more than twice the cost of the U. N.'s peace keeping operations in Africa, the Middle East, and Korea.

It is not only the visitor from Mars who might ask "what is wrong with this picture?" Our dilemma is fully visible to all the world, for the transistor radios and the combat photographs, like Coca Cola, go everywhere.

Today we are dealing with a different adversary, and a different development equation than the one which we were able to resolve in Europe and Iran. The confrontation in Asia requires a different response—it is increasingly clear that it is not soluble by massive inputs of money and equipment, which tend to make the rich richer, and the poor poorer; nor is it being resolved by the massive exercise of armed force. Until more basic needs begin to be met, the grim day to day struggle against hunger and disease, will take precedence over the political and strategic considerations, however compelling these may seem to us. Until the attack on human misery is begun at the level at which people live, neither declarations of our benevolent intent, nor show of force will persuade the people of Asia that we are acting in their behalf.

In Europe it was possible to bring the confrontation into balance quickly, for we dealt with a society of high productivity. Money and equipment could be put to use rapidly and effectively—the time scale was short. In Asia we are dealing with societies at the other end of the development curve—societies in which little energy is available beyond that supplied by human muscle, and nearly all of that energy is spent in the continuing struggle to stay alive.

The total investment necessary to initiate significant social and economic development programs in Asia, is, of course, large. Estimates by the U.N. suggest that a long range program designed to shift from a marginal agricultural subsistance to a broader economic base could be initiated and sustained for most of the underdeveloped world, with an investment of $15-20 billion per year. It has been further estimated that such investment would become self-sustaining in a period of 20-30 years. At the present time the United States is spending more than $60 billion per year in its direct military budget.

The resources, the skills, the knowlege, and hopefully, the wisdom needed to begin the long process of narrowing the development gap in Asia, are available. For strategic as well as humanitarian reasons, the first steps—those to relieve suffering and improve health—are the most important. Programs directed against hunger, malnutrition, preventable and communicable disease, and excessive birthrate with its high maternal and infant mortality, *can* be mounted rapidly. Such programs should operate under multilateral (U.N.) as well as bilateral auspices;

they must be regional in scope, and must be offered to both side of the present conflict. They should be followed by carefully planned long term development assistance to improve basic education, to increase agricultural production, and to provide technical training for broader economic development.

The formula is not new—it has been repeatedly defined by President Johnson and others as the real goal of our efforts in Asia. Initiation of such a program by the United States, now, in collaboration with the U.N., would be the first and most essential step in reducing the growing crisis in Asia. The choice may not remain open to us much longer.

Orthopedic Surgery

Surgery of the Rheumatoid Hand*

James H. House, M.D.,† Wayne W. Thompson, M.D.,‡
Robert B. Winter, M.D.,§ and John H. Moe, M.D.¶

Significant symptomatic, functional, and cosmetic improvement in the "rheumatoid hand" can be accomplished by the timely application of the various surgical techniques that have been developed as a direct approach to the local joint and soft tissue manifestations of rheumatoid arthritis. Generally, if treatment is undertaken before extensive joint destruction has occurred, the local progress of the disease can be halted or delayed and pain can be relieved. In the later stages of the disease when severe deformity and joint destruction have occurred, there are several "salvage procedures" that will generally improve function as well as appearance and will usually make the patient more self-sufficient.

This report is a brief review of the surgical techniques which may be used to facilitate the rehabilitation of the "rheumatoid hand" and does not consider the details of medical management and general conservative treatment of the patient as a whole. Surgery on joints other than the hand and the details of pre- and post-operative therapy are not discussed.

The procedures commonly used in rheumatoid surgery are synovectomy, arthroplasty, and arthrodesis. Synovectomy may be performed alone, but it is generally combined with arthroplasty to improve the mechanical function of the joint. Arthroplasty may involve plication of the joint capsule, reconstruction or tightening of the collateral ligaments, excision of damaged cartilage and bone, and repair or realignment of extrinsic tendons. Arthrodesis means fusion of the joint in a functional position.

The function of the elbow and wrist are intimately related to the function of the hand and are commonly involved in rheumatoid arthritis. Synovectomy and arthroplasty of the

*From a report to the Staff Meeting of University Hospitals on December 9, 1966
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elbow and excision of the radial head have been used successfully to improve function. At the wrist, early synovectomy of the dorsal extensor compartments will prevent rupture of the extensor tendons. Carpal tunnel decompression is occasionally required to alleviate symptoms of median nerve compression. The distal end of the ulna can be excised for distal radio-ulnar arthritis with limited supination at the wrist. Arthrodesis of the wrist in a functional position may be required to provide stability and eliminate pain.

The metacarpophalangeal (MP) joints are commonly involved in rheumatoid arthritis and the synovitis, instability, and dislocation of these joints gives rise to the characteristic deformity of "ulnar drift" of the fingers with displacement of the extensor tendons to the ulnar side of the joint axis. Arthroplasties are generally performed at the MP joints to maintain a functional range of motion and re-establish joint alignment. After careful synovectomy, the collateral ligament on the radial side of the joint is attached more proximally on the metacarpal to correct ulnar drift and lateral instability. The extensor tendon is relocated dorsally in line with the joint axis, and the attenuated joint capsule and extensor hood are plicated on the radial side to maintain this corrected position. If cartilage destruction is severe and the joint has dislocated volarly, a portion of the metacarpal head must be excised to allow the joint to return to a functional position. A portion of the extensor tendon or the volar plate may be interposed to maintain a gliding surface at the joint. Metal hinge endoprostheses are available for replacement of joints extensively damaged, and although some motion may be sacrificed, there is considerable improvement in the lateral stability of the joints.

The interphalangeal (IP) joints may be deformed by the intrinsic contractures that develop secondary to fibrosis of the interosseous muscles or by imbalance in the extensor mechanism that occurs with loss of the central slip attachment at the base of the middle phalanx. These deformities are respectively referred to as the "swan neck" and the "boutonniere" deformities. Intrinsic release by excision of a portion of the lateral bands in the "swan neck" deformity and release of the terminal extensor apparatus in the "boutonniere" deformity will often re-establish more normal muscle balance at the IP joints and thus correct deformity and improve function. Occasionally arthrodesis of these joints is performed to correct instability and maintain a functional position of the fingers.

The thumb characteristically develops the position of MP flexion and IP hyperextension but generally remains functional

in this position. Not uncommonly, however, arthrodesis of the MP and/or IP joint is required to correct instability and dislocation.

The extensor tendons of the fingers and thumb occasionally rupture secondary to tenosynovitis. Function may be restored by primary repair, tendon graft, or tendon transfer.

At the University of Minnesota these techniques have been employed for only a few years, so long term follow-up with objective data is not yet possible. The nature and extent of the deformities and the amount of associated dysfunction are difficult to measure objectively, and at this stage in our assessment of results, we must rely primarily on subjective data acquired from patient examination, follow-up questionnaires, and the review of pre- and post-operative x-rays and photographs. In this preliminary study, it is apparent that the majority of our patients are pleased by the results of surgery and report better overall function of the hand, decreased pain, and improved appearance. Their ability to perform various specific activities of daily living has generally improved following surgery. Few feel that surgery was not worthwhile and most of them would recommend it to others similarly afflicted.

The management of patients with rheumatoid arthritis can best be accomplished by a team approach. In most patients, the medical management of this systemic disease consisting of rest, analgesics, and anti-inflammatory agents, in addition to a physical therapy program at home, is the primary and perhaps the only treatment required. Early evaluation by an orthopedic surgeon is desirable, and in selected patients surgery can contribute significantly to the overall rehabilitation program.

Medical Foundation News

Vernon Smith Honored by Medical Foundation

Vernon D. E. Smith (Med. '30) was succeeded on November 2, 1966 as president of the Minnesota Medical Foundation by Karl W. Anderson (Med. '23). The change of command occurred at the Fall meeting of the Foundation's Board of Trustees in St. Paul, and Dr. Anderson is now at the helm.

Dr. Smith's two years of exceptional presidential service to the Foundation won him a plaque of recognition from the organization on which was inscribed the following:

> *The Minnesota Medical Foundations honors Vernon D. E. Smith, M.D., for his exceptional loyalty, distinguished services and personal devotion to the Medical School, University of Minnesota, and his leadership and advocacy of the Minnesota Medical Foundation. November 2, 1966.*

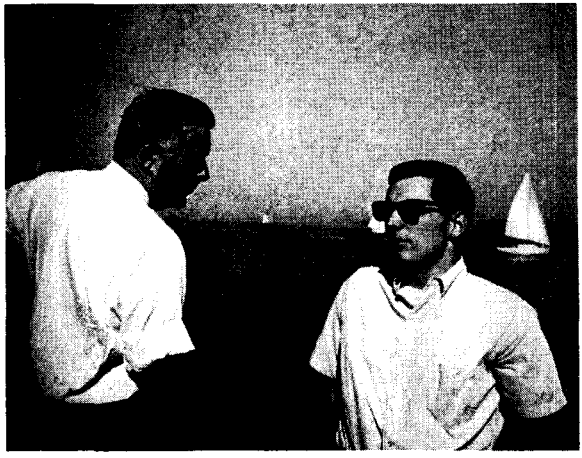
Dr. Smith, Dr. Anderson, and a handful of other alumni joined with faculty of the Medical School to establish the Minnesota Medical Foundation in 1939. Its growth and accomplishments in the 28 intervening years are tribute to the devotion and belief of the founders.

Dr. Smith served as a trusteee during the early years of the Foundation and was largely responsible, with Dr. Erling Platou, for acquainting the physicians of the state of Minnesota with the fledgling organization. This step was accomplished by "missionary visits" to county medical society and hospital staff meetings by Dr. Smith, usually carrying a reel of his famous outdoor movies.

When the Foundation began full time operations in 1959, Dr. Smith saw the realization of some of the founders' dreams come true. He rejoined the Board of Trustees in 1961, served as vice-president 1962-64, and was president 1964-66. He remains a member of the Board.

Carleton C. Evans ('66), H. Mead Cavert ('50), Melvin Goldfine ('57), and Thomas McNamara ('66).

N. L. Gault, Jr. (Med. '50) and Richard E. Carlson ('66)



H. Mead Cavert and Thomas McNamara

Eivind Hoff, Jr., executive director, Minnesota Medical Foundation, and Dr. Goldfine.

When Medical School administration members gathered in San Francisco, Calif. in October for the annual meeting of the Association of American Medical Colleges, a local alumnus, Dr. M. Melvin Goldfine (Med. '57) and Mrs. Goldfine hosted the group aboard their boat for a Sunday afternoon cruise of San Francisco Bay. The MEDICAL BULLETIN's photographer also hopped aboard, as did a handful of Minnesotans interning in the Bay area.

Medical School News

Dr. N. L. Gault to Leave Minnesota

Dr. N. L. Gault, associate dean of the College of Medical Sciences, has announced his resignation from the University of Minnesota effective June 30, 1967.

He will become a professor of medicine at the University of Hawaii, Honolulu, where a new medical school is being created. Dr. Gault's immediate assignment will involve two years on the island of Okinawa, where a new hospital and graduate medical training program is being planned under sponsorship of the University of Hawaii.

N. L. Gault

Dr. Gault's wife, Sarah, who is also a physician, will accompany him as will their three youngsters. The Gaults came to Minnesota from Texas in 1949 to complete their undergraduate medical training. Neal Gault also received the Ph.D. in internal medicine at Minnesota and was chief resident at University Hospitals before joining the Medical School faculty. He also served as director of Continuation Medical Education, and spent 1959-1961 at Seoul National University School of Medicine, Korea, under the University's educational exchange program.

His successor at the University of Minnesota has not yet been named.

Michael Paparella to Head Otolaryngology Department

Dr. Michael M. Paparella of Ohio State University, Columbus, Ohio, has been named to succeed Dr. L. R. Boies as head of the Department of Otolaryngology at the University of Minnesota upon Dr. Boies' retirement next June. Dr. Boies has been head of the department since 1955 and a faculty member since 1931.

Michael Paparella

Dr. Paparella, 33, is a native of Detroit, Mich., and received his undergraduate and specialty training in that state. From 1961-63 he was chief of ENT at the U.S. Army Hospital, Nuremberg, Germany. He is presently an assistant professor of otolaryngology and director of the Otological Research Laboratory at Ohio State University School of Medicine.

Alumni Notes

◆ **1913**

Frederick A. Love, Carlos, Minn., has retired after 52 years of medical practice in that community.

◆ **1922**

Helen Brenton Pryor lives at 659 Middlefield Rd., Palo Alto, Calif., and is a research associate in pediatrics at Stanford University School of Medicine. Recently she was co-author of an anthropometric study of anatomic deviations in 600 handicapped children, which was reported before the American Academy of Pediatrics. Her colleague and co-author in the research was **Dr. Hulda E. Thelander** (Med. '24), director of the Child Development Center, Children's Hospital, San Francisco, Calif.

◆ **1930**

Viktor O. Wilson was winner of the 1966 *A. J. Chesley Award* of the Minnesota Public Health Association for contributions to public health. Since 1948 he has been fulltime health officer in Rochester, Minn., for Olmsted County.

◆ **1932**

Clayton T. Beecham has been named president-elect of the American Association of Obstetricians and Gynecologists. He practices at the Geisinger Medical Center, Danville, Pa.

Charles G. Uhley, who practiced many years in Crookston, Minn., has retired and moved to live in Palm Desert, Calif. His address is 77-565B Michigan Dr.

◆ **1934**

Emil W. Johnson is now in general practice in Echo, Minn., after practicing in Minneapolis many years and serving as medical director of Stillwater State Prison 1961-65.

◆ **1935**

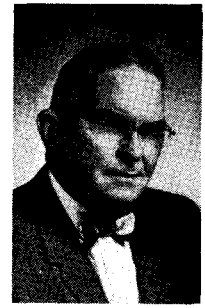
L. O. Underdahl of the Mayo Clinic is serving this year as president of the American Diabetes Association. He has been active in the organization for many years.

◆ **1943**

Richard M. Magraw, director of the Comprehensive Clinic program at the Medical School, won the 1966 *Norman A. Welch Memorial Award* for his book, *"Ferment in Medicine."* He received a gold medal and a $1,000 contribution in his name to the A.M.A.E.R.F. Judges declared Dr. Magraw's book to repre-

Clayton Beecham

Richard M. Magraw



Charles Uhley

sent "the most scholarly and meritorious contribution to the literature of medical care" during the past year.

◆ **1944**

Edward D. Henderson, Mayo Clinic orthopedic surgeon, has been appointed a member of the Clinic's Board of Governors.

◆ **1946**

Robert E. Carter has been appointed Dean of the Medical School and Director of the Medical Center, University of Mississippi, Jackson, Miss. He will leave his present post as associate dean of the University of Iowa College of Medicine on Feb. 1, 1967 to move to Mississippi, where he will join **John A. Gronvall,** (Med. '56), fromer acting dean, who has been appointed associate dean and associate director.

Roger I. Lienke is now chairman of the division of family medicine at the University of Oklahoma School of Medicine. He was formerly in private practice in Minnesota, and had served on the faculties of the University of Texas and University of Iowa.

Donald C. Hauser, who teaches at Hennepin County General Hospital, is now associated in the practice of radiology with the St. Louis Park, Minn. Medical Center.

Troy G. Rollins is now practicing dermatology with the Portland Clinic, Portland, Ore., and is associated with the University of Oregon Medical School. He lives at 1216 S.W. Yamhill Rd.

◆ **1948**

Leong Y. Hom, who is in general practice at Battle Lake, Minn., was elected chief of the medical staff of Lake Region Hospital, Fergus Falls, Minn.

◆ **1951**

Van S. Lawrence, former head of anesthesiology at Hennepin County General Hospital, has been appointed a consultant in anesthesiology at the Mayo Clinic, Rochester, Minn.

◆ **1953**

Gerald Maguire (Med. '53) and **Don Woodke** (Med. '61) are colleagues on the staff of Mendocino State Hospital, Talmage, Calif., a center for community psychiatry in northern California. The usual clinical services are provided, in addition to consultative, educational, and planning services for helping agencies in the 40,000 sq. mi. area from San Francisco to the Oregon border. The Hospital received a 1965 Bronze Achievement Award for excellence in its community programs from the American Psychiatric Association.

Gerald Maguire

Donald Woodke

Dr. Maguire serves part-time on the staff and part-time in the neighboring Glenn County General Hospital, Willows, Calif. He began his staff practice on January 17, 1966.

Dr. Woodke is full time on the Mendocino Hospital Alcoholism Service, which is believed to be the largest such inpatient service in the world. He has been a member of the staff since July 1, 1962.

◆ **1954**

Lloyd T. Wood has been appointed a consultant in PM & R at the Mayo Clinic, after completing a residency program there this year.

◆ **1955**

Lewis A. Johnson now resides at 60 Riverside Dr., New York City, "as a neighbor of former Dean **Harold S. Diehl.**" Since early in 1966 Lewis has been Director of Laboratories at the 500-bed St. Clare's Hospital, and teaches at Columbia University.

◆ **1956**

Martin Z. Fruchtman, Waukesha, Wis., internist, has been elected an associate member of the American College of Physicians. His practice stresses allergic diseases.

◆ **1957**

Dwight E. Jaeger is now associated in orthopedic surgery practice in St. Cloud, Minn., with **Edward LaFond** (Med. '44) and **J. H. Zeleny.**

Dale D. Lindholm concluded eight years of service with the U.S.P.H.S. in October and became associate professor of medicine and head of the Renal Section at Tulane University School of Medicine, New Orleans, La. He lives at 2216 St. Nick Dr.

◆ **1958**

Sidney W. Maurer has been appointed an assistant in pediatrics at the Mayo Clinic, where he is continuing his residency training after serving in the Peace Corps in Turkey for the past two years.

Thomas A. Stolee has become associated in the practice of pathology in St. Paul, Minn. with **Dr. E. M. James** and **Dr. J. W. James** (Med. '45).

It's a second daughter, Moana Marie, born Oct. 1, 1966 to **Dr. and Mrs. James A. Silver,** Belle Glade, Fla. The Silvers also enjoyed a trip to Hawaii last summer, and visited **James L. Erickson** (Med. '60) while in Honolulu.

◆ **1959**

James R. Thompson completed a residency in ophthalmology at the Mayo Graduate School of Medicine, and is now practicing in Bemidji, Minn.

Mike Davis writes from Neubrucke, Germany, where he lives with his wife and two children while serving with the U.S. Army, 98th General Hospital: "Have a booming little private practice consisting primarily of GI's running their tanks into unyielding objects such as trees, other tanks, etc. . . . but we miss Minneapolis, the Symphony, and pizza."

◆ **1960**

David W. Bean has joined the staff of the Mental Hygiene Clinic, Duluth, Minn., which provides a program for the Duluth Public Schools in treatment and education of severely disturbed children.

◆ **1962**

Robert L. Hegrenes, recently completing his military service, is now in general practice at the Rivers Edge Clinic, Farmington, Minn.

Kenneth A. Branch is "very happy in his new general practice" in San Diego, Calif., after four years of Air Force duty.

John D. Palmer

Thomas Koelz

David G. Piepgras

He lives at 3158 Mt. Carol Dr., with his wife, Sandy, and Scott, 3, and Julie, 2.

John D. Palmer recently resigned from the University of Colorado School of Medicine and joined the faculty of the new Medical School at the University of Arizona, Tucson, Ariz.

◆ **1963**

John D. Zapf is now in general practice at the Monticello, Minn. Clinic.

John D. Watson is out of the Air Force and is now a resident in OB-GYN at the University of Wisconsin Hospitals. His address is 1801 Lynndale Rd., Madison, Wis.

Larry R. Erickson is out of the Air Force and has begun a residency in dermatology at the University of Colorado School of Medicine. He is now living at 11993 E. Virginia Dr., Aurora, Colo.

Thomas Koelz has begun a residency in anesthesiology at University of Minnesota Hospitals. Tom spent two years in the Navy, and now lives at 5246 34th Ave. S., Minneapolis, with his wife and three children.

Larry J. Gallagher is practicing general medicine at the Ely, Minn. Clinic.

Nikolai Koropchak is now out of the service and in general practice with the Fridley Medical Clinic, 203 Mississippi St., Minneapolis, Minn.

William I. Mennis is presently with the U.S.P.H.S., and is stationed in Belcourt, N.D.

◆ **1964**

George P. Norbeck is serving with the Air Force near Sacramento, Calif. He and his wife are parents of a new daughter,

Kari. George and Joyce both have found the time to be active in local theater groups. (George played "King Arthur" in *Camelot.)*

Capt. Donald W. Peterson is a general medical officer with the U.S. Air Force, stationed in Turkey. His address is TUSLOG Det. 119, CMR Box 493, A.P.O. New York, 09016.

Garfield W. Brown was married earlier this year in Hamar, Norway, to Sigrid Christiane Holm, who was a surgical nurse in Oslo. They are now living at Ft. Sheridan, Illinois, where Garfield is serving with the Army.

◆ **1965**

David Piepgras writes from Andrews AFB near Washington D.C., where he serves as a flight surgeon: "My practice is quite general and I have the opportunity of world wide travel on Air Force assignments."

Gary T. Reiners is now in general practice at the Cambridge, Minn. Clinic.

Byron C. Olson is now serving with the U.S. Army Medical Corps in Vietnam. Mail will reach him c/o Box 245, Healdsburg, Calif.

Capt. Severt L. Jacobson is now serving with the Air Force. His address, 1st Brigade, 82nd ABN Div., Ft. Bragg, N.C.

Alumni Deaths

◆ **1906**

Dr. Margaret Isabel Smith, Gardena, Calif. Died April 5, 1966 of myocardial infarction. She was 83 years of age.

◆ **1923**

Dr. Arnold S. Anderson, St. Petersburg, Fla. Died Aug. 30, 1966 of metastatic melanoma at the age of 68 years. He was a chest physician in Minnesota for many years before moving to Florida, where he had continued his practice. He is survived by Mrs. Anderson and a son and daughter.

◆ **1933**

Dr. Henry B. Clark, Jr., Minneapolis, Minn. Died recently in University of Minnesota Hospitals. He was chairman of the Department of Oral Surgery in the University of Minnesota School of Dentistry, and had been a faculty member since 1947. Dr. Clark was originator of the graduate training program in oral surgery at Minnesota.

MEMORIALS

The Minnesota Medical Foundation acknowledges with gratitude recent contributions made in memory of:

O. C. Chamberlin
Andrew Dahlstrom
Mrs. Marion Freeman
Tommy Kasper
Mrs. Cecilia McAlister
Dr. Irwin L. Oliver
Mrs. Bonita J. Roberts
Mrs. Belle Thomas
Dr. Earl Trucker

NOTICE TO MEDICAL ALUMNI

Any Medical School graduate who did not receive a copy of the new MEDICAL ALUMNI DIRECTORY last month should notify the Minnesota Medical Foundation, Box 193, University Hospitals, Minneapolis, Minn. 55455. A second copy will be sent without cost, as was the first. Additional copies of the MEDICAL ALUMNI DIRECTORY may be obtained from the Foundation for $2.00 each, postpaid.