



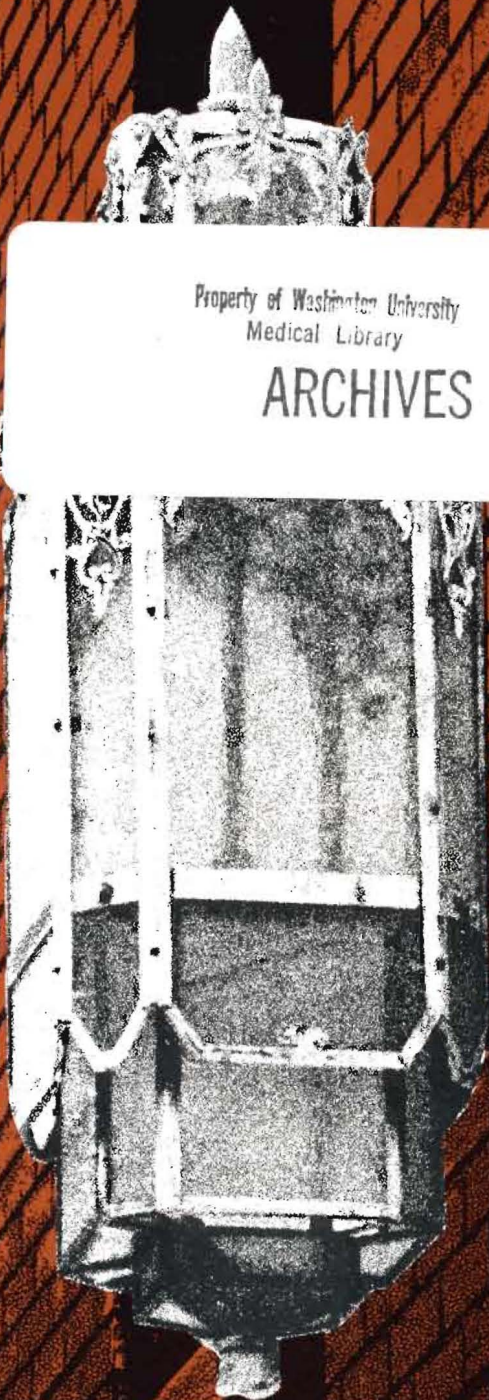
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Washington University School of Medicine

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Story on page 24

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Summer 1980

Volume XVII, Number 2

The Future of Academic Health Centers	2
Transplanting Insulin-Producing Cells From Rats To Mice	10
Neonatal Neurology: One Of The Last Frontiers In Pediatrics	12
Continuing Medical Education	18
Living, Learning and Caring in Africa: A Medical Missionary's Story	24
James S. McDonnell	28
Newsbriefs	30
The Alumni Report	31

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On the cover:

Photo by Casey Croy.

Is that the Lamp of Knowledge up against the wall? In reality, it is one of a pair of lamps (the western one) on the south entrance to the Washington University School of Dentistry in the Medical Center. The cover represents the medical-center theme of the issue which begins with "The Future of Academic Health Centers," includes articles about research at the School of Medicine and an alumnus' perspective after 20 years as a medical missionary, and concludes with a special insert, the annual report of the Washington University Medical Center.

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The Future of Academic Health Centers



“The Future of Academic Health Centers” was originally an address given to the Association of Academic Health Centers (AAHC) at its 1980 spring meeting in Washington, D.C. The subject of the three-day meeting was the presentation of the results of a three-year in-depth study of the organization and governance of academic health centers.

According to the AAHC study report, the modern academic health center came into existence after World War II. In the prosperous 1950's, government invested considerable funds in research, construction of classrooms and clinics and laboratories, and the education of more doctors and health professionals to meet the needs of America's growing population. Expansion of academic health centers continued through the altruistic 1960's, when the goals were to increase and to improve health care for the poor and the aged. During the 1960's, the schools of dentistry, nursing, pharmacy, public and allied health also grew in number, capacity and influence, and affiliated with academic medical centers.

Today, academic health centers are complex and dynamic amalgamations of hospitals, schools, clinics and laboratories. They respond to students, faculty, university, patients, employees, their communities and regions, regulatory agencies at many levels, the local and national media, and politicians and their constituents. As Ray Wittcoff wrote in his position paper in Volume 3 of the AAHC report:

“There are programs to educate doctors for all of the medical and surgical specialties and general practice, programs to educate dentists, hospital administrators, public health officers and technicians of all sorts, programs to provide continuing education for doctors and instruction in preventive medicine for the general public, programs to do research and train investigators in basic biologic sciences and all the clinical specialties, programs to function as a tertiary care center treating the most seriously ill and injured from an entire region, programs to provide primary and secondary care (including some social services) for people living in the vicinity of the center, and programs to provide staff assistance to other hospitals in the region . . .”

Instruction in health sciences requires a hospital setting. Education and research are as important to the academic health center as patient care. Health care delivery also generates income which results in administrative complications and a level of self-sufficiency not normally found in such university professional schools as law or engineering. Because patients are being treated, the academic health center must cope with regulations, licensure requirements, malpractice insurance, peer review, rate setting and other interventions not normally found in such university professional schools as law or engineering. Education and research efforts distinguish academic hospitals from non-teaching hospitals. Yet, academic health

centers are more than a group of teaching hospitals. In long-term policy and in daily decisions, academic health centers must contend with the authority of faculties, the balance between education and patient care, the need to provide clinical training to residents, and to manage programs of externally funded research.

The AAHC's three-year study placed special emphasis on the relationship of academic health centers to university-wide governance, structure and policies. The study was sponsored by the AAHC and supported by a grant from the W.K. Kellogg Foundation. The study project director was Kenneth R. Crispell, M.D., University Professor of Medicine and Law at the University of Virginia in Charlottesville, and a former medical school dean and vice-president for health affairs. A steering committee, composed of representatives from the top levels of academic health centers, health professions schools and universities was established to set policy for the study task force. Raymond H. Wittcoff was the only layman and the only trustee to participate in the steering committee.

The study focuses on 16 issues, and information was gained through informal interviews with health center and university administrators, through literature searches, and through questionnaires covering three general subjects: organizational structure, governance processes, and the future of academic health centers. All 87 institutional members of the AAHC in the United States cooperated in the

study. The sixteen issues determined for the questionnaire were:

- Missions and goals,
- Cost containment and funding,
- The impact of external forces,
- Allocation of money and space,
- Trusteeship,
- Departmental structure and administration,
- Clinical earnings and faculty practice plans,
- Interschool relationships,
- The place of the teaching hospital,
- Appointments, promotions and tenure,
- Administrative roles and responsibilities,
- Faculty governance,
- Relationships with the parent university,
- Coordination of extramural education,
- Continuing education for the health professions,
- Health education for the public.

The conclusions and recommendations of the study were grouped under the 16 key issues and are based on information from responses to the questionnaire, position papers prepared for the project, previous studies and the experiences of the steering committee and staff. The AAHC has published a four-volume report on the study, “The Organization and Governance of Academic Health Centers.” Volume 1 is the “Executive Summary.” Volume 2 is the “Presentation of Findings.” The third volume is “Position Papers,” and the fourth is “Literature Review.” ■



A member of the Board of Trustees of Washington University, a director of the Washington University Medical Center, and chairman of the board of the Jewish Hospital (affiliated with the medical center), Raymond H. Wittcoff is by profession a developer and by nature a man who adds dimension to the term "developer."

As a real estate developer in 1959, Wittcoff built the first new office building constructed in downtown St. Louis in 30 years. In a broader sense of development, Wittcoff chaired the committee which established national educational television. Supported by the Ford Foundation, the National Citizen's Committee for Educational Television worked, in the 1950's, to reserve non-commercial channels and to build the country's educational television stations. He served also as vice-chairman and as chairman of the executive committee of the

National Educational Television network (NET), and was a leader in establishing the public television station in St. Louis.

Wittcoff is president of Transurban Investment Corporation of St. Louis, a real estate investment firm that has been a leader in the revitalization of downtown St. Louis, involved in the creation of at least four landmark downtown structures. He was the first president of Downtown St. Louis, Inc., when revitalization and rebuilding of the riverfront was just beginning. He is on the board of the organization which planned the world-famous Gateway Arch — the National Expansion Memorial Association.

In addition to his service to Washington University and the medical center, Wittcoff is chairman of the Missouri Selection Committee for Rhodes Scholars, the Greater St. Louis Arts and Education Council and the Governmental Research Institute.

The Future of Academic Health Centers

(an address presented to the Association of Academic Health Centers, Washington, D.C. on April 13, 1980)

by Raymond H. Wittcoff

Detached from the details of day-to-day operations, trustees are supposed to see things as a whole, to look at our institutions in relation to what is going on in society, and to take the long view. But detachment is hard to achieve when we are thinking about institutions to which we feel deeply attached. My thinking about academic health centers is colored by my convictions about their extraordinary importance for our society. Apart from their vital role in promoting the nation's health and relieving human suffering, it seems to me that in responding to the challenges now confronting them, they have a unique opportunity to prove the efficacy of free and autonomous institutions. And this is important because the central issue of this century is not the efficacy of science, which is now accepted almost everywhere, but the efficacy of free institutions, which is questioned almost everywhere. The question is whether individuals can shape creatively the destiny of their own institutions, or can they only struggle to adapt their institutions to inexorable forces beyond their control.

This study has found out what the people who run the academic health centers think is going to happen to them in the next 10 years, and whether they think those things are desirable or undesirable.¹ Responsible leaders in every field have to anticipate trends, and people trained in biology are specially aware that adaptation is the key to survival. But a more robust approach to leadership is needed than merely to spot trends and then adapt to them.

A useful starting point in our thinking about the future might be to focus our attention on those conditions which big majorities of the respondents in the survey believe are most likely to happen but are least desirable, and those conditions perceived as being the most desirable but least likely to happen. Occasionally, we must buck the trends if the essential character of our institutions is to be preserved. I shall comment on several trends which, in my opinion, threaten the future of academic health centers.

First, there are the trends which threaten their academic character. Although the Congress and the Administration regularly reaffirm federal support for medical research, the real dollars available for research after inflation are decreasing substantially. Funds for professional education and new facilities are decreasing. This must be viewed in the context of a clear national resolve to reduce over-all federal expenditures. In this decade, most of any modest increase in federal expenditures for health will probably be used to deliver medical care to the growing number of persons over 65 in an aging population, leaving less support in real dollars for research and education. These realities are hard to accept for a generation of administrators nurtured by unprecedented federal largesse, a generation with a mind-set fixed on expansion. While private philanthropic support is significant and should be increased, it represents a drop in the bucket of the total requirements of the nation's academic health centers.

A realistic appraisal of the future suggests that the best to be hoped for in research and education in this decade is a steady-state. Maintaining a steady state will require all of the ingenuity we can muster. It will not be achieved through business as usual. As Dr. David Rogers, President of the Robert Wood Johnson Foundation, said: "A steady-state future need not be static, stationary or regressive . . . It will require that institutions decide what must be eliminated or reduced in order to start new ventures. But that steady-state future has some real possibilities for allowing us to decide what is fundamental and precious to our academic health centers so we can shape them

more precisely to meet those objectives than we found possible during the breathless rush to bigness and complexity . . ." Dr. Rogers believes that the key to economic survival and support for the academic mission is a substantial increase in clinical practice income to offset the drop in research grants.²

We know that this is not as simple as it sounds. Unless clinical practice plans are compatible with the academic character of our institutions, they may compound the difficulties which they purport to correct.

Faculties with expanding clinical responsibilities will need more clinically oriented people. Enlarged earning opportunities and new criteria for appointments and promotions may be needed to attract to full-time academic positions more promising clinically oriented physicians and surgeons. The inordinate rise in the cost of living is compelling them to consider abandoning academe for more lucrative careers in private practice.

From the standpoint of their paramount responsibilities to patients as tertiary care centers, some university-affiliated hospitals might be less interested in whether a clinician has full-time academic status or is in the private practice, and more interested in the physician's distinction as a clinician and his ability to fill the beds.

Many elements comprising the academic health center will be tempted to take the fullest possible advantage of the increasing demand for their in-patient and out-patient services. This is good business. It meets a market demand. It satisfies community needs. It fills beds. It enables doctors to make more money. It makes possible the retention of staffs and the balancing of budgets hard hit by inflation and the loss of research grants. Indeed, as in Greek drama, the "deus ex machina" has appeared in the form of the third-party payers to save the situation. Is it possible that some of our institutions in the process of being saved might lose their souls?

Those of us who share a responsibility to protect the best traditions, as well as the solvency, of our institutions must ask this question: will plans for expanding clinical practice really generate support for research and teaching, or will they divert energies, and even whole careers, away from those activities which give the university connection its meaning? The answer, I suspect, will vary with each plan according to its specific provisions, its implementation, and the environment in which it operates. So the question calls not for doctrinaire responses, but for the wisdom (and the magic) to work out flexible arrangements which will facilitate the performance by these institutions of each of their vital functions.

Dr. James Wyngaarden, in his presidential address last year before the Association of American Physicians (entitled "The Clinical Investigator As An Endangered Species") focused on a remarkable set of facts. He noted that: "In the last decade, the numbers of medical school graduates, of full-time faculty in American medical schools, and of faculty in departments of medicine have all doubled. Meanwhile, between 1968 and 1975, the number of American physicians reporting research as their primary activity declined from 15,441 to 7,944."³

The recent experience of American industry is instructive. We have gloried in the possession of the world's most productive industrial plant. Now we are stunned to discover that our productivity is lagging behind some other industrial nations, and this regression is related to the fact that American industry, preoccupied with short-term earnings, has diminished its investment in research and development. Similarly,

the quality of medical practice and the nation's health will be affected if our stock of medical knowledge is not constantly enhanced. We should not be lulled into complacency by our present preeminence in medical research. The government is now looking for ways to stimulate industrial research through such devices as more generous depreciation allowances and investment tax credits. Perhaps a comparable stimulus in medicine would be to take into account in the reimbursement formulas the special character of teaching hospitals whose educational and research responsibilities are inseparably related to patient care. From the standpoint of cost containment, research costs are a small fraction of total health-care costs, and in the long run they offer the best hope for the reduction of the costs as well as the suffering involved in many diseases.

Dr. David Kipnis (Busch Professor and Chairman of the Department of Medicine at Washington University School of Medicine), in his presidential address to the Central Society for Clinical Research, contends that the sharp drop in the number of physicians going into research cannot be ascribed simply to economic factors. He suggests that "the medical sub-specialties themselves, through the training programs they have developed and the scope of research they pursue, have contributed substantially to the paucity of young physicians committing themselves to full-time careers as clinical investigators." He refers to the narrow focus of training programs which have "the built-in presumption that the sub-specialty unit is capable of providing all the research experience needed to prepare the future academician for an independent and productive investigative career." Dr. Kipnis asks: "How many subspecialty units expose their research trainees to the sophisticated concepts and methodologies of cellular biology, molecular genetics, membrane biochemistry and biophysics, immunogenetics, cellular and humoral immunology, and molecular pharmacology to unravel the pathogenetic mechanisms of common clinical problems . . ."⁴

The proliferation of sub-specialties has brought enormous benefits to patients. It also brings to a layman's mind some troubling questions. We know that specialization is the strength of our academic health centers. It is through the process of specialization that science advances. But it is a fragmenting process. Does a preoccupation with the fragments sometimes obscure the unity of scientific knowledge, the unity of the person, and the unity of the institution?

There are many facets to this. Consider the patient in a teaching hospital who presents a complicated problem. He is converged upon by a bewildering assortment of specialists who are very good at taking him apart. Are they equally good at putting it all together again? Does it come through to the patient that there is a keen awareness of his wholeness, a sensitivity to needs that cannot be measured, and a feeling for his own role in getting well? We know from our experience that we can have super specialists and the newest technology without any loss of warmth and compassion. This goes deeper than public relations. It relates to the spirit that animates the institution.

One may wonder whether a staff member feels a closer attachment to the national professional societies in his specialty than to his university or hospital. He interacts regularly with colleagues in his own field who work thousands of miles away. But his contacts with a specialist in another field, whose office happens to be down the same corridor, might consist only of occasional collisions over the use of limited space and funds.

More is at stake here than good fellowship or the efficient use of resources. Universities and their health centers are more than elaborate support systems for single scholars or groups of specialists who are doing their own thing. A university is an intellectual community in which specialists, in addition to being obligated to their specialties, are obligated to talk with and to understand one another and to strive for a genuine communion of minds. The intellectual vitality of the entire institution depends on interdepartmental collaboration.

To some observers the departments in medical schools resemble rival hegemonies bound together by mutual non-aggression pacts. Department chairmen enjoy a high degree of autonomy which is supported by a long-standing and illustrious tradition. How does this affect the unity and cohesiveness of academic health centers? It is doubtful whether there are any institutions where decision-making authority is more widely dispersed. So it seems essential that department chairmen, as well as deans and chief administrative officers, be persons whose intellectual breadth is evidenced by interests which transcend their specialties, and whose temperaments incline them more toward building bridges than fences. Their enjoyment of relative autonomy entails an obligation to be good collaborators who can inspire their staffs with a sense of the unity and the wholeness of the institution. Men and women of this sort in key positions can do more for the future of academic health centers than can any kind of structural change.

One of the conditions which the respondents in the survey think is most likely to happen and is least desirable is increasing governmental regulation with decreasing institutional autonomy. The cost of complying with excessive regulations is adding fuel to the fires of inflation. Our staffs are bogged down in a morass of rules and reports which divert them from their important work. The current plight of New York hospitals is an ominous example of the horrendous consequences of tying up institutions with red tape.⁵ What can be done about this?

One thing we should not do, it seems to me, in opposing excessive regulation is to give the impression that we are attacking the idea of regulation. That could be counter-productive. Academic health centers have to live with regulations because of the public interest in everything they do. They receive large sums of public money for patient care and for research. They are perceived by the public as life-saving centers where the most serious illnesses and accidents are treated. They are among the largest employers in the regions which they serve. But their spokespersons must bring to people in government at all levels a better understanding of this critical point: regulations should be imposed with the same restraint and concern for side effects as are decisions to use invasive measures in medicine. Systematic studies are needed to weigh the costs and benefits of each kind of regulation. Universities have the analytic capabilities to make these studies. The public is now benefitting from airline deregulation because people in government were convinced by hard empirical data derived from the experience of some carriers. The facts were more persuasive than polemics or pressures.

Trustees should serve as buffers as well as bridges between institutions and the public. They should be prepared to speak up in defense of institutional harmony. The most persuasive argument against external controls is to show that internal controls are effective. Audit committees should be composed of competent and hard-working trustees. Governing boards should be satisfied that



mechanisms for professional peer review are in place within their institutions.

Trustees have learned that universities and hospitals are more complicated than most businesses. In business it is easier to keep score; the results are clearly stated on the bottom line of a profit-and-loss statement. In universities and hospitals there are important results that elude the bottom line. Some indices of success or failure are quantified in other ways. There are inputs and outcomes which are intangible and defy quantification. There are whole programs which are vitally important and inherently uneconomic. But this does not excuse waste. This does not relieve us of our obligation to question whether the most efficient use is being made of limited resources. It does explain why interventions to eliminate waste should be the responsibility of people close to the institutions who understand their special character.

This suggests a principle of governance, deeply rooted in America, which might be termed the principle of subsidiarity. The principle is that functions performed effectively by subordinate or local organizations belong more properly to them than to a dominant central organization. Efforts to curb waste which compromise this principle might in the end turn out to be self-defeating. Separate governing boards for hospitals within an academic health center seem plausible in light of the principle of subsidiarity. The independence of private universities and hospitals will grow with their endowments. Independence is threatened by deficiencies in funds and nerve.

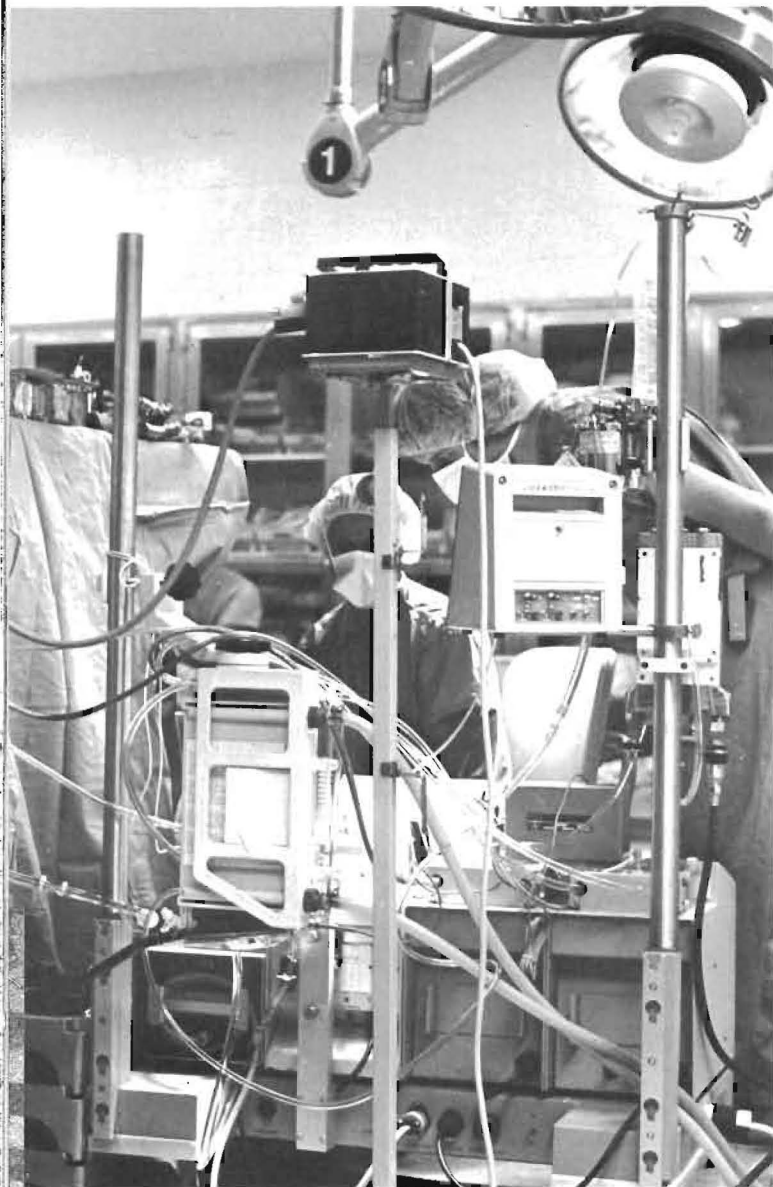
The autonomy of hospitals is threatened by the crisis of rising costs. As an alternative to mandatory government controls, hospitals should explore new arrangements with insurers, employers and doctors based on prepayment and built-in incentives for cost control. In Minneapolis, where several fast-growing health maintenance organizations are competing with each other, there is fresh evidence of how competition can contain costs.⁶

I shall mention one other situation where bucking the trends has

worked. Some of our oldest academic health centers are located in central cities where they have been threatened by the spreading blight. The institutions comprising the Washington University Medical Center decided to fight the blight in St. Louis rather than to flee from it. They formed a redevelopment corporation to reverse the destabilizing trends. The Medical Center provided the leadership and the funds which sparked the redevelopment of the area which surrounds it. An investment of approximately \$2 million by the Medical Center has already stimulated more than \$45 million in other private investment in the neighborhood.

The future of an institution is less likely to be shaped by grand policy declarations of its governing board than by the countless decisions about the uses of people, money and space made daily at various levels within the institution and by external funding agencies. Unless these daily decisions are informed by a shared vision of the future, their cumulative effect over the years may result in serious imbalances. Keeping things in balance becomes more challenging as these multipurpose institutions continue to move in new directions. For example: the knowledge explosion requires continuing education for all categories of professionals; preventive medicine requires imaginative approaches to health education for the general public; and the new awareness of the impact on health of environmental and social factors prompts new modes of collaboration with other disciplines in the university.

We have suggested that periodically, perhaps once every several years, there be reviews of the academic health center's overall performance. Administrators, faculty leaders and some trustees would participate in these reviews to discuss such questions as: "How do the programs of each part relate to the overall objectives of the whole center and to the changing needs of society?" "How do commitments square with objectives?" "How do resources square with commitments?" The role of trustees in these discussions would be to raise questions. Trustees have to be very careful to



observe the distinction between asking questions and meddling in management. Questions can be constructive. Meddling is destructive.

We have found that one of the great strengths of academic health centers in America inheres in their diversity. Through the exchange of their diverse experiences, which this association facilitates, they will find ways to cope with the forces that threaten their academic character, their cohesiveness, their autonomy, and the environment surrounding them. This new era of limitations will stimulate innovation.

A great architect once said that limitations are the friends of art. So, the times call for resourcefulness as well as restraint, and for that unshakeable confidence which reflects what Tocqueville called "a love of the future." By their creative responses to challenges that confront them, academic health centers can assure for themselves a future even brighter than their recent past. ■

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Study Recommendations

The AAHC study included 59 recommendations. Many apply to both public and private academic health centers, and some are more appropriate to either public or private. The recommendations applying to both types of centers, or specifically to private centers are:

- Academic health centers should establish a formal written statement of missions and goals.
- Goals and missions should be reviewed and revised regularly.
- Each center should strengthen its financial and managerial systems to eliminate waste and increase effectiveness.
- Trustees should become more involved in establishing financial policies for AHCs.
- The Congress should recognize AHCs as an essential national resource and should provide a substantial share of the basic operating costs for teaching and research on a regular and continuing basis.
- AHCs should develop ways of minimizing the effect of outside fiscal restraints on the integrity of institutional programs.
- AHCs should establish a program to educate the public about the value of research to the eventual solution of health care problems, the need for additional funds not only to maintain present educational and research efforts but also to initiate new ones, the adverse effects of certain federal and state regulations on institutional self-determination and academic freedom, and the need for cooperation in controlling the cost of health care.
- The AHCs should establish at the health center level an organizational unit for institutional planning and analysis that is coordinated with similar activities at the university level.
- AHCs should develop formal programs for informing trustees about, and involving them in, the affairs of AHCs.
- AHCs (where not mandated by state law) should select trustees who are community leaders and who possess a wide knowledge of the community and of how the institution can best serve it.
- AHCs that have not already done so should institute a plan for distributing clinical earnings which is aimed at achieving the following goals: equitable distribution responsive to institutional objectives, participation by all clinical departments, recognition and reward for those individuals and departments making major contributions, and high quality management that will effectively serve patients, clinicians, and the institutions.
- AHCs should establish organizational mechanisms that permit chairmen of clinical departments to assume a responsible role in the management of hospital resources.
- AHCs should exert leadership in developing programs which foster the regionalization of health care and should involve all units of the center in planning these programs.
- AHCs should thoroughly re-examine and assess appointment, promotion and tenure systems, particularly as they pertain to clinical faculty members, in order to make these systems compatible with current missions and goals.

- AHCs should establish, if it does not already exist, an administrative council which advises the health center CAO and is comprised of the deans of the health schools, the director of the principal teaching hospital, and the directors of other administrative units of the center to provide the leadership for coordinating the multiprofessional activities of the center.
- AHCs should evaluate and, where necessary, restructure mechanisms for faculty participation in major policy decisions to ensure meaningful participation and adequate representation.
- The relationship between the AHC and the parent university or university system should be maintained and strengthened.
- AHCs should begin planning and implementing expanded institutional programs in continuing education; the planning process should include consideration of the financial resources and faculty manpower required, the degree of involvement of faculty members in existing programs, possible ways of making the program self-supporting, and the establishment of consortia with other institutions and agencies to avoid duplication of effort.
- AHCs should establish programs of health education for the public to be coordinated with educational programs for health professional students and with efforts by other organizations to educate the public in preventive medicine and health care.

Strongest Opinions

Most Likely

1. AHCs will provide more continuing education
2. Increased affiliations between universities and health facilities
3. Continued medical school dominance
4. Increased demands for primary and secondary care
5. Greater involvement of non-physicians in direct patient care
6. External regulations will reduce university autonomy
7. Hospital directors will report directly to CAO
8. Alternative standards for appointment, promotion, and tenure
9. Increased size of clinical faculty
10. Health schools will assume more of costs of instruction

Least Likely

1. Chief administrative officer (CAO) will be unnecessary
2. Departmental management by health center-wide business managers
3. Deans will report to university president
4. CAO will be staff position
5. One individual will be both dean of medicine and CAO
6. Hospital directors will report to dean of medicine
7. Decrease in AHC patient population
8. Decrease in federal funds and federal influence
9. Deans of nursing schools will administer nursing services in hospital
10. University presidents will be the major decision makers in AHCs

Most Desirable

1. AHCs will provide continuing education
2. AHCs will assume more responsibility for education of general public
3. Unified process of accreditation
4. Hospital directors will report directly to CAO
5. Increase in community-based educational programs
6. Increased interprofessional team health education programs
7. Increased affiliations between universities and health facilities
8. Basic science faculties will be combined to serve all AHC schools
9. Policy decisions will be made by health center council
10. Greater involvement of non-physicians in direct patient care

Least Desirable

1. Faculty unionization
2. One individual will be both dean of medicine and CAO
3. External regulations will reduce university autonomy
4. House staff will join employee organizations
5. Decreased priority for education in teaching hospitals
6. Governmental determination of house staff distribution
7. Decrease in university funding of AHCs
8. Decreased patient population in teaching hospitals
9. Hospital directors will report to dean of medicine
10. CAO will become staff position

Transplanting Insulin-Producing Cells From Rats To Mice

Paul E. Lacy, M.D., Ph.D. (Mallinckrodt Professor and Chairman of the Department of Pathology), Joseph M. Davie, M.D. (professor and head of the Department of Microbiology and Immunology), and research assistant Edward Finke have successfully transplanted islet cells from a rat pancreas to diabetic mice. They have shown that insulin-producing beta cells within the islet, taken from healthy rats, could reverse diabetes in the recipient mice. The announcement was made in July by Health and Human Services Secretary Patricia Roberts Harris, who termed the accomplishment "a significant advance both in the fields of immunology and organ transplantation and in the continuing search for better methods of treating diabetics who are dependent on injections of insulin for survival." The research is supported by a grant from the National Institute of Arthritis, Metabolism and Digestive Diseases, part of the National Institutes of Health, and by the Kroc Foundation.

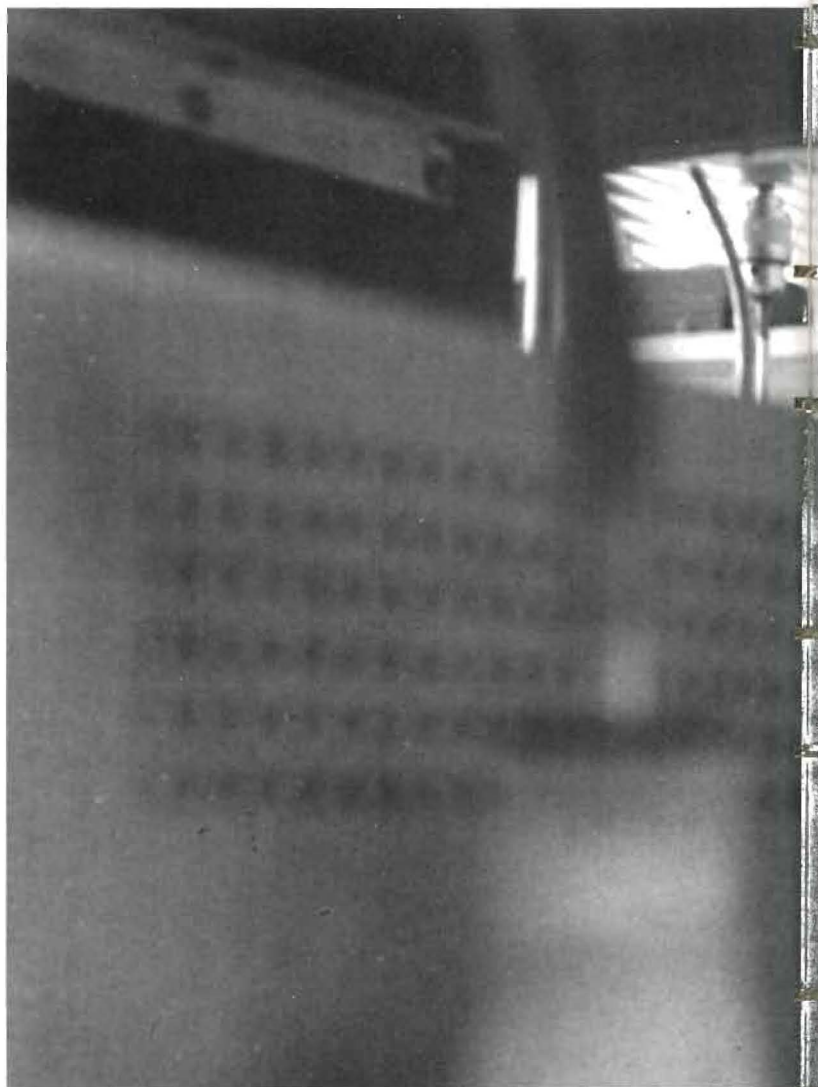
In recent years, islet cells and whole pancreas glands have been transplanted successfully into inbred strains of diabetic animals. Islet cell transplantation in experimental animals of different strains, however, has been impeded by the problem of immune rejection. Last year, Lacy and his colleagues transplanted rat islet cells into rats of a different genetic strain without graft rejection.

In the most recent project, healthy rat islets were placed in tissue culture for seven days at 24 degrees C to lessen the rejection-inducing capability of immunologically active cells present in the islet tissue. Immediately

before transplantation, the diabetic mice received a single injection of immune-suppressive drugs to minimize their natural immune response and to reduce further the risk of graft rejection.

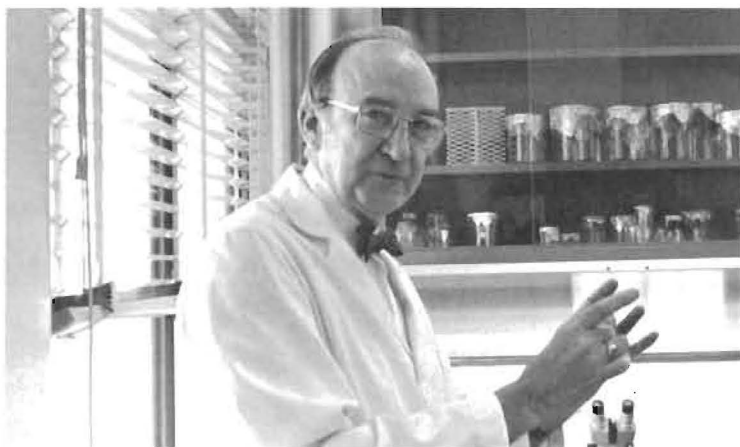
The rat islets were transplanted into the livers of 10 diabetic mice. Within two to four days, the elevated blood glucose levels of the mice returned to normal. Most significantly, seven of the 10 mice continued to maintain normal blood glucose levels 100 days after transplantation. These animals will remain under close observation to determine whether rejection of the islet cells will occur at a later time, or whether this procedure has produced indefinite graft survival. In contrast, diabetic mice receiving transplants of untreated rat islets without the immune-suppressing injection rejected their grafts within 7-12 days.

The ultimate goal of the research team is to determine whether the simple combination of islet incubation at low temperature and a single injection of immune-suppressing drugs will eventually permit successful transplants into human diabetics. At present, it is not feasible to apply the results of the research of Lacy and his colleagues to the treatment of diabetes in man. Several major obstacles must be overcome before this type of islet transplantation can be attempted in humans. The adaptability of the culture procedure must be examined to determine if it will be suitable to the transplant of islets from other animals, as well as man. Specific cell types and the numbers of cells responsible for immune rejection must be identified, and procedures must be developed to eliminate these cells prior to islet transplantation.

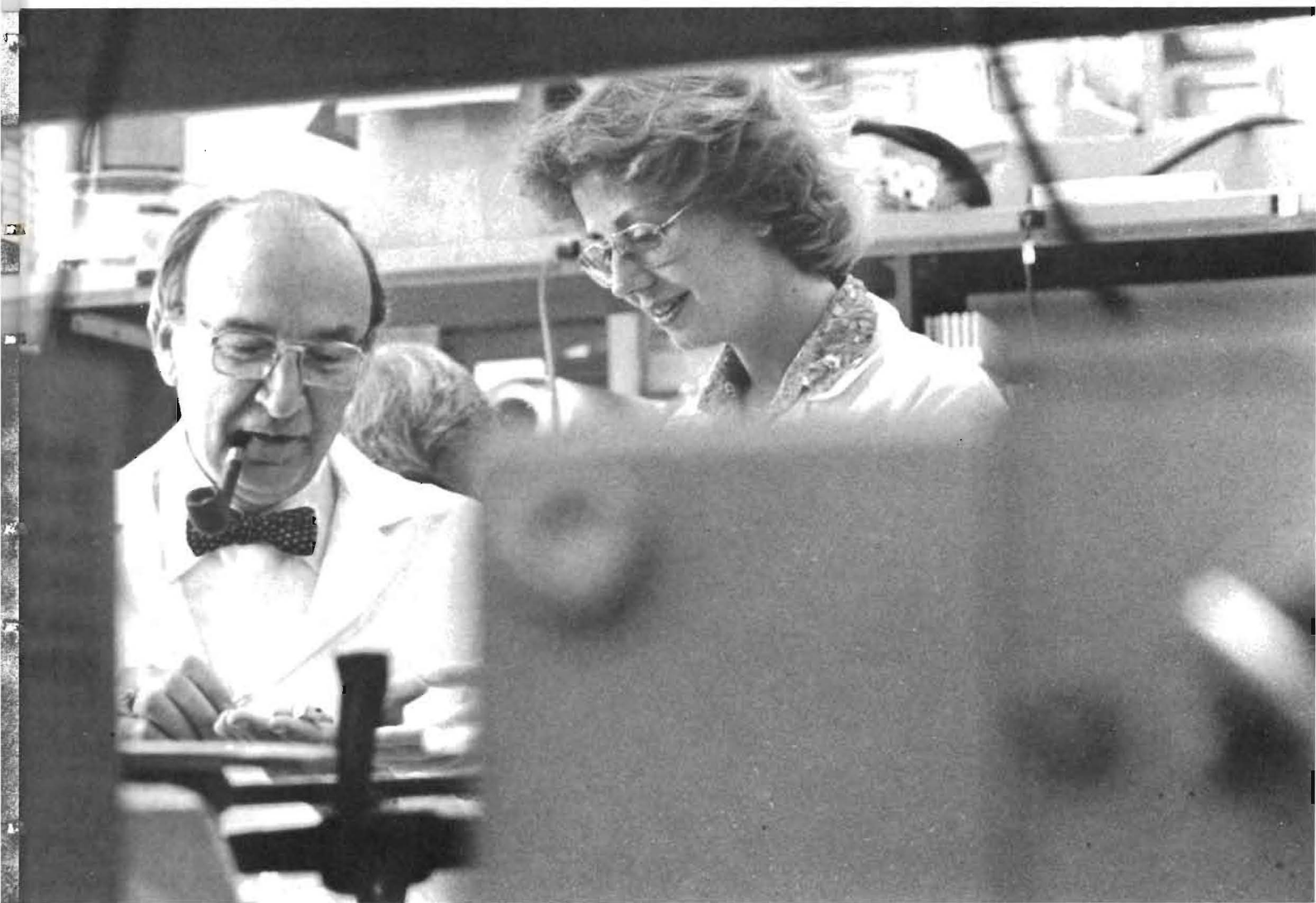


Other important questions concern whether, and for how long, islet transplants into different species will maintain normal metabolic activity in the recipients. The minimum number of transplanted islet cells required to normalize blood glucose levels will need to be determined. Further research is also required to determine the best site for islet transplantation to achieve optimal

blood glucose control and to permit removal of the islets should adverse reaction occur. Other problems to be solved include the development of techniques for extracting islet cells from the pancreas of man, cattle and pigs, the establishment of adequate supplies of islet tissue for transplants, and the methods of preserving the supplies. ■



Paul E. Lacy, M.D., Mallinckrodt Professor and Chairman of the Department of Pathology, leads the research team which successfully transplanted islet cells from healthy rats to diabetic mice, arresting the diabetes.



In the laboratory, Lacy works with Denise Faustman, who is in the third year of the M.D./Ph.D. program at the medical school.

Neonatal Neurology: One Of The Last Frontiers



Modern neonatal intensive care units save premature babies from pulmonary crises. "It is increasingly clear that the neurological outcome of the survivors is now the most critical issue," says Joseph J. Volpe, M.D., professor of Pediatrics, Neurology and Biological Chemistry.



Eighty percent of Volpe's patients are premature babies. Full-term babies with neurological problems are born of mothers with such problems as diabetes or toxemia. Volpe sees an average of two or three new patients a day in the Intensive Care Unit at St. Louis Children's Hospital.

In Pediatrics

by Joan Carter Johnson and Casey Croy

“**T**here is beginning to be a groundswell of interest in neonatal neurology throughout the country — more so among neonatologists than among neurologists. The interest is rising because of the need to solve problems caused by solutions to another problem. I consider neonatal neurology to be one of the last real frontiers in pediatrics,” says Joseph J. Volpe, M.D., professor of Pediatrics, Neurology and Biological Chemistry at the School of Medicine.

The technologies and methods of neonatal intensive care, which came into full fruition in the 1960's, solved the primary problems of the time — pulmonary — but have led to the survival of infants who subsequently develop significant neurological problems during the neonatal period. “It is increasingly clear that the neurological outcome of the survivors is now the most critical current issue,” Volpe says.

Volpe sees an average of two or three new patients a day — newborn infants who have severe neurological problems. Eighty percent of them are premature babies. The full-term babies with neurological problems are born of mothers with such problems as diabetes or toxemia. According to Volpe, there are few clearly defined causes for premature birth. Nearly half of all the babies in the neonatal intensive care unit at St. Louis Children's Hospital (part of the Washington University Medical Center) sustain intracranial or intraventricular brain hemorrhage. As a result of the hemorrhage or other problems such as asphyxia or apneic spells, which cause a drop in blood pressure and disturb the flow of blood to the brain, any or all of three major types of neurological sequelae can develop in the newborn. Neurological development can be delayed and later

be manifested as mental retardation; or cerebral palsy or seizure disorders, such as epilepsy, can develop. At worst, some survive but do not develop a neurological function beyond that of the newborn stage. Physical growth is retarded, but the infant grows and can live for several years with no more neurological development than was present during the newborn period.

Volpe concentrates on developing methods to predict and prevent intraventricular hemorrhage and to detect and treat hemorrhage and minimize its effects. He brings the results of his work to pediatric neurologists, neonatologists and pediatricians throughout the country, making approximately 10 trips a year to speak, lecture and participate in symposia at major universities and medical centers.

Volpe came to Washington University in 1971, having completed his neurological training at Massachusetts General Hospital in Boston. He came here to work with one of his former teachers, Phillip Dodge, M.D., Professor and Head of the Mallinckrodt Department of Pediatrics and professor of neurology and neurological surgery. It was Phillip Dodge who guided Volpe toward the study of the neurology of the newborn. “Dodge's wisdom and perception were outstanding. I knew that because I had been a student of his in the 1960's,” Volpe says. “So, I began to work in the area despite the fact that I wasn't originally attracted to it. It doesn't involve the personal contact with patients that I enjoyed in other areas of pediatric neurology. But I soon found out that there were a tremendous amount of unknowns, of basic questions to be answered.” For the past ten years, Volpe has been identifying unknowns and discovering some of the possible answers to basic questions.

Ten years ago, close clinical observation was the principal method of analyzing potential neurological problems and documenting the neurological signs that the premature infant was able to exhibit. “We could only watch for signs and try to define the meanings of the few signs observable in terms of pathological phenomena occurring in the newborn's nervous system,” Volpe says. “During this time, we were reproducing an approach to the acquisition of knowledge that had occurred in other subspecialties of pediatrics years ago.”

Volpe has been conducting both clinical and laboratory research in neonatal neurology in addition to caring for the very sick, very tiny babies in the ICU. In the lab, several current projects involve the study of the regulation of membrane lipid synthesis. Particular emphasis is placed on critical enzymes such as HMG-CoA reductase involved in cholesterol biosynthesis. Recent research projects have been concerned with the role of cytoskeletal structures in the regulation of HMG-CoA reductase in cultured cells of neural origin, such as glial cells. Another project deals with the relation of fatty acyl composition of membrane phospholipids in the regulation of this enzyme. And a third deals with various aspects of regulation in the developing rat brain. Additional basic studies involve the changes in the regulation of cholesterol and fatty acid biosyntheses accompanying the cessation of proliferation and the onset of differentiation in the glial cells.

He has published nearly 90 papers, reviews and other communications, nearly a third of which involve aspects of neonatal neurology. His book, *Newborn Neurology*, (21 chapters and several hundred pages) will be published early next year by W. B. Saunders Company of Phil-

adelphia. It is part of the series “Major Problems in Clinical Pediatrics.”

Much of Volpe's clinical research revolves around the study of the causes and effects of intraventricular hemorrhage in the brain. Nearly half of the premature babies of less than 34 weeks gestation suffer this kind of problem. He has found that the presence or absence of the usual infant reflexes are not reliable indicators of the possibility of the presence of hemorrhage. “These reflexes are fascinating, but we have learned that they are not of much help in defining the kinds of neurological problems we are concerned about,” Volpe explains. “They are mediated at a low level of the nervous system, not at the level of the cerebral hemispheres which are so critical to the future development of the individual.” Volpe and his colleagues are trying to develop an approach to neurological evaluation of the newborn that differs from past approaches, which depended principally on analyses of reflexes. “We try to avoid the reflex approach. Instead, we are trying to adapt the approach to neurological evaluation used for older children, while keeping in mind the unique aspects of the newborn. It is important to correlate clinical phenomena specifically to what is going on in the infant's nervous system,” Volpe says.

He is working to define the relationships of intracranial pressure and ventricular dilation following intraventricular hemorrhage, and to determine the effects of hydrocephalus, which follows hemorrhage, on the blood flow through the anterior cerebral arteries. Another area of clinical research is the role of ventriculostomy in preventing hydrocephalus after hemorrhage.

Volpe has also learned that,

(Below) Tender loving care conquers even the array of sophisticated equipment in the Neonatal ICU at St. Louis Children's Hospital.

(At right) Non-invasive methods of diagnosis are important because these infants are deathly ill. Even transporting them down the hallway to the Mallinckrodt Institute of Radiology's CT scanner was risky. A new portable ultrasound scanner was delivered in July. A small transducer is applied to the skin over the infant's anterior fontanel and the intracranial pressure is indicated digitally on the portable scanner.

contrary to traditional thought premature babies do show weakness on one side of the body if there is a major brain lesion. "We found that if you look very carefully, these newborns do show localizing signs," he says. "The problem is that often these signs are easily overlooked."

The continuing development of sophisticated equipment — portable ultrasound units, CT scanners, electronic sensors of ever-increasing adaptability and sensitivity — will greatly enhance the knowledge gained from clinical evaluation. "Such equipment, and developments in clinical evaluation procedures, will provide us with some very important information regarding management and the prevention of neurological sequelae," Volpe says.

Equipment, however, is not the ultimate key to the solution. "These babies don't advertise neurological problems the way an older child does. Devastating things can be occurring in the nervous system that are difficult to ascertain either by close clinical scrutiny or by the use of sophisticated equipment and procedures. These babies are so labile that you don't like to disturb them or even turn them over for a lumbar puncture."

CT scans have been used with newborns at the School of Medicine for the past four years. "This," Volpe says, "is not ideal because the baby must be transported to the machine. With a deathly ill infant, it is very risky." In the past year, in conjunction with Dr. Leland Melsom and his colleagues at the Mallinckrodt Institute of Radiology, Volpe has adapted the use of portable ultrasound scanning to the newborn. A new machine was acquired by the Institute in July for further development of this procedure. Volpe predicts that "our research in many areas will intensify and





expand because of the new machine." Ultrasound techniques are of unique value in the newborn because a small transducer can be applied to the infant's very thin skull or to the skin over the anterior fontanel. "We obtain superb pictures of the brain and any intracranial abnormalities with hardly any disturbance to the baby," Volpe says. "We have actually applied this procedure when a baby was being resuscitated from cardiac arrest. The unique characteristics of the newborn's skull make this procedure possible. We can't do this at any other age."

However, sophisticated scans have not been proven to be effective in predicting the onset of hemorrhage. Volpe refers to studies in which premature babies were subjected to CT scans during their first week of life. Half of them were shown to have sustained intraventricular hemorrhage. "In such populations, it has been difficult to predict the infants who will have the hemorrhage. We have documented that you can't rely on clinical criteria as the only way, or as the major way, to predict hemorrhage." If these hemorrhages are not detected, they may cause death or hydrocephalus, a common complication following intracranial hemorrhage. "We think that there is a critical period in the development of hydrocephalus, and we are trying

to determine how long it is. Hydrocephalus that goes on too long without correction leads to intellectual retardation and the development of spastic motor deficits when the child is older," Volpe explains.

He and his associates have recently completed an important negative study regarding a widely used therapy for hydrocephalus. They determined that the use of a series of lumbar punctures to prevent hydrocephalus is not effective. Volpe is evaluating non-surgical means of controlling hydrocephalus. He is also studying the utility of continuous monitoring of intracranial pressure in the management of infants with intracranial hemorrhage. "I think we have actually defined some rather unusual circumstances in newborns in which hydrocephalus occurs in the presence of normal intracranial pressure; the newborn seems able to generate this state without an increase in pressure. Thus, if we depend only on signs of increased intracranial pressure to diagnose hydrocephalus, we may miss it. It appears that we are going to have to detect hydrocephalus by other means, such as serial CT or sonar scans."

Volpe believes that research must be conducted on the prevention of intracranial hemorrhage in premature infants because of the high rate of brain injury and mortality. "If we find out

what causes these hemorrhages, we can probably prevent them," Volpe says. "The regulation of cerebral blood flow currently appears to be a fruitful area for study because an abrupt increase in cerebral blood flow may cause hemorrhage. We also suspect that there are some procedures occurring in neonatal intensive care units themselves which may cause intracranial hemorrhage." Volpe is investigating the possibility that blood entering the cranial cavity from a hemorrhage may trigger a spasm of the blood vessels supplying various parts of the brain, resulting in a serious decrease of blood to important regions of the brain. "The consequences would be an infarct," Volpe says, "just as in an older person with a stroke."

Other areas which Volpe feels need exploration are the relationship between the size of the hemorrhage and the outcome; the degree of increase in pressure during hemorrhage and the most effective means of lowering the pressure. In this research, ultrasound appears to be a particularly promising technology.

The efforts to eliminate neurological diseases will, of necessity, involve obstetricians, neonatologists and pediatric neurologists, and an expansion of the concept of neonatal neurology to perinatal neurology. Volpe explains: "Many of the pathological processes in the full-term baby are related to events occurring *in*

utero. Fetal monitoring is becoming more sophisticated, but we need more development. Fetal monitoring can tell us about the heart rate, breathing, movements and EEG of the fetus. Some people say that too much money has been dedicated to fetal monitoring and not enough benefit has resulted. I believe that fetal monitoring is valuable. For example, it is very unusual for us to see a full-term asphyxiated baby in our neonatal ICU. The reason is that obstetricians here take a close look at the high-risk pregnancy, study it carefully and, when they determine difficulties *in utero*, they deliver the woman by cesarean section. Through these efforts, they have prevented cases of hypoxicischemic injury."

Other preventions are in the hands of the neonatologist. According to Volpe, there is evidence that hemorrhage may be related to post-natal events in the nursery. "These are still hard to define," he says. "We think it has something to do with the rapidity with which babies are given blood, plasma or other fluids. Increases in blood pressure may cause hemorrhage and can occur in a baby who is handled too much. Venipunctures and other kinds of diagnostic procedures, even suction, might be too much for these extremely tiny and sick babies. We are looking for different ways of handling these babies to prevent crises."

Volpe points out that there is no specific division of neonatal neurology at any American institution. He works within the Division of Pediatric Neurology at the School of Medicine, and is on the staff of St. Louis Children's Hospital. He envisions — more accurately hopes for — an institute of neonatal neurology at Washington University, considering the school to be an ideal and logical home for such an institute because of its reputation and recognized leadership in the field of neurology. "It's probably in the far-distant future," he says, "but an institute would provide funds and space for a core group of people with an interdisciplinary approach. It would provide continuity and focus for the different aspects of research, patient care and training of physicians, research scientists, nurses and technicians."

In the absence of such an ideal, Volpe usually has one or two pediatric neurology fellows participating in the clinical research activities. He and his work benefit from the multidisciplinary capabilities at the Medical School and the Washington University Medical Center. In addition to pediatric neurology fellows working in neonatal neurology, and an experienced and dedicated ICU team at St. Louis Children's Hospital, Volpe's patients are seen by the Children's Hospital psychology division for assessment of intellectual potential, and by the physical therapists at the Irene Walter Johnson Institute for assessment of motor development and for therapy. Help is available, too, for the families of these babies.

Some families take the most severely handicapped babies into their homes and care for them for years and years, which requires an astounding amount of physical and emotional energy. "It is not unusual to see a mother almost

totally consumed by the effort of caring," Volpe says. "I don't have precise information, but I have an impression that many such families are disrupted. Some, of course, seem to come together in relation to such an infant, but these are not common. Most families are strained incredibly. Some know they can't handle their situation, and place the infants in residential facilities. Some of the severely handicapped infants can live for years in residential facilities, depending on the quality of care. The most expensive facilities provide the closest, best care. So, the infants live longer in that kind of facility," Volpe says.

Volpe emphasizes that most premature babies do very well after a hemorrhage. A small group of them, who have had severe hemorrhage, do badly, either dying or living with severe problems.

"It is probably fair to say that no other area of pediatric medicine raises crucial ethical issues of the definition of life and death and the quality of life as frequently as does neonatal medicine. When you have a baby with a major hemorrhage defined conclusively, should you have an aggressive approach to therapy with that baby, doing everything, keeping the baby on a ventilator, giving blood transfusions, trying to drain the blood from the ventricular space and using shunts when hydrocephalus develops? Some would argue that the percentage of infants who would have a satisfactory quality of life after that is so small that it is unreasonable to do everything possible," Volpe explains.

He quotes ethicist Albert Jonsen, a priest and professor of pediatrics, who stated: "The lifesaving skills of intensive care teams have challenged our understanding of a venerable ethical principle that in medicine

one ought to save endangered life. Now the ethical question arises: how shall we interpret that principle when it is possible to save the life of an infant so severely brain damaged that he will never participate in human activities?"

Volpe believes that the important issue is the quality of life, not simply life itself. "The theologian James Gustafson expresses my feelings about the quality of life when he talks of a person capable of personal happiness and a wide range of human relationships, including the capacity to give and receive love. For me, these potentialities outweigh the handicaps of subnormal intelligence. Jesuit Richard McCormick says that the guideline should state that life is to be preserved if human relationships would still be possible for the survivor." Volpe adds, "I don't pretend to understand how to gauge that, to measure it. I have to accept it as an imprecise framework, but the framework that I use."

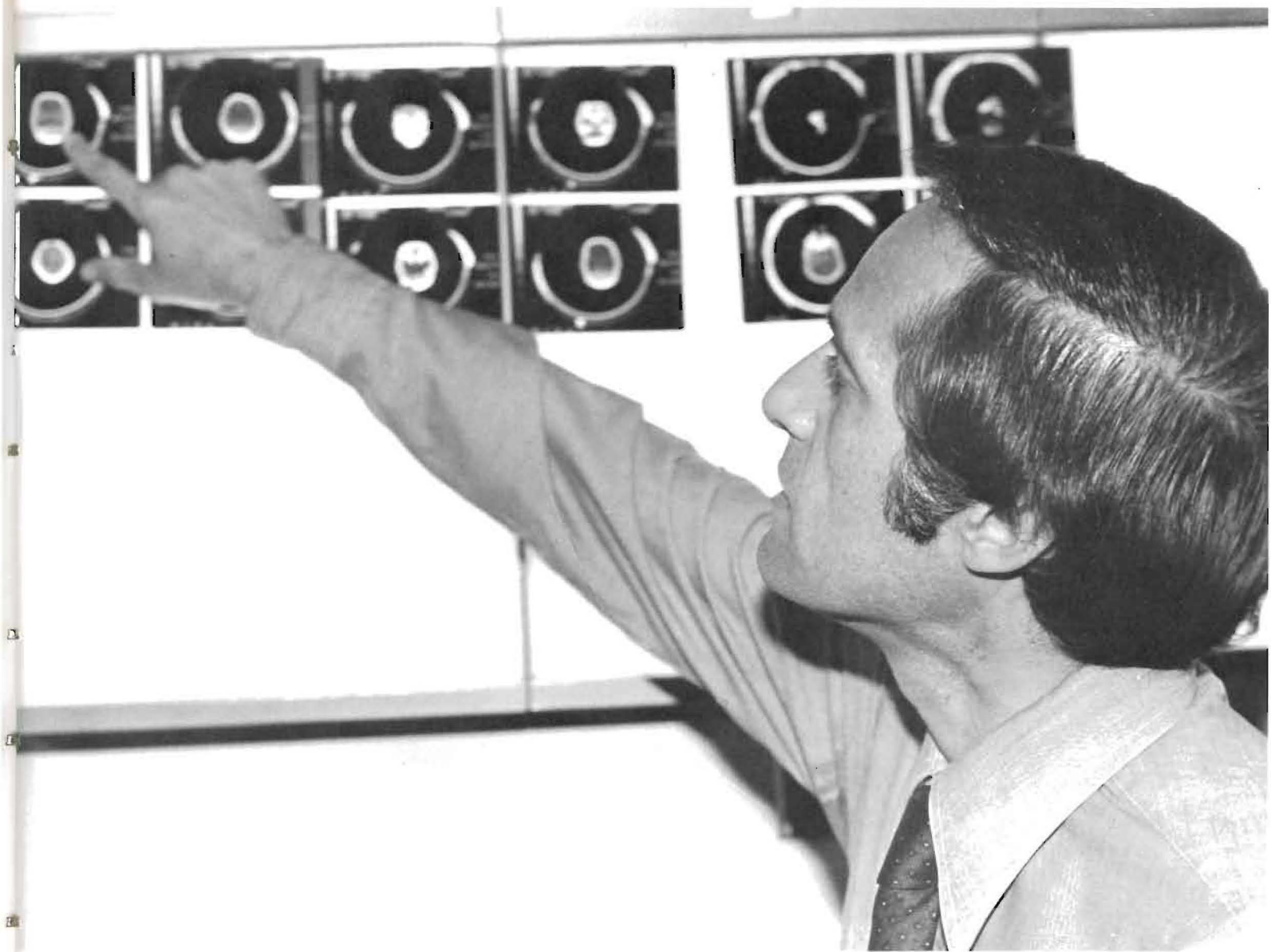
The question of how much life-support for how long is one Volpe and his associates must deal with daily. One might expect a pattern to develop to help them in making tough ethical decisions. But then there are the unexpected cases, such as the little 35-week girl who exhibited all the usual signs of brainstem death. She recovered after three days.

Volpe and a former pediatric neurology Fellow, Joseph F. Pasternak, M.D., wrote about the case in *The Journal of Pediatrics*, Volume 95, Number 6, published in December 1979. Their discussion of the case calls for caution and elaborates on the problems of prediction based on most of the knowns determined by skilled people using sophisticated equipment.

"This infant had a striking clinical syndrome indicative of

essentially total brainstem failure, including apnea, dilated and non-reactive pupils, and absence of spontaneous and reflex eye movements, corneal reflex, facial movement, response to sound, gag reflex, and limb movement. Several of the elements of this syndrome comprise the so-called "catastrophic deterioration" which has been observed with major degrees of intraventricular hemorrhage. Infants so affected almost invariably die. Survivors of intraventricular hemorrhage more often exhibit a more subtle neurologic syndrome, consisting of fragments of the catastrophic deterioration evolving in a saltatory fashion. The distinguishing feature of our patient was the remarkable persistence of the signs of brainstem failure for a full three days, and, then, the dramatic recovery with subsequent near normal neurologic development. We are unaware of any previously reported case of intraventricular hemorrhage manifesting such a syndrome and subsequent course.

Because intraventricular hemorrhage has become so very common and because decision-making concerning the type and extent of therapy is very difficult, it is important to recognize that clinical features alone do not accurately presage outcome in the premature infant. In older patients, brainstem failure of the type described in our patient, in the absence of hypothermia or drug intoxication, is a uniformly accepted indicator of brain death or, at best, of very poor neurologic outcome. Comparable data are not available for the premature infant, but our experience emphasizes that brainstem failure at this stage of central nervous system development must be interpreted with considerable caution with respect to prognosis. Most critical for the clinician is deter-



mination of the etiology of the brainstem failure. The most likely cause in our patient was compressive or related effects of likely cause in our patient was compressive or related effects of blood filling the fourth ventricle and/or cisterna magna. The possibility of an intracerebellar hematoma with compression also was considered. However, the failure to demonstrate blood within the cerebellum by the CT scan performed 24 hours after the return of brainstem function is a major point against this lesion and favors more the occurrence of lysis of clot that was originally in the fourth ventricle or cisterna magna. It is not likely that the intraventricular hemorrhage was massive, in view of the relatively small amount of blood apparent in the CT scan four days after the ictus. We suspect that a loculated collection of blood occurred transiently in the fourth ventricle;

the cause is not clear. The relative sparing of the EEG suggests that structures rostral to the mesencephalon were not severely disturbed; the subsequent near normal neurologic development supports this hypothesis. The combination of brainstem failure and relative sparing of the EEG may be particularly useful in assessing potential for neurologic recovery in the newborn infant in deep coma.

It would be inappropriate to utilize the data that we have reported as the basis for supporting vigorously all premature infants with severe intraventricular hemorrhage and essentially total and persistent brainstem failure. We report these findings only to demonstrate that caution must be utilized in ascribing a dire prognosis for a newborn infant on the basis of clinical deficits that, at later ages, are



Volpe has found that signs of increased intracranial pressure is not a reliable method in the diagnosis of hydrocephalus. Hydrocephalus can exist without increased pressure. "It appears," he says, "that we are going to have to detect hydrocephalus by other means, such as serial CT or sonar scans."

extremely reliable predictors of outcome."

There are still basic questions to be answered and many problem areas to be discovered, limited, studied and tested. Joseph J. Volpe, a man from Massachusetts, is hard at work in St. Louis, "the Gateway City," leading a small group of dedicated pioneers in neonatal neurology — one of the last frontiers in pediatrics. ■

Continuing Medical Education

by Glenda King Rosenthal



"You must always be students, learning and unlearning till your life's end, and if, gentlemen, you are not prepared to follow your profession in this spirit, I implore you to leave its ranks and betake yourself to some third-class trade."

—Lord Joseph Lister
(1827-1912)

What was true for the physician in Lord Lister's time is even more true today. Medical education does not — and should not — end after four years of medical school. The practice of medicine is an art that is constantly changing. New drugs continually make existing ones obsolete; accepted forms of treatment in all areas of medicine are continually revised. The clinician must keep abreast of research advances; the researcher must have a clear understanding of changes in the world of clinical medicine. Physicians must be students of medicine all of their lives. It can be an awesome responsibility.

In 1973 Washington University School of Medicine began a program in Continuing Medical Education (CME) under the direction of Elmer B. Brown, M.D. '50, professor of medicine and Associate Dean for Continuing Medical Education, to help the physician meet that responsibility. M. Kenton King, M.D., Dean of the School of Medicine, described the then-fledgling program as "a very worthwhile contribution to the medical community." Since its beginnings, the CME program has grown considerably. Five courses were offered the first year; 30 are now on the agenda. The program is accredited by both the American Medical Association and the LCCME (Liaison Committee for Continuing Medical Education).

"It took a lot of hard work on the part of many people to make the program a reality," Brown says. "I understand there was a brief period of continuing medical education after World War II, but the program as we know it now was not revived again until 1973."

The School's Alumni Association was the catalyst for beginning the CME program in that year. "Some of the more active local alumni, Drs. Jack Barrow and Robert Anschuetz in particular, sent out surveys to the membership asking what the Association could do to better serve their needs," Brown says. "The answer came back loud and clear that they would like to have a CME program. This group has a strong interest in the School and wanted the opportunity to come back periodically and further their education at the institution from which they graduated."

With this stimulus and an offer of financial support from the Alumni Association, the CME program began. The Alumni Association has continued to be supportive of the program and contributes over 50 percent of the operating costs. "The Association also has a medical education committee which meets with members of the administration to evaluate and respond to the school's needs," Brown says.

When Brown was asked to take over the CME program, he visited several other schools that had successful CME programs underway. "One of the places I visited was the University of Kansas which has a CME program that has been in existence for over 30 years. The director of that program felt that physicians practicing in the Midwest have different needs from those in other areas."

Brown agrees with this assessment. "There are more solo practitioners in the Midwest," he

says, "and it is more difficult for these people to attend CME programs than it is for those in a large group practice, which is more likely found on the East and West coasts. The density of physicians, with the exception of suburban areas, is also less here."

Brown also visited Stanford University which has a strong CME program in basic science. "While I think it is appropriate to offer that here," Brown says, "the likelihood of it being successful here is much less than on the West coast. Probably one program like that in the country is enough to meet the needs of people desiring a concentrated dose of basic science."

Brown considers the School's CME program as primarily a regional one with most of the physicians attending from within a 300-mile radius. But, of course, there are exceptions. "Some of our programs have been geared to a national audience if it happens to be a specialized subject where we might want to put on an especially large program," he says. "Each year we have had a few physicians attend programs from almost every state and several foreign countries."

Surprisingly, attendance at CME programs by local St. Louis physicians is relatively small. Brown says this is the usual experience of most CME directors across the country. "People come from out of town but not from in town. People want to get away from their usual environment, away from the telephone and the many interruptions of a busy medical practice. It's far easier to have uninterrupted continuing medical education if you go somewhere else," he says.

Brown does feel that the physicians attending the CME programs here are particularly dedicated to learning, possibly more so than those attending seminars in other areas of the

country. "Many of the CME programs in other areas emphasize the vacation aspects of their cities in addition to the program itself," he says. "CME programs offered in such places as San Francisco and New Orleans have a built-in drawing attraction. Even though St. Louis is a fine city, it is not a particularly famous vacation place. So, we know that the people who come here for CME are here to learn."

This group is not disappointed. Brown says some of the School's CME participants attend as many as seven or eight programs a year. "We analyze this yearly and feel it indicates that we're doing something right."

His success does not just happen. Pinpointing the needs of the physician and planning programs to meet them is not an easy task. "We really don't have a systematic way of determining these needs other than getting responses about the programs we've initiated and seeing whether or not they met the individual's perceived needs," Brown says. "Many physicians have a difficult time really defining their needs."

What should be included in CME's yearly programs is generally decided on an informal basis by selected people on the School's faculty and interested physicians in the community who, through the Alumni Association or a special interest, have been willing to participate. "From past experience we know who is interested in certain areas," Brown says. "Since program directors are always on our faculty, it is easy to contact them and decide if the time is right for a particular program. We also rely heavily on physicians in the community for feedback. These people have been helpful by checking with their colleagues to determine what subjects need coverage."

The majority of CME pro-



grams are geared to the clinician, even though important medical advances in the research area are included as part of most programs. Brown has discovered, however, that only a small amount of research is of interest to most practicing physicians.

“Our faculty members on the program panel generally discuss bench research in terms of its clinical applications,” he says. “New advances, primarily clinical in nature, are one of the areas that most physicians coming to a program are eager to hear about. They want to reinforce what they’ve heard through other channels, whether it is in the medical literature or the media. They are not, for example, too enthusiastic about hearing about studies in rats or of experimental drugs which have not yet come onto the market.”

The focus of a CME program can be general or specific, depending on what the goal of the program is. “We do feel, however, that the fine points of a specialty are really handled better at the national group meetings of the particular specialty.”

Attendance at CME programs and national specialty meetings certainly assists the physician in keeping up with the changing picture of medicine. “The more input the physician can get from colleagues and the closer he can stay to the activities of a major medical center, the better his chance of keeping abreast of these changes,” Brown says. “I think every physician has to work out a system that works for him. The physician in private practice has to relate his continuing medical education to his own practice. There really is no point for him to take a lot of CME courses outside of his area of actual practice, even though potentially it may have an impact. The physician

has to be selective in the courses he takes.”

Brown says CME is not the only way the physician has of keeping up with the latest changes in medicine, “but it certainly is one approach that people enjoy. The physicians return to us for a sounding board to compare notes and see if they are up to date, and perhaps to be stimulated in areas they hadn’t thought about,” he says.

This has been one of several positive benefits resulting from the CME program. The physician in private practice has an opportunity to meet people on the faculty and establish contacts he can use when he needs to consult about a patient. “This contact helps the private physician in his patient care and causes him to view the large medical center more positively,” Brown says.

A large medical center such as Washington University is often viewed as impersonal, an “ivory tower” research institution in which the faculty is not concerned with the physician in private practice. “The CME program has gradually helped to change this image,” Brown says. “We have

many faculty members who enjoy teaching and enjoy this interaction with the private physician. After they attend a CME program, physicians realize that the faculty members are receptive to them. A rapport can be established and maintained that may be very useful to both groups. This interaction has helped to reduce the image of a cold, austere medical center.”

The CME program also has helped to eliminate some misconceptions on the part of the faculty. “I think one of the things that has been a real eye opener for the faculty is just how sharp the practicing physicians are,” Brown says. “Many of them are right up to date with new advances, they ask very perceptive questions and have a strong desire to understand the latest techniques. As a result of these programs, members of our faculty have a great deal more respect for the private medical doctor.”

In addition to gaining respect for the private physician, the academician also learns what problems are seen in a private practice. “This has been another positive-benefit of the CME pro-

gram,” Brown says. “At the Medical Center we see the unusual cases that have been filtered through several channels before they get here.”

Because of this channeling process, the academic physician may get a distorted viewpoint of what medicine is like in the private sector. “Our faculty members who participate in CME programs get a better idea of what’s going on by seeing what problems confront the private physicians and what is of concern to them,” Brown says. “They often change their lecture presentation to emphasize areas they otherwise would not have thought about.

Brown says it is equally beneficial for the private physician to see the type of medicine more common to a large medical center. “A CME program can be a real eye opener for the private physician. It’s good for them to see the more unusual, dynamic clinical situations and technologies that are common here and unusual elsewhere.”

Improved teaching techniques are another positive benefit of the CME program.

Doris McCall, Assistant Director of CME, administers the details of the CME program and negotiates for meeting places, hotels and other facilities.



Elmer B. Brown, M.D. '50, professor of medicine and Associate Dean for Continuing Medical Education.

"Each year, we have had a few physicians attend programs from almost every state and several foreign countries."

According to Brown, many faculty members who have served as CME lecturers have had to analyze their teaching techniques and goals. "Many of these people have given little thought to this before their participation in the program," he says. "They've had to improve their presentations. They've realized that it just doesn't work to upgrade a sophomore class lecture for use with a CME group. The CME participants are a critical group. They're paying their money and taking time off from a busy practice to be here. If they don't find the program helpful, they're not going to come back. Consequently, the quality of the program and its instructors is on review all the time. I'm sure our faculty's participation in the program has positive effects on their regular teaching responsibilities."

The benefits of CME for both the academician and clinician are often difficult to document. Brown says the people in the continuing medical education programs have spent a lot of time and energy trying to analyze this. "We'd like to know how CME changes attitudes and actual medical practice. It is very hard to design a system that would enable us to actually study the way the physician has changed his methods. Even then, it would be difficult to determine if the change came about as a result of a CME program as compared with the many other things that impinge on the physician."

Brown emphasizes that the School's CME program cannot meet all of the needs of the physician. He describes the program as "selective." "We don't try to do everything for everybody. We offer a good mixture of high-quality programs," he says. "I feel that the programs offered here are as good as any available."

He also feels that the CME program has reached a plateau in



the number of yearly programs it will offer. "We will continue to stress those areas in which we have a special expertise, but we will not attempt to compete with the specialty societies for national programs. They do that very well and we would only be duplicating efforts."

"We do rank all of our speakers and programs in terms of content and presentation. Feedback is important in terms of planning future programs. We're proud of the fact that all but a few of the responses are highly favorable."

The CME program as it exists is quite successful, but Brown continues to look for ways to improve it so as to better meet the needs of both the academician and the clinician. He would especially like to see the CME program expand its service to the community.

"Rather than mount programs that seem to the faculty to meet needs of community physicians, I would like to provide the physician seeking special knowl-

edge or training the chance to plan his own program. Some might visualize such a plan as a mini-residency, others might conceive of it as a chance to learn a special procedure that he could perform at his local hospital. I suspect many doctors would like to discuss the management of perplexing cases, but don't feel comfortable approaching strangers at the Medical Center. Perhaps the CME office can be the catalyst to work out individualized programs that better meet learning needs."

The CME office currently provides a list of speakers who will make site visits to area hospitals. However, Brown says most of the interaction between medical school faculty and the medical community is done on a person-to-person basis. "But I would very much like to expand this consulting service to the community," he says.

The CME program also has provided an important service to the community by helping foreign medical graduates upgrade the

quality of their training. Brown says many of them recognize areas of deficiency and have attended CME programs in considerable numbers.

"Another educational format we've been involved in is computer assisted instruction, which was sparked by Drs. John Halverson and Walter Ballinger," he says. "We haven't had enough feedback yet to know who is using it, but we do feel it has the advantage of being available to people at their convenience. We serve as the accrediting office for this, and all of the computer programs come through this office for review."

Brown feels this computer approach to learning can supplement a continuing medical education program, but can never replace the personal contact CME participants have with faculty instructors. "Medicine is never black or white," he says. "A CME program is most effective when a physician's question

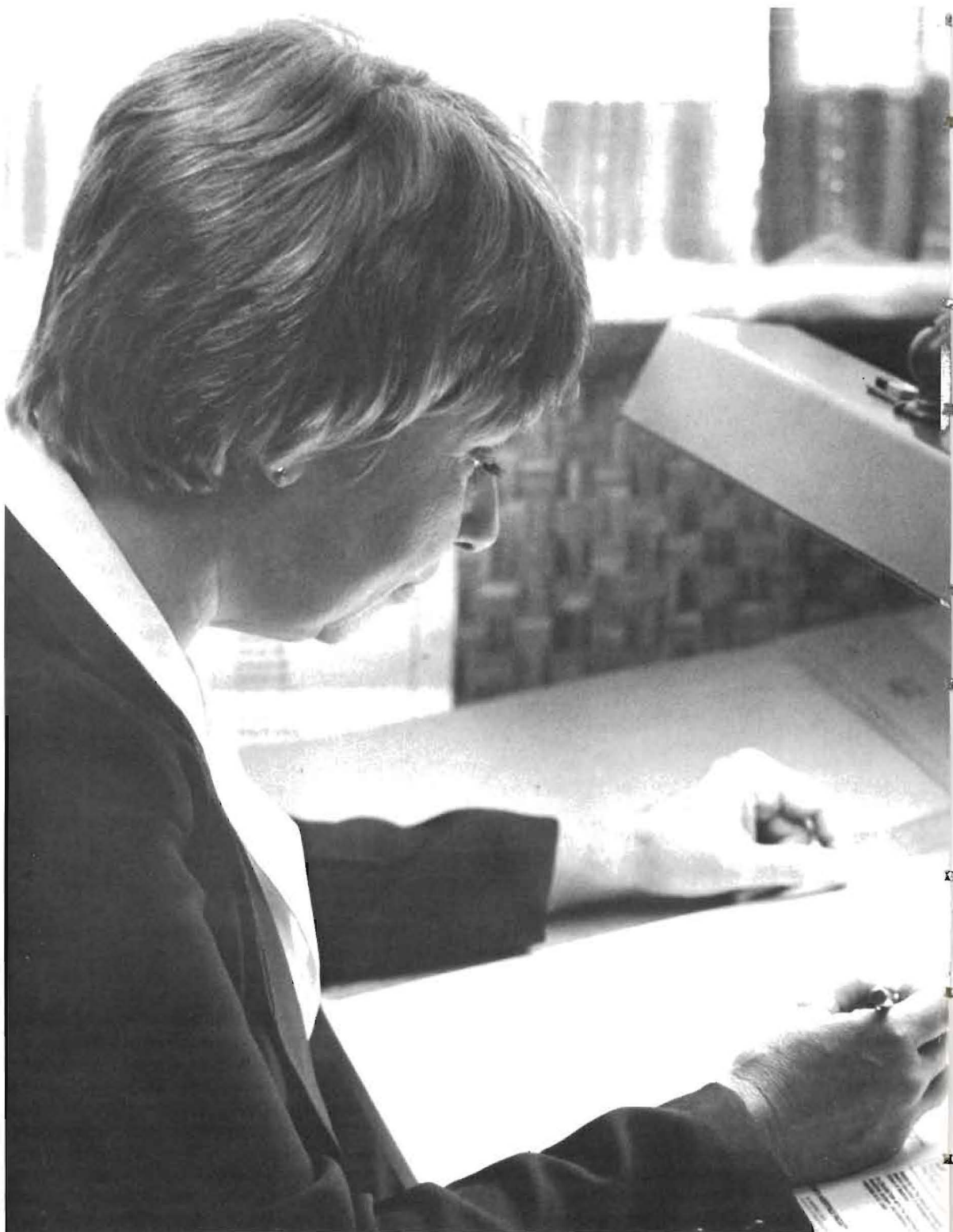
Loretta Giacoletto produces information brochures for each CME course offered.

is directed to a panel of experts who discuss their often conflicting viewpoints; it helps bring the topic into the real world. A computer can't do this."

The CME provides still another service through its participation in bimonthly newsletters in the areas of pediatrics and internal medicine. Several of the School's faculty members serve on the editorial boards of *Pediatric Alert* and *Internal Medicine Alert*. "A physician may receive CME credit by taking tests which are published quarterly in these publications," Brown says. "I'm one of the people here who generates the questions for the internal medicine newsletter. The medical literature is still the way most physicians keep up with recent advances, and these news briefs in the specialty can really be invaluable for someone with a busy schedule."

Physicians may acquire CME credit not only through the tests offered by these newsletters, but also through the computer and continuing medical education courses. Practically all medical schools in this country now offer CME programs. "Even the schools which have not had much of an interest in CME until recently have become involved due to compulsory continuing medical education for relicensure now required in 19 states," Brown says. "Missouri is not one of those states, but I think eventually it may also require CME credit."

Some states require continuing medical education for the physician to have his license renewed. "This has been a controversial area," Brown says. "The question has been whether or not the credits physicians obtain from attendance at CME courses reflect actual knowledge gained or simply the fact that they were there. It is difficult to determine if CME has



The CME staff uses computer display terminals and printers to manage distribution of brochures about upcoming seminars and to organize registrations.



any impact on how they actually practice medicine."

The issue of compulsory continuing medical education arose, in part, because of the growing medical malpractice problem. It was believed by legislators that the problem could be eliminated if the physician could show evidence that he was continuing his education and keeping up with recent changes in the field of medicine. "The malpractice problem has not been affected by compulsory CME," Brown says, "but CME has proven to be an excellent method of keeping up with changes."

There is no magic formula to insure the physician that he is keeping up. Each must develop his own technique within his own time frame and stimulus to do so. Brown sees continuing medical education as an issue that must constantly be raised with today's physicians — and tomorrow's. "We need to have students in their last two years of medical school begin to think about how they intend to keep up with rapid advances and changes when

they are away from a formal learning environment. Furthering his education is an important aspect of the professional life of both the clinician and academician."

For the most part, Brown feels physicians have an in-born desire to continue their education. But they do need help in developing skills to accomplish this in the most efficient way possible. All of the techniques of continuing medical education — seminars, computers, journals, newsletters — should be available.

"We also need to determine the most efficient ways CME can be of aid and develop a better understanding of how an educational experience can be translated into a change in actual behavior," Brown says. "Most physicians know much more than they actually put into practice. We need to help them define problem areas. Fortunately, physicians are compulsive learners. Their education is a life-long process." ■

1980-81 CME Calendar

Date	Title
September 27, 1980	Hand Injuries
October 3-4, 1980	Parenteral & Enteral Nutrition
October 9-11, 1980	Update in Hematology/Oncology
October 17, 1980	Pediatric Pathology Club
November 4-16	Anesthesia & the Geriatric Patient
November 5	Trauma Management
November 6-8	Clinical Allergy for the Practicing Physician
November 7, 1980	Current Topics in Diabetes
November 29-31, 1980	The 1980's — A Decade of Change in O.T.
December 4-5, 1980	St. Luke's Clinical Conference
January 4-9, 1981	Dx & Rx of Skeletal Disorders
January 31–February 7, 1981	WUMC Alumni Annual Clinical Conference
February 26-27, 1981	Clinical Topic in Pulmonary Medicine
March 2–May 18, 1981 (Monday evenings)	Internal Medicine Review
March 12-13, 1981	Gland Rounds (What's New in Endocrinology)
March 16-17, 1981	8th Annual Symposium on Obstetrics & Gynecology
March 19-20, 1981	Rheumatology for the Practicing Physician
March 27-28, 1981	Vascular Disease
April 3, 1981	Hand Splinting — Simple to Complex
April 5-12, 1981	Current Concepts in Musculoskeletal Radiology & Orthopedics
May 8-9, 1981	Alumni Reunion
May 13, 1981	Burns: The Early Days
May 21-22, 1981	Postgraduate Course in Otolaryngology
April 24-25, 1981	Eye Alumni

Living, Learning And Caring in Africa: A Medical Missionary's Story

by Casey Croy

Richard C. Braun, M.D. (class of 1955) worked himself out of a job after 21 years as a medical missionary in Ghana, for the United Church of Christ. He spent his last four years in the West African country as clinical preceptor of the Ghana Medical School. Then, in 1978, he and his wife and co-worker, Trudy (a graduate of the Washington University nursing school), and their four children returned to the U.S. Braun is now one of seven physicians with the Cumberland Clinic in rural Crossville, Tennessee. Braun shared a few memories and observations of his career in Ghana while he was attending the 25th reunion of his class last spring.

When Dick and Trudy Braun arrived in Ghana in 1957, they went to the Evangelical Presbyterian Church Hospital at Adidome, a rural town approximately 85 miles from the capital. "Our town was a market town of 3,000 or 4,000 people. The hospital there was the only medical facility within a 30-mile radius in which there were about 100,000 people. This was one of the poorer parts of the country. The climate was dry and the soil was poor. Most of the people worked in agriculture — subsistence-level agriculture. There was some fishing. Adidome Hospital was the end of a 6,000-mile supply chain, so there were some difficulties and problems."

The hospital at Adidome was built 23 years ago, approximately two years before the Brauns arrived. It was a simple shelter with 120 beds in various wards. "Wards were a good arrangement," Braun said. "Ghanaians are used to living communally and don't like to be isolated from people." The hospital had an x-ray lab and facilities for basic tests. There was an operating room which was air-conditioned — when the air-conditioner worked. The hospital was staffed by two doctors. "For most of the time that I was there, there were two," Braun said. "Sometimes, I was alone. For a few months we had three." Braun was joined by another Washington University alumnus, Michael Gass, M.D. (class of 1958). "He worked with us for two or three years starting in 1960, and again for two or three years starting in 1970." At first, Trudy Braun and another American were the only nurses at Adidome.

Braun described himself as a man who has "always been entranced with hospitals — the drama and all of the sophisticated equipment." How did he wind up being half of the staff at a simple shelter with one O-R and a part-time air conditioner?

"I wanted to go where I was needed the most," he explained. "That is why I stayed. I enjoyed it. And I learned a lot. I learned that a hospital is just a part of health care. Teaching people to keep themselves healthy, to help each other, and to prevent the things that get them over and over and over again — to me, those are most important. As time passed, I saw our role not as delivering technology, but devising ways to treat people who needed it but were not getting it."

At first, that was 85 percent of the population in the area. Infectious diseases and malnutrition were, not surprisingly, the major kinds

of problems. The solutions were not as simple as merely teaching western methods and lifestyles which would mitigate infections and diet-related problems.

"The principal malnutrition problem in Ghana was protein deficiency," Braun said, "although obesity was becoming fashionable. People were proud to show that they had enough food to become fat. We have a malnutrition problem in Appalachia, too, but of a different style. The diets are too high in fat and cholesterol. Poor people in Appalachia are fat because the cheaper foods are fattening, and their diets are heavy on starch and fat. I was surprised, in Tennessee, to see people in the stores buying 25-pound cans of lard. Ordinary lard! But lard and flour and water are the ingredients for the gravy and biscuits which are mainstays in their diet."

Poor sanitation and lack of plumbing and pure water supplies spread infectious diseases. In Ghana, malaria is still one of the major killers, according to Braun. "In our area, 50 percent would survive past the age of five. If they made it past the age of 15, the survival rate was almost comparable to that of the U.S.," Braun said. Village life is primitive. The people dig water-storage pits or ponds in the impervious gravelly clay soil to hold rainwater. Snails, part of the cycle of schistosomiasis, live in the water supply. "Of course, there are no bathrooms, and few latrines," Braun said. "People just walk away from the villages and urinate on the ground." Then, when the rains came, the cycle of schistosomiasis continued, with eggs passed in the urine washing into the ponds.

Changing the people's habits was no simple task. Presenting the facts was not sufficient. Braun explained: "In this country, much is being written about the concept of holistic health. But in Africa, the body and the mind and the soul have never been considered separately. Africans are a spiritual people. Their health, and all aspects of life, have spiritual relationships. They believe strongly in the influence of the spirit world. It soon became obvious to me that we can't fight it. I learned to appreciate it."

Braun recounted a story of learning to work for medical goals within the context of the spiritualism and customs of the people — a story of an evolving trust and respect between "the medical man" and "the medicine man." Braun and the small group based at the hospital at Adidome had started a program of outreach into the villages. "We started emphasizing the care of children under the age of five. Nurses and aides went into the villages monthly, giving immunizations and malaria prophylaxis, and teaching about nutrition. At the hospital, we had given nurse's aide training to young teen-aged girls, and we encouraged them to go into nursing school. Some became the equivalent of nurse-practitioners, and some of them are even doing surgery now. As we worked in the villages, people came to realize the effect that the clinics had on health. Children were not dying."



Braun at work in a pediatric clinic.

EVANGELICAL PRESBYTERIAN
CHURCH HOSPITAL
ADIDOME



At first, only half of the children would survive past the age of five. Braun initiated a program of clinics, held in villages, to care for children under five. Later, medical students received training in "Under Five" clinics.



In one particular village about seven miles away, Mafi Tsawla, the fetish priest was at first hostile. "He was very powerful and his people would not cooperate or even come to the clinic as long as he opposed us. Then, one day, we had a 'miracle.'"

A pregnant woman was brought to the hospital. The village birth attendants and the priest were unable to help her deliver. "We took her in, took care of her, and she delivered triplets." Braun explained that the multiple birth was both a physical and a spiritual problem. Many Ghanaians considered twins to be bad fortune, almost the opposite of a blessing. Triplets were an even worse fate. In the culture and physical characteristics of the country, it is understandable. Malnourished mothers could not maintain twins. Death and sorrow would surely come to them. "We gave this mother supplementary food," Braun said, "and she nursed those babies to the age of four months. The fetish priest observed their growth, and declared it a miracle. He became one of our boosters. The triplets are teenagers now."

"At first, I had felt threatened by these faith healers. And they probably felt threatened by me. But this priest, Basomfo Ahorgo, eventually became a good friend." He invited Braun and his team to conduct their monthly clinics in his village. After listening to Braun's explanation of schistosomiasis, the priest told his people that the gods had given him a new taboo for the village: "no urination within 100 meters of the village pond." That simple declaration did more to reduce the incidences of schistosomiasis than all of the lectures and warnings of the westerners. The doctor and the medicine man achieved a breakthrough.

"Once," Braun continued, "I visited him because he wanted me to see a woman who had come 30 miles to him because he was known to be powerful. I went with him and examined the woman. She had a grass hull lodged in her cornea. I removed it and she had no more pain. That sounds simple, but she was not cured. She had no more pain, but she did not have healing. She had to know from the priest why the gods had caused this thing to happen to her. Why was it a grass hull and not something else? Why had it happened to her, not

someone else in her family? Why did it happen to her along the path and not in the field? There was a spiritual meaning to every element of the incident. And the patient *needed* the priest for complete healing. Even though the grass hull had been removed and she had no more pain, she needed spiritual healing as well."

The government of Ghana opened a medical school in 1969-1970, admitting approximately 45 students in the first class. "At first they had to pick up faculty from all over," Braun said. "But now, they have mostly Ghanaian faculty. We had planned that some of the Ghanaian doctors would take over the hospital at Adidome. One of them did, but he has been alone." Ghana is having a brain-drain crisis. Educated Ghanaians are leaving the country, looking for more money than can be earned at home. "Many have gone to Germany or England," Braun said. "Other African countries, many with oil revenues, can pay much more money than Ghana. Many countries, in their quest for doctors, will pay more for people coming in than they will pay for their own. Nigeria has oil money and pays two or three times more than Ghana can pay physicians."

With the growing pool of Ghanaian doctors, nurses and nurse-practitioners, and with the increase in Ghanaian staff at the hospital at Adidome, the Brauns realized that it was time to go home after 21 years in Ghana. Their four children had been educated in the capital city, at an international school based on the British system. "My children are Americans, and I thought that they should experience America. They could never totally merge with Ghanaian society. There is an old proverb: 'the log may stay in the river 20 years and never become a crocodile.'" There were now two Ghanaian doctors at the hospital, and they are continuing the outreach programs and training more people. "It was time to turn it over to them."

Braun said that the budget for the Adidome hospital had risen to \$500,000 per year by the time he was ready to return to the U.S. "To serve 100,000 people, that was health care at \$5 per person per year. This raises questions of priorities: how do we get the most out of that \$5. We had an average of 2,000 hospital admissions each year. That is not a high percentage of the population being served. To distribute limited resources equally or equitably, you would have to teach people to take care of themselves. We emphasized training village health workers, who were usually mothers and often illiterate. We taught them rudimentary skills — how to recognize illnesses and when and how to treat them, and when to refer their neighbors to the hospital. These workers were part-time volunteers. This kind of program can accomplish much good in terms of spreading limited resources."

Braun pointed out that in many developing countries there is no health establishment. "We had the freedom to try new things, to experiment and be innovative. From trying to improve equipment, gadgeteering so to speak, to devising ways of getting health care to people who needed it, we had the freedom to try. If a program failed, we could drop it, learn from it and try to do better. If it worked, it could be replicated. The Ghanaian government now is emphasizing the training of village health workers. I feel that we pioneered in this program and I'm proud that it is now working and helping people."

Braun views the health care system in America with some interesting criticisms born of his experiences. He terms the health "establishment" as "disease/crisis/hospital oriented and very expensive." He says he finds himself "making comparisons about the effectiveness of health care at \$5 a head and at \$1000 a head. Are we really 200

Trudy Braun, who graduated from the Washington University nursing school in 1954, taught nursing classes in Ghana.

Below, the birth of triplets was a "miracle," and the start of a major breakthrough for Braun.



times healthier than Ghanaians? These are irreverent questions, but ones which should be asked."

Braun believes that lifestyle accounts for half of the health status of a country, with the remaining half divided relatively equally among environmental factors, biology and genetics, and the health-care system. He cited a bit of modern American folklore: the belief that doctors and nurses will make us healthy when we get sick, probably in a hospital, no matter what we do.

"If you ask Americans to name the most significant medical achievement of our generation," Braun says, "the consensus might well be the CT scanner, a half-million-dollar piece of equipment. It is good. It is exciting. One the other hand, consider that smallpox has been eliminated through the application of Jenner's 200-year-old technique. It wasn't exciting even though it involved cooperation of all nations at all levels of health care. It cost a global total of \$250 million to eliminate smallpox, but the United States, alone, saves that much a year because of the elimination."

The problem of distributing limited resources is not indigenous only to developing countries; it is a problem felt in both rural and urban America. Solutions are being sought by foundations, governments at all levels, and medical schools. Many programs of training "village" health workers and nurse-practitioners are underway in cities such as

St. Louis and in rural areas such as Crossville, Tennessee.

Braun is one of several alumni whose medical practice is based on the desire "to go where I was needed most," and he capsulizes his 21 years in Ghana using those words and adding: "We enjoyed it. We have many friends and fond memories of Ghana. As a medical missionary, I don't think of myself as 'religious' in any traditional way, such as going to church and saying a lot of religious words. I go to church, but that is not the major part of being religious. The major part is your commitment to others, the motive for it, and the respect for others."

Who should consider being a "medical missionary"? "I would recommend for any medical student that he or she spend some time in a developing country. It gives you a perspective that you can't get any other way. You really touch the basics, the fundamentals. And I would recommend that doctors, either before beginning private practice, or at sometime during their practice, spend some time overseas as a volunteer. I think most of them would enjoy it and gain a perspective that it is entirely possible to practice medicine, and to give a very high level of service, without all of the drugs and all of the sophisticated equipment and tests and so forth that we find so commonplace here. So much of what is high-powered in American health care delivery applies to such a small percentage of the population. It is valuable to doctors to shift their sights, at least for a time, from the few in the hospital to the many in need." ■

James S. McDonnell

1899-1980



James Smith McDonnell was born April 9, 1899 in Denver, Colorado and reared in Arkansas. After graduating from Princeton University in 1921 with honors in physics, he received a master's degree in aeronautical engineering from Massachusetts Institute of Technology. In the interim he learned to fly as a second lieutenant in the Army Air Service.

Leaving the military, Mr. McDonnell held many jobs in the small but numerous aircraft plants of that era. At age 40, he decided he was ready to found his own company. He raised \$165,000 and on July 6, 1939 he incorporated McDonnell Aircraft Corporation in St. Louis.

He started in rented quarters at Lambert Field with one employe and no sales backlog. Forty-one years later, McDonnell Douglas is one of the world's largest aerospace companies, with 83,000 personnel worldwide and 1979 sales of \$5 billion.

Mr. McDonnell led his company in many creative engineering accomplishments, including build-

ing the first jet aircraft to operate from a U.S. aircraft carrier and developing America's first manned spacecraft.

With the merger of McDonnell and Douglas in 1967 he achieved his long-sought goal of a good balance between government and commercial business.

His interests ranged far beyond that of his company alone. He was a long-time supporter of the United Nations, stressing that "peace must be waged from a foundation of strength." He capped his U.N. service by serving as chairman of the United Nations Association of the United States of America.

Through family and company philanthropic funds, he channeled many millions of dollars to charity and to the support of medical and scientific research. Major beneficiaries include Washington University and its Medical Center. Mr. McDonnell was a former chairman of the Washington University Board of Trustees. He also served on the boards of many other civic and educational groups.

James Smith McDonnell, founder and chairman of the board of McDonnell Douglas Corporation, and Washington University's most important individual benefactor, died at his home in St. Louis County on August 22. He was 81. A memorial service was held in Graham Chapel at the university on Saturday, August 30. Chancellor William H. Danforth, M.D., opened the memorial service, establishing the theme of "a celebration of his life," and introduced the two other speakers, James F. Hornback, leader of the Ethical Society of St. Louis; and William R. Orthwein, chairman of the McDonnell Douglas Automation Company.

McDonnell, his family, the McDonnell Foundation and the corporate foundation provided more than \$28 million to Washington University, and Mr. Mac (as he was known) persuaded Danforth to become vice chancellor in 1965, when McDonnell was chairman of the university's board of trustees. "He had more impact on my life than anyone outside my immediate family," Danforth told the nearly 1000 people at the memorial service.

In briefly recounting McDonnell's career, Danforth spoke of

McDonnell's rare foresight, thorough preparedness and meticulous attention to detail — from his graduation as one of four aeronautical engineers in his class at MIT, through his military service and employment which prepared him to establish his own company, through his continuing commitments to "maximum service through creative research and design." The Chancellor described McDonnell as "a man who liked to plant seeds," and in that context reviewed McDonnell's work for world peace through the United Nations, and his contributions to Washington University, which include: the McDonnell Center for Space Sciences, the McDonnell Department of Genetics, the McDonnell Laboratory of Biochemical Genetics, the McDonnell Center for Studies of Higher Brain Function, the McDonnell Laboratory for Psychic Research and the endowment of the Washington University Medical Center. McDonnell was elected to the university's Board of Trustees in 1960, and served as its chairman from October 1963 to June 1966. He was elected to the board of the medical center in December 1963, and served as chairman from June 1964 to June 1966.

William Orthwein shared reminiscences of McDonnell as a pioneer in aviation and aerospace, dedicated to creativity, service and teamwork. McDonnell was the first to celebrate United Nations Day as a company holiday, another form of "planting seeds," Orthwein said. McDonnell believed in maintaining military preparedness while working for world peace through the United Nations.

James F. Hornback told the assembly that McDonnell's earliest vocation indicated "the complexity of the man. He wanted to make his vocation the study of the inner space of the mind" and held the theory of "a unified field linking value, energy and fact together." His father encouraged him to pursue a vocation more practical and remunerative than the inner space of the mind, and his early interest remained an avocation throughout his life.

James S. McDonnell was, in Danforth's words, "a man of vision and compassion, with an incisive mind and total integrity . . . whose hope was that the next generation of human beings can explore the universe, from the farthest stars to the nearest thought, on a peaceful and productive planet earth." ■

Ronald G. Evens, M.D., has been elected to a five-year term on the executive council of the American Roentgen Ray Society, the oldest scientific radiological society in America. The organization's objective is to advance medicine through the science of radiology, emphasizing teaching and contributions to the literature of medical science. Evens is Elizabeth Mallinckrodt professor and head of the Department of Radiology at the School of Medicine. He is director of the Mallinckrodt Institute of Radiology, and is on the staffs of Barnes, Jewish and St. Louis Children's hospitals.

Richard H. Fallon, M.D., has been elected to represent the part-time faculty on the Executive Faculty, the governing body of the School of Medicine. Fallon is assistant professor of clinical surgery and is on the staffs of Barnes Hospital and St. Louis Children's Hospital. He has served as assistant professor since 1973.

August W. Giese, M.D., a 1956 graduate of the School of Medicine, has been elected president of the Washington University Medical Center Alumni Association. He is clinical professor of neurosurgery at the University of Missouri at Columbia and head of the neurosurgery section at St. Luke's hospitals. Other officers of the association are: Robert C. Drews, M.D., past president; Frederick D. Peterson, M.D., president elect; Richard Parson, M.D., vice president; and John M. Kissane, M.D., secretary-treasurer.

Sidney Goldring, M.D., professor and head of neurological surgery, and co-head of the Department of Neurology and Neurological Surgery, has been named president elect of the Society of Neurological Surgeons. Goldring will be the third professor at the School of Medicine to serve as president of the society, the oldest neurosurgical organization in the world. The Society has 215 members.

James O. Hepner, Ph.D., associate professor and director of the Health Administration and Planning Program, was presented with the Silver Medal Award of the American College of Hospital Administrators at the organization's 47th annual meeting in July. Hepner is the second educator to receive the award which is presented annually to an outstanding health-care executive in a non-hospital situation.

The McDonnell Foundation

announced a gift of \$5.5 million to Washington University to enable the School of Medicine to establish The McDonnell Center for Studies of Higher Brain Function. The late James S. McDonnell, former president of the foundation, stated: "... science and technology have made possible instrumentation which can be applied to the measurement of local brain activity in human beings as through processes take place. Purposefully pursued, this line of neuroscience research may point up the possible interface between the human brain and the human mind, and thereby help indicate if the human mind is something which emerges from the interplay of elements of the brain, or whether the human mind and brain should be considered as independent or semi-independent entities."

Sidney Goldring, M.D., professor and head of neurological surgery and co-head of the Department of Neurology and Neurological Surgery, will head the new McDonnell Center, a multidisciplinary group of scientists in the life sciences, physical sciences and engineering disciplines.

Dabeeru Chandrasekhara Rao, Ph.D.

has been appointed head of the Division of Biostatistics in the Department of Preventive Medicine and Public Health. Rao obtained his Ph.D. in statistics and mathematical genetics at the Indian Statistical Institute in Calcutta in 1971. Before joining Washington University, he was associate professor of Public Health and Genetics in the Population Genetics Laboratory at the University of Hawaii in Honolulu. Rao is internationally recognized for his research in mathematical genetics and genetic epidemiology. He is an expert in segregation and linkage analysis of family data, and has made important contributions to the genetic analysis of population structure. His most notable work has been in the application of multivariate statistical technique to the development of causal modes of combined genetic and cultural inheritance, and he has applied the technique to a variety of biomedical traits such as lipoprotein levels, plasma uric acid and blood pressure. His work has been important in the development of new statistical methods for the study of inheritance of common diseases.

Ben H. Senturia, M.D. received the Award of Merit of the American Otological Society, Inc., the oldest organization in the world dealing with diseases of the ear. Senturia is clinical professor emeritus in the Department of Otolaryngology and a member of the staff of Barnes and Jewish hospitals. He is editor of the *Annals of Otolaryngology, Rhinology and Laryngology*. A 1935 graduate of the School of Medicine, Senturia has been a member of the faculty since 1938 and has been emeritus professor since 1979.

Morton Smith, M.D., professor of Ophthalmology and Pathology at the School of Medicine, was elected chairman of the pathology committee of the American Academy of Ophthalmology. The committee monitors education in, and the practice of, ophthalmologic pathology, and is developing a manual of eye pathology for the Academy. As committee chairman, Smith will edit the manual.

The Alumni Report

1980 Reunion

'55: Our Twenty-Fifth!

What's more fun than a twenty-fifth Medical School class reunion?! The one for the class of 1955 was marvelous. Under the Chairmanship of Miles Whitener, and with the help of the wives and especially of the Medical Center Alumni office personnel, our reunion was a joy from beginning to end. The special party Thursday evening was held in the beautiful University Club Towers facilities beginning with the magic of a spectacular sunset, and with reminiscences presented by each member of the class late into the evening. No one seemed to want to go home; there was reluctance to break off the camaraderie of the friendships renewed.

The scientific sessions provided another chance to meet and, of course, we were all together again at the wonderful banquet the next evening in the Spanish Pavilion. As your President, I was privileged to welcome all who attended but there was, of course, a special thrill in leading the cheer for my own class.

Robert C. Drews, M.D.



Robert C. Drews, M.D. '55, President



Mary Lou and Charles Lederer ('50)



Maury Lonsway ('50), Guerdan Hardy ('29), John Eschenbrenner ('29)



Jackie and Ronald Gaskin ('70)



Jean and Ed Emura ('50)

Medical Center
Alumni Association

660 S. Euclid
St. Louis, MO 63110
(314) 454-2823

Claire MacConnell, Director
Ruth Moenster
LaVerne Kammer

The alumni office is located in
room 107 of Wohl Hospital



Margaret and Ben Harmon ('60)



Bill Curtis ('40) and Robert Garrett ('40)



Marge and David Perkins ('55), Glen King ('55)

Alumni Banquet

April 15, 1980

The Class of 1935, celebrating its 45th year reunion, last evening demonstrated its love and loyalty to its Alma Mater by a record attendance, reunion chairman Richard Sutter, ('35) remarked to the banquet guests.

"One of our classmates was even willing to forgo the greatest honor his State Academy of Family Physicians was prepared to bestow on him, because it would have meant his not being in attendance here at this Reunion.

"Let me read from his letter to me . . .

Dear Dick:

After we decided to make the 45th reunion and had promised to come — guaranteed room and all that complicated business, I had a phone call from the Chairman of the State Academy of Family Practice asking me to be the Family Physician of the Year. Their meeting is the same date as the 45th!!

Well, I was speechless and paralysed and happy that they wanted to honor me thus.

But, since I was already committed to you to attend the 45th anniversary, I would have to forgo this honor. I could not see how I could go back on a promise.

So if planes fly, or our car runs, and no floods or tornadoes develop, we will be seeing you on the 8th, 9th and 10th of May in St. Louis.

Sincerely,
Dr. Emory L. Soule

"Well, we haven't had a tornado — nor have we had a flood. His car did run, and he and his lovely wife are here tonight.

"Happily, I have permission from his State Academy of Family Physicians to name as Family Physician of the Year of the Great State of Idaho, a revered member of the Washington University School of Medicine Class of 1935:

Dr. Emory L. Soule, of St. Anthony, Idaho"



Emory L. Soule ('35) receiving the AAFP's "Idaho's Physician of the Year Award" from Richard Sutter ('35)



Israel D. Newmark ('30) responding for his class.



Stanley Harrison ('30) receiving his Senior Membership Certificate from August Geise ('56), President-elect.





**Washington University
Medical School
Class of 1930 — 50th Reunion —
May 9, 1980**

Seated: Drs. Langmack, Lange,
Durst, Diehr, Eggleston, Pipkin,
Trotter, and Margolin.

Standing: Drs. Newmark, Zelson,
Scrivner, Tess, Horton, Spickermann,
Brennecke, Irwin, Pearson, Lawson,
Livingston, Harrison, Byland, and
Orenstein.



**Washington University
Medical School
Class of 1935 — 45th Reunion —
May 9, 1980**

Seated: Drs. Sutter, Schwartzman,
Amlin, Loeffel, Goldenberg, Seddon,
Fleishman, and Senturia.

Standing: Drs. Hamann, Needles,
McAdam, Rothman, Berman, Flance,
Robinson, Pray, Soule, McLroy,
Bortnick, Jones, Potter, and Brown.



**Washington University
Medical School
Class of 1940 — 40th Reunion —
May 9, 1980**

Seated, First Row: Drs. Sale, McCullough, Budke, and Anschuetz
Seated, Second Row: Drs. Robinson, Lindley, Merrill, Brown, Wright, and Read.
Standing: Drs. Foerster, Skinner, MacDonald, Cross, Obermeyer, Garrett, Delano, Curtis, Schoen, Cayce, Sachar, Summers, Tomlinson, and Gallagher.



**Washington University
Medical School
Class of 1945 — 35th Reunion —
May 9, 1980**

Seated: Drs. Washington, Uzman, Roberts, G.W. Levis (Guest), C. Ramsey, and Guze.
Standing: Drs. Holt, Wood, Lambiotte, Schulz, Lewis, Conrad, Bussmann, Smith, Adams, Spitze, Wissner, Ubben, Bates, Sanneman, Ramsey, Lockett, Tuthill, Gibson, Herweg, Smith, and Prothro.



**Washington University
Medical School
Class of 1950 — 30th Reunion —
May 9, 1980**

Seated: Drs. Thomasson, Eagleton, Epp, Rodgers, Fuller, Payne, Gabrio, Reister, and Comens.

Standing, Second Row: Drs. Reid, Emura, Meyer, Stewart, Skerbeck, Catanzaro, Yaeger, Iwano, Hillman, O'Keefe, James, S. Livingston, Swarm, and Lonsway.

Standing, Third Row: Drs. Advocate, Lederer, H. Livingston, and Brown.

Top of Stairs: Drs. Vineyard and Hurst.



**Washington University
Medical School
Class of 1955 — 25th Reunion —
May 9, 1980**

Seated, First Row: Drs. Drews, Braun, Davis, Adams, O'Dell, Foreman, and Traylor.

Seated, Second Row: Drs. Perkins, Jung, Trotter, Simon, Collins, Steg, and Katz.

Standing: Drs. Charkes, Huey, Grantham, Kraus, Schultz, Paris, Whitener, King, Arnstein, Katz, Wipfler, Cooper, and Goldenberg.



**Washington University
Medical School
Class of 1960 — 20th Reunion —
May 9, 1980**

Seated, First Row: Drs. Donnell, Grubbs, Jekel, and Edmonds.
Seated, Second Row: Drs. Kreager, Goell, Harmon, Clayton, C. Terry, and Schoentag.
Standing: Drs. Sly, Hammond, Wochner, Fahien, Muench, Rubin, Shuter, B. Terry, Winters, Sauer, and Sisson.



**Washington University
Medical School
Class of 1965 — 15th Reunion —
May 9, 1980**

Seated: Drs. Kusama, Harrison, O'Dell, Telfer, Dickinson, and Cole.
Standing: Drs. Kanagawa, Rogers, Ott, Snow, Mell, Lynch, Melson, Periman, Kardinal, Friend, and Hammond.



**Washington University
Medical School
Class of 1970 — 10th Reunion —
May 9, 1980**

Seated: Drs. Lusk, Kamenetzky,
Rymer, J. Zurbrugg, Hilliker, Brick,
and Dunlop.

Standing, Second Row: Drs. Orbals,
Marshall, Strauss, Garriga,
E. Zurbrugg, Mick, Scharp, Dierberg,
and Brodie.

Standing, Third Row: Drs. Brueckner,
Gaskin, Becker, Smith, Crews, Blair,
and Pheifer.



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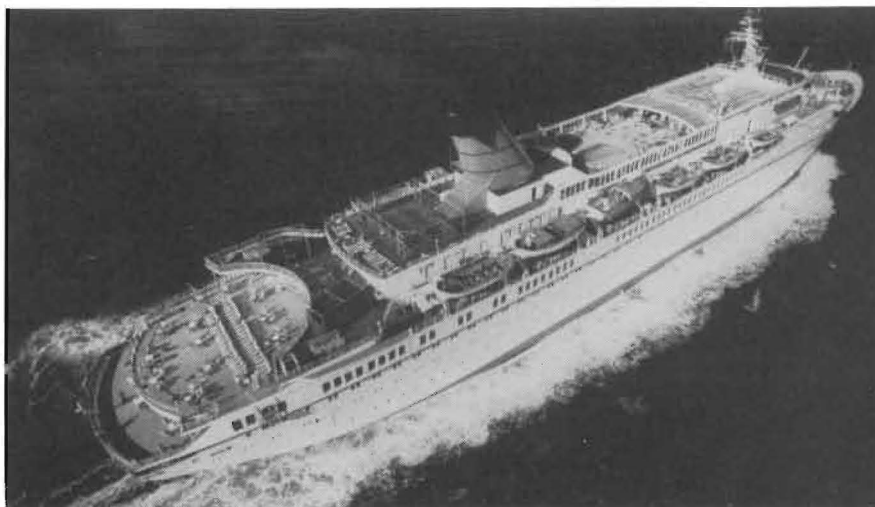
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The cover features a complex, abstract geometric design. It consists of various overlapping shapes in shades of brown, blue, green, and red. The shapes are arranged in a way that suggests architectural forms or a stylized landscape. The colors are solid and the lines are sharp, creating a modern, graphic aesthetic. The text is positioned in the upper right corner, set against a brown background.

**Washington
University
Medical Center**

**1980
President's
Report**

**McDonnell Center For
The Study of Higher
Brain Function**

Several months ago James S. McDonnell, Jr., Chairman of the Board of McDonnell Douglas Corporation, announced a gift of \$5.5 million from the McDonnell Foundation to establish the "McDonnell Center for the Study of Higher Brain Function" in the School of Medicine. The new center is to be headed by Dr. Sidney Goldring, Professor of Neurosurgery and Co-Head of the Department of Neurology and Neurosurgery. Dr. Goldring, whose contributions to brain research over the past 25 years have achieved national recognition, commented that "Neurological sciences stand at a critical threshold for making profound advances; technological breakthroughs have had an enormous impact; information is accumulating at an unprecedented rate. The need for the McDonnell Center is the highest priority and consistent

with the McDonnell tradition of providing unique leadership for our nation."

Previous gifts to the School of Medicine from Mr. McDonnell have included the McDonnell Medical Sciences Building, the McDonnell Department of Genetics, the McDonnell Professorship of Genetics, and the McDonnell Laboratory of Biochemical Genetics. In addition, Mr. McDonnell

has established a major endowment for the Washington University Medical Center. A man of rare vision and generosity, he has been a truly outstanding benefactor and supporter of the School of Medicine and the Medical Center.

I regret to report that James S. McDonnell Jr. passed away on August 22, 1980.



**Washington University
Medical Center
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Washington University
- Dr. W. Maxwell Cowan
**Washington University
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- Mr. Richard S. Jones
Central Institute for the Deaf
- Mr. Thomas H. Kenton, Jr.
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Jewish Hospital of St. Louis
- Dr. Samuel B. Guze, President
**Washington University
Medical Center**



- 1. The Jewish Hospital of St. Louis
- 2. The Jewish Hospital of St. Louis School of Nursing
- 3. Proposed St. Louis Children's Hospital
- 4. Proposed Jewish Hospital Garage
- 5. Parking Garage
- 6. Wohl Buildings
- 7. Parking Garage
- 8. Proposed Clinical Sciences Building

Introduction

The scale of Medical Center activities continues to be impressive. During fiscal 1979, Medical Center institutions spent nearly \$313 million and employed nearly 11,000 individuals. We treated over 60,000 inpatients in our hospitals for a total of 638,618 days of care. Our research and educational progress kept pace with our clinical programs. We can all take justifiable pride in our varied accomplishments.

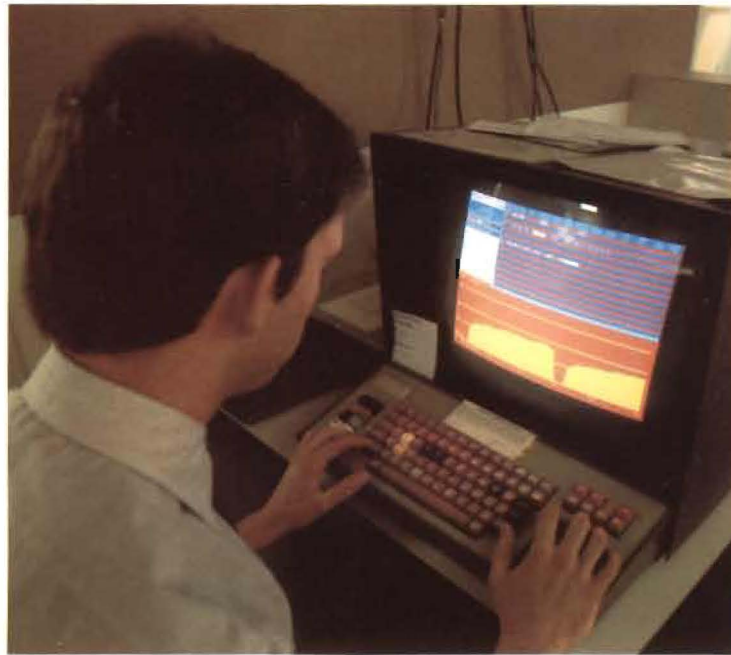


Table 1
WUMC Expenditures
(in millions of dollars)
Fiscal 1979

	For Research		Total Operating costs (Including Research)	For Capital Improvement		Grand Totals
	Gov't. Funds	Private Funds		Gov't. Funds	Private Funds	
Barnes Hospital (1)	—	.003	101.1	—	21.8	122.9
The Jewish Hospital of St. Louis	2.7	3.2	59.8	.04	4.6	64.4
St. Louis Children's Hospital	—	—	23.7	—	.4	24.1
Central Institute for the Deaf	.74	.07	2.1	.03	.07	2.2
Washington University School of Medicine	31.8	3.6	95.2	.02	3.8	99.0
TOTALS (Rounded)	35.2	6.9	281.9	.1	30.7	312.6

(1) Includes Barnard Free Skin
and Cancer Hospital

Planning With The Community

It has been five years since the city of St. Louis formally approved the Washington University Medical Center Redevelopment project. During this time, dramatic changes have occurred in the 36 blocks around the Medical Center that make up the Redevelopment area. A

summary of major accomplishment is impressive.

To date, 260 new residential units have been completed or are underway, and another 210 residential units have been or are being rehabilitated, for a combined investment of \$15.5 million. Equally striking, \$28.5 million have been spent in the

commercial area, highlighted by the Blue Cross headquarters (\$12 million) and the Monsanto Toxicology Laboratory (\$12 million). It is anticipated that if all projects being planned come to fruition, an additional \$42 million will be invested in residential and commercial projects during the final four years of the project.

Major rehabilitation and new construction at the west end of Laclede Place. ▶

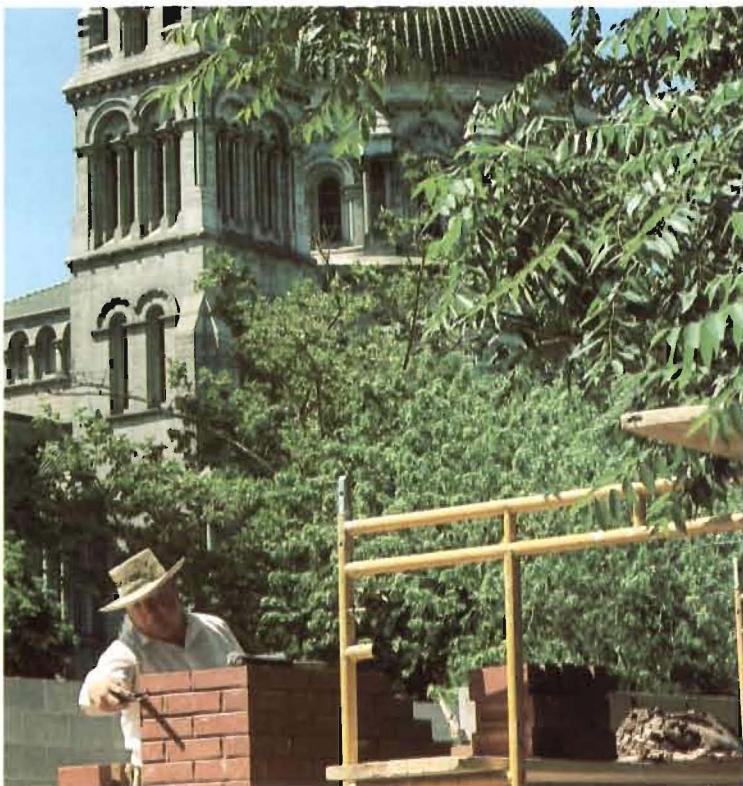


Rear view of deck and stairway system at Laclede Mews Condominiums. All twelve units were sold before the project was completed.





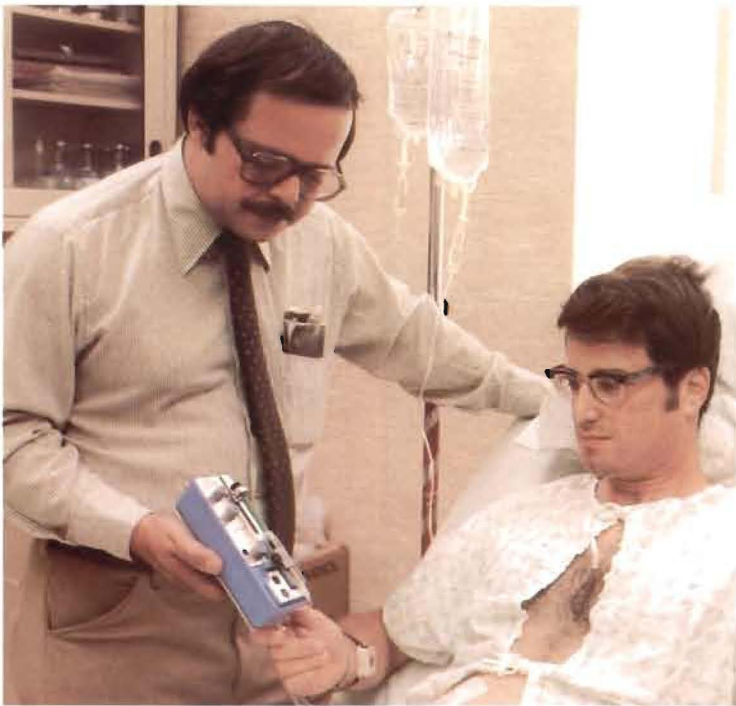
The newly renovated Ronald McDonald House for families of children receiving treatment at area hospitals.



Remodeled interiors of Condominium unit on 4500 Wichita.

← Elegant Cathedral Court Condominiums under construction on Lindell at Newstead.

Research



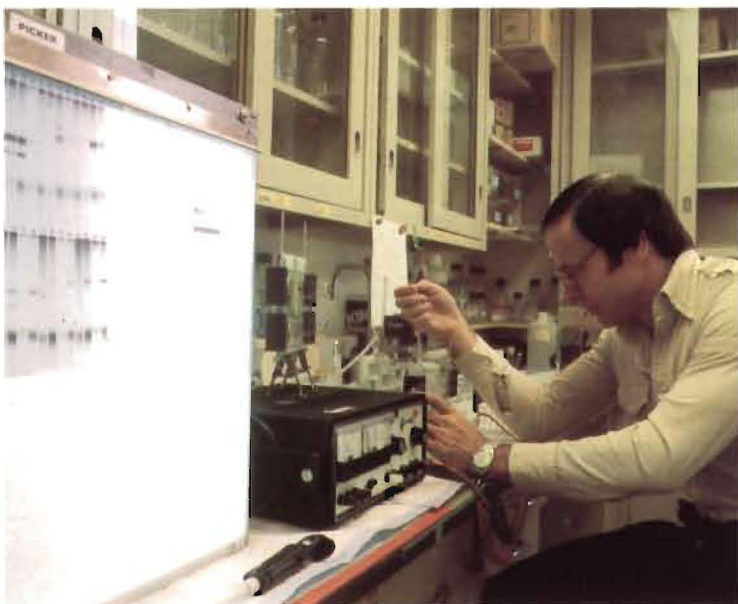
In the Departments of Pediatrics and Medicine, Julio V. Santiago, M.D., has been studying devices for improved metabolic control of patients with insulin dependent diabetes mellitus. These devices include one that continuously monitors blood glucose and a computer controlled insulin pump that simulates the pancreatic beta cell. A small portable insulin infusion pump for home use has now been used by some patients for over two years. Some diabetics with early eye and nerve complications that accompany diabetes have shown dramatic improvement after a year of nearly normal metabolic control with the portable insulin pumps. Washington University is at the forefront in the development and use of mechanical devices that may be used in the 1980's to reduce the long term complications of diabetes.



Dr. Joseph M. Davie, Professor and Head of the Department of Microbiology is studying the mechanism by which the immune system generates an extraordinary diversity of antibodies. The goal has been to determine the extent of antibody diversity and the way the diversity is accomplished. During the past two years, Dr. Davie's laboratory, in collaboration with Dr. Brian Clevinger, (School of Dental Medicine) and Dr. Leroy Hood of the California Institute of Technology, has shown that one way diversity is generated is by constructing genes (DNA) for antibodies from many smaller genes. Thus, millions of gene combinations may result from a few hundred parts. Through these studies, Dr. Davie hopes to understand how the immune system is capable of responding to an enormous variety of infectious microorganisms, tumors, and transplants in a rapid and highly specific manner.



Research at the Central Institute for the Deaf (CID), in collaboration with the Biomedical Computer Laboratory of the Medical School, has developed a computer-based system called a "speech microscope" that makes possible the study of tiny sub-sounds (some as short as a few thousandths of a second) of human speech. This research may eventually tell us not only about how humans hear and understand speech, but how they and other animals listen to a variety of sounds essential for communication and survival.

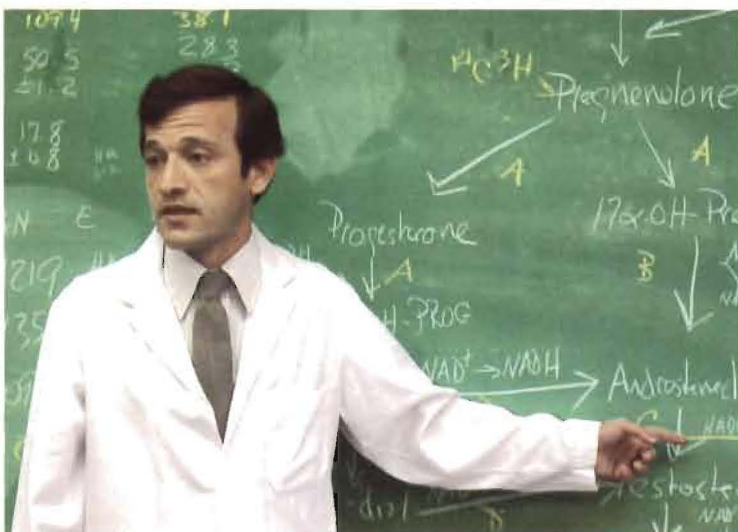


Dr. Robert G. Roeder, James S. McDonnell Professor in Biochemical Genetics, is directing studies toward an understanding of the molecular basis of cell growth and differentiation and cell transformation by DNA tumor viruses. Since cellular and viral genes which effect these kinds of processes may be controlled in large part at the level of transcription (the process of RNA synthesis, which is the first step in the readout of genetic information), Dr. Roeder's work has focused largely on an analysis of the biochemical mechanisms which are involved in this process for selected genes. Using individual genes cloned by recombinant DNA techniques, Dr. Roeder has developed cell-free systems in which these genes are transcribed in a fashion identical to that observed *in vivo* (in the living cell). He has begun to identify the various cellular factors (proteins) which mediate these processes and to study their mechanisms of action. Using *in vitro* mutagenesis techniques to modify the cloned genes, he will also be able to identify which DNA sequences are crucial for various steps in gene function.

Table II
A Five Year Summary of Care Provided by Washington University
Medical Center Patient Services

Year	Operating Beds	Discharges	Days of Care	Clinic and Emergency Room Visits	Amount of Free Patient Care Provided#
1975	1,947	66,933	643,389	277,918	\$7,963,832
1976	1,963	65,047	647,252	282,766	5,568,028
1977	1,964	65,323	626,995	271,612	7,592,513
1978	1,976	66,066	628,931	268,241	7,844,813
1979	1,935	67,207	638,618	269,658	6,518,634
TOTALS		330,576	3,185,185	1,370,195	\$35,487,820

#Excluding free professional care provided by medical staffs of the Center



Dr. Theodore J. Cicero, Ph.D., Professor of Neuropharmacology in Psychiatry has focused on the effects of narcotics and alcohol on male reproductive endocrinology. Dr. Cicero has found that both drugs significantly depress levels of blood testosterone in several species, including rats, mice, and man. Recent work in his laboratory has been focusing on the consequences of such drug induced alterations in testosterone with respect to the development of tolerance to the narcotics and alcohol.

Education

The Commission on The Future of Washington University School of Medicine Task Force

The Process of External Review

On the evening of September 22, 1979, sixteen prominent medical scientists and businessmen from across the country convened for the first time as the Washington University School of Medicine Task Force. This group was a part of a larger body, The Commission on the Future of Washington University, created in the spring of 1979 by the University's Board of Trustees. Similar Task Forces were appointed for each School within the University and each was charged with reviewing and reacting to the programs and plans of the particular School.

The School of Medicine Task Force was chaired by Mr. John W. Hanley, Chief Executive Officer of Monsanto Company of St. Louis and a member of the Board of Trustees. Other members were: Dr. Mary Ellen Avery, Harvard University; Dr. Eugene Bricker, Ellis Fischel State Cancer Hospital; Dr. Jules R. Krevans, University of California; San Francisco, School of Medicine; Dr. Robert

L. McLaurin, University of Cincinnati School of Medicine; Mr. Lee M. Liberman, Laclede Gas Company; Dean Henry Meadow, Harvard Medical School; Dr. Daniel Nathans, John Hopkins School of Medicine; Dr. Herman N. Eisen, the Massachusetts Institute of Technology; Dr. Paul A. Marks, Columbia University College of Physicians and Surgeons; Mr. Donald N. Brandin, Boatmen's National Bank of St. Louis; Mr. James S. McDonnell, III, the McDonnell Douglas Corporation; Mr. Donald Lasater, Mercantile Trust Company; Mr. Maurice R. Chambers, INTERCO Inc.; and Dr. George F. Cahill, Jr., Harvard University. Each member of the Task Force brought particular expertise for

the external review process, either in the areas of business and management or in areas of medical science, teaching, and research.

The Task Force was charged by the University's Board of Trustees with four primary objectives:

- to conduct a review of current research, teaching, and clinical activities at the School of Medicine.
- to probe/challenge the validity of future School of Medicine plans with special emphasis on projected institutional growth.
- to aid the institution in understanding the "outsiders" perception of the Washington University School of Medicine.



Mr. John W. Hanley and Dr. Samuel B. Guze

Table III
Care Provided by Washington University Medical Center—1979

Hospitals	Operating Beds	Discharges	Days of Care	Average Length of Stay	Clinic and Emergency Room Visits	Amount of Free Medical Services Provided #
Barnes Group (1,2)	1,163	40,985‡	372,583	9.09	146,552	2,917,864
The Jewish Hospital of St. Louis (3)	590	17,751‡	185,825	10.5	55,441	1,262,132
St. Louis Children's Hospital (4)	182	8,321	57,090	6.9	64,535	1,766,638
Central Institute for the Deaf (5)	—	150*	23,120**	—	3,130	572,000
TOTALS	1,935	67,207	638,618		269,658	6,518,634

‡ Does not include newborn
* Students attending School Division of C.I.D.
** Days of attendance at School Division of C.I.D.
Excluding free professional care provided by medical staffs of the Center.

- (1) Barnard Free Skin and Cancer Hospital; Barnes Hospital; Renard Hospital; David P. Wohl, Jr. Memorial Hospital; David P. Wohl, Jr. Memorial—Washington University Clinics.
(2) From Mr. Robert E. Frank, President, Barnes Hospital
(3) From Mr. David A. Gee, President, The Jewish Hospital of St. Louis
(4) From Mr. Linn B. Perkins, Executive Director, St. Louis Children's Hospital
(5) From Dr. Donald R. Calvert, Director, Central Institute for the Deaf

- to suggest for consideration modifications in current/future practices and directions.

The group met monthly, concluding its work in April, 1980. The content of the Task Force's deliberations and recommendations are included in a final report which will be submitted to the Washington University Board of Trustees this fall. According to this report, the School of Medicine is perceived by Task Force members as an educational, research, and clinical institution of the first-rank.

The Task Force's final conclusions and recommendations touched on subjects such as the present and future financial strength of the School, the superior interface of the clinical and pre-clinical departments within the School, the public image of the School, means for dealing with potential governmental influences in the years to come, the need of the School for new facilities for clinical research, the strength of continuing medical education, the high quality of leadership at the School, and the general atmosphere and high quality of teaching and research found at the School of Medicine.

In its final report, the Task Force states, "We commend the high quality of leadership of the School of Medicine, We applaud the creative growth environment provided for young scientists and the 'research point of view' which is conveyed by the School. The Task Force urges the School to continuously strive to maintain the extremely high level of creative scholarship which we have found to characterize the School of Medicine."

In his closing remarks, Mr. Hanley said, "Speaking on behalf of my distinguished Task Force colleagues, it has been a privilege to participate in the evaluation of Washington University's School of Medicine. The enthusiasm for the School which evolved during our study will insure a life-long loyalty to Washington University School of Medicine."

For the Washington University School of Medicine, the external review process accomplished by the Task Force has provided valued information and resources which will serve well planning and progress into another decade of excellence.



Dr. Mildred Trotter, Professor Emeritus and Lecturer in the Department of Anatomy and Neurobiology, received an Honorary Doctor of Science degree from the University at its 119th commencement on May 16, 1980. Dr. Trotter has been associated with the School of Medicine for sixty years. During this period, she taught Anatomy to nearly four thousand students, including two Nobel Laureates.



**Table IV
Care Provided by WUMC to Patients from Outside
Metropolitan St. Louis—1979**

Institution	Discharges	Number from Outside Metro. Area (1)	Percent from Outside Metro. Area
Barnes Hospital (2)	40,985‡	11,838	29%
The Jewish Hospital of St. Louis	17,751‡	1,251	7%
St. Louis Children's Hospital	8,321	1,995	24%
TOTALS	67,057	15,084	22%
Central Institute for the Deaf	701(3)	280	40%

‡Does not include newborn.
 (1) Outside St. Louis Standard Metropolitan Statistical Area
 (2) Includes Barnard Free Skin and Cancer Hospital
 (3) Includes 150 students and 551 patient-clients in treatment programs.

The Medical Center in Transition

After extensive cooperative planning by Medical Center Institutions, construction will begin shortly on three major projects on the parking lot between Jewish Hospital and the rest of the Medical Center (see cover). A new Children's Hospital will be built just east and south of the Jewish Hospital School of Nursing. The new building will provide about 450,000 gross square feet of space and contain 235 beds, a major ambulatory care center, three floors of research laboratories, radiological facilities, and operating rooms.

Further to the east and south, the School of Medicine is undertaking the largest project in its history. Planning is well advanced for a three (3) wing, ten (10) story Clinical Sciences Building that will bridge over Audubon Avenue. The new

structure, containing approximately 375,000 gross square feet of space, will be totally committed to research for the Departments of Medicine, Surgery, Anesthesiology, Radiology, Preventive Medicine, Pathology, and Psychiatry.

Pedestrian bridges will link Jewish Hospital, the new Children's Hospital, and the Clinical Sciences Building with the rest of the Medical Center.

The third project will be the doubling of the Jewish Hospital's 400 car parking garage. The new structure will bridge over Parkview Place and rest on the northeast edge of the present Medical School parking lot.

At Barnes Hospital, the new West Pavilion is nearing completion. Combined with the

East Pavilion, it will represent one of the most technologically advanced patient care facilities in the world.

Also at Barnes Hospital, an 800 car parking garage for employees, located at the southeast corner of Duncan and Taylor Avenues, was completed in early July, 1980.

As the new West Pavilion patient care facilities are activated, construction will start on renovation of seven floors of Renard Hospital for research laboratories and offices for the Department of Psychiatry. Planning is underway, as well, for an Ambulatory Cancer Treatment Center on the third floors of Barnard and Wohl Hospitals, a joint project of Barnard Hospital and the School of Medicine.



Table V
Greater St. Louis Outpatient Visits to Selected Hospital Clinics—1979

	(Clinic) Physician-Patient Visits	
	Number	Percent
Washington University Medical Center	158,810	33%
City Hospitals (1)	141,089	29%
St. Louis University (2)	56,007	12%
St. Louis County Hospital	45,712	9%
Others (3)	84,182	17%
TOTALS	485,800	100%

	(Clinic) Physician-Patient Visits	
	Number	Percent
David P. Wohl, Jr. Memorial—Washington University Clinics (4)	100,087	63%
St. Louis Children's Hospital	30,244	19%
The Jewish Hospital of St. Louis	28,479	18%
TOTALS	158,810	100%

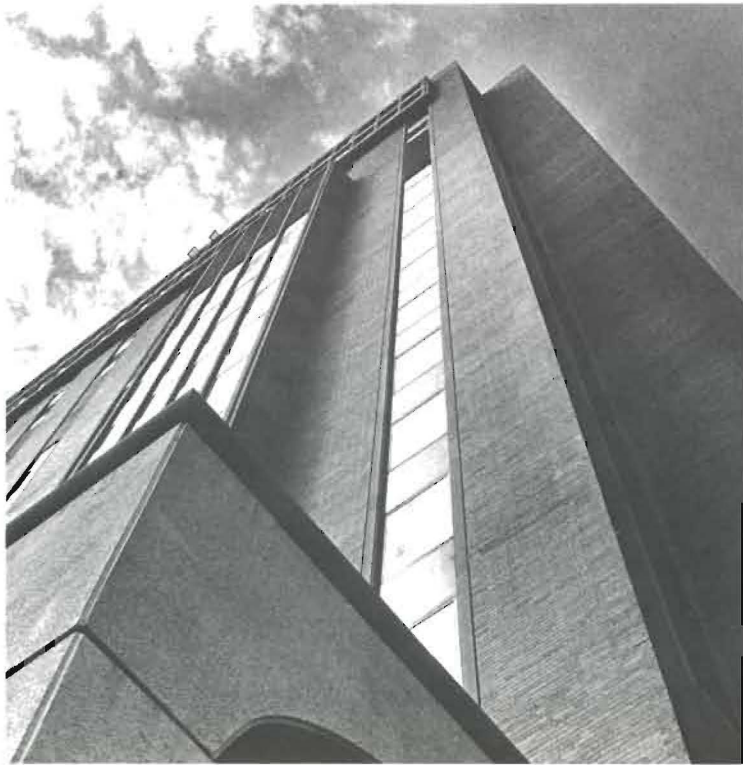
Source: WUMC Statistics from Member Institutions, all others from Hospital Association of Metropolitan St. Louis, Patient Statistics.

(1) Homer G. Phillips Hospital, St. Louis City Hospital

(2) St. Louis University Hospital, Cardinal Glennon Hospital

(3) Deaconess Hospital, Lutheran Hospital, Missouri Baptist Hospital, St. John's Mercy Hospital, St. Mary's Hospital

(4) Barnes Hospital



Barnes Hospital new west Pavilion.

Proposed St. Louis Children's Hospital.



Proposed Clinical Sciences Building, Washington University School of Medicine.
◀

Health Care

The last decade was a period of unprecedented expansion and revitalization of patient care facilities in the Medical Center. With the new Children's Hospital and other capital improvements planned for the immediate future, our clinical facilities will rival any in the nation. We are able to provide the most exacting and complex care to the most seriously ill.

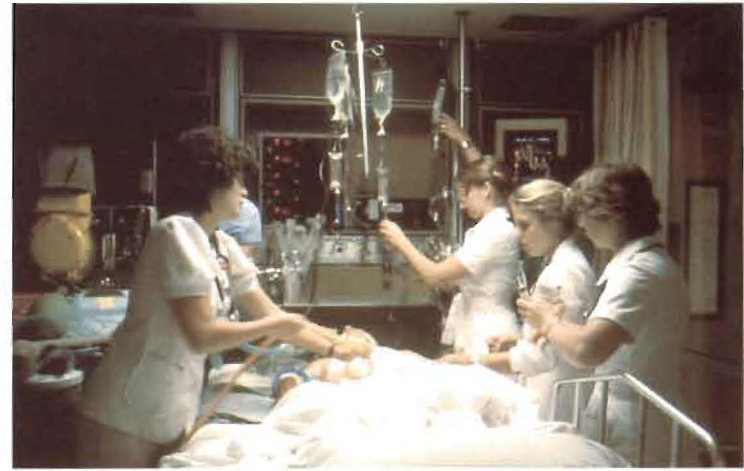
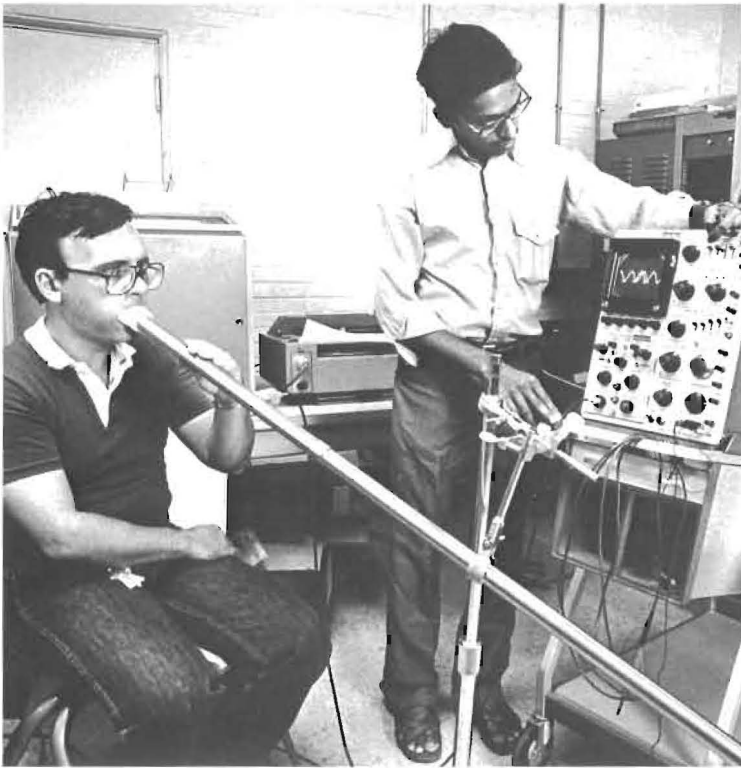
Table III indicates the scale of services rendered this past year. Stressing sound management, Medical Center Institutions routinely surpass voluntary cost containment guidelines, but are able to initiate innovative treatment programs that keep pace with advancing technology. A few examples of new programs are as follows:

At Jewish Hospital a unique Critical Care Center (consisting of a Coronary Care Unit, a Respiratory Care Unit, and a General Medical Intensive Care Unit) has been in operation this past year. This center not only provides highly sophisticated electronic monitoring, but its design enables the nurses' stations to be located so that each patient can be seen clearly. ➤



The Mallinckrodt Institute of Radiology is now performing temporomandibular joint arthrography. It uses microfocus magnification radiography, fluoroscopy, and contrast material to yield both structural and functional information not available with standard x-rays. ➤





The Central Institute for the Deaf has developed a Glottal Tube that assists in the study of the larynx in normal and hearing impaired subjects. The device is simple, economical, and requires little time; it provides measurements as accurately as more complicated methods.

Table VI
Teaching Responsibility of the Washington University Medical Center—1979

Medical Students			555*
Graduate Students in Biomedical Sciences			145**
Students in Postdoctoral Educational Programs			
Interns		142	
Residents		462	
Postdoctoral Fellows & Trainees		163	767
Students in Allied Health Professions			
Health Care Administration	W.U.	82	
Dietetic Internship	Barnes	17	
Medical Technology	Jewish	10	
Nurse Anesthesiology	Barnes	45	
Nursing	Barnes	263	
Nursing	Jewish	292	
Occupational Therapy	W.U.	60	
Pediatric Nurse Practitioners	W.U.	13	
Physical Therapy	W.U.	41	
Audiology, Education of Deaf	C.I.D.	40	
X-Ray Technology	W.U.	31	
Nuclear Medicine	W.U.	5	
Radiation Therapy	W.U.	5	904
TOTALS			2,371***

*Includes 62 students in M.D./Ph.D. Medical Scientist Training Program

**Excludes the 62 students in M.D./Ph.D. Medical Scientist Training Program

***This total does not include 256 students in the School of Dental Medicine and 709 students at the St. Louis College of Pharmacy who

are in training in close proximity to Medical Center Institutions. Also not included are a host of students—nurses, social workers, therapists, health care administrators and others who use Medical Center Institutions for Clinical training.

In an effort to personalize care, Barnes Hospital has developed a Primary Nursing Care Program (PNC). In this program, one nurse is assigned primary responsibility for the patient throughout the patient's stay in the hospital. Nurses agree that primary nursing care is more demanding, but they consider it rewarding because they feel they are doing what they were trained primarily to do. ▶



Table VII
Number of Employees and
Salary Expenditures—
Fiscal 1979

Institution	Number of Employees	Expenditures in Millions For Salaries
Barnes Hospital (1)	4,266	48.04
The Jewish Hospital of St. Louis	2,299	30.5
St. Louis Children's Hospital	814	9.12
Central Institute for the Deaf	118	1.5
Washington University School of Medicine (2)	3,346	48.4
TOTALS	10,843	137.56

(1) Includes Barnard Free Skin and Cancer Hospital

(2) Includes 307 Trainees & Fellows carrying Medical School appointments

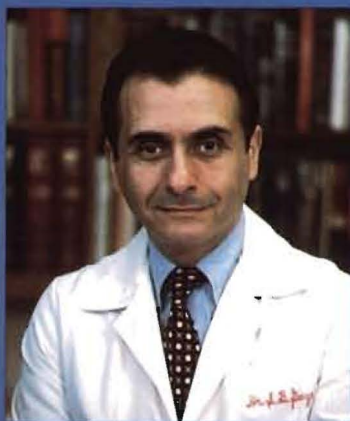
The Irene Walter Johnson Institute of Rehabilitation is sponsoring an adult fitness program for Medical Center personnel and students. Using the enclosed running track located on the fifth floor of the Institute, the program will offer aerobic exercises to improve cardiovascular fitness, as well as calisthenics to enhance "flexibility".

Conclusion

The past year has been a good one. Medical Center Institutions helped make possible a new Children's Hospital. The near completion of the West Pavilion brought Medical Center expenditures for capital improvements, over the past five years, to more than \$127 million; equally important, another \$150 million are projected for the next five years.

In our neighborhood, the success of our redevelopment effort is clear. New residents and businesses and an optimistic "spirit" are evident. We have every reason to believe our goals will be fully achieved—to the benefit of the entire community, as well as the Medical Center.

As long as we can continue to count on first rate people at all levels within the Medical Center, we should be able to cope effectively with the new and the continual problems of the future. Commitment, intelligence, imagination, and hard work—they have enabled us to thrive in the past and they will assure success in the future.



Samuel B. Kuyze



**Washington University
Medical Center**



"Froggy went a-courtin'." So goes the old song. And who hasn't seen a toady character leaning on the bar, harboring a certain glint in the eye, prefatory to a classic line such as 'haven't I seen you someplace before?' A more classic description of the fellow above might well be Hilaire Belloc's: "With an indolent expression and an undulating throat, like an unsuccessful literary man." However, Belloc was referring to a llama, not the Trinidad tree frog in the photo by Paul Philip Sher, M.D. '65, whose photography has appeared in magazines such as "National Geographic World," "Natural History," and "Camera 35."

OUTLOOK invites alumni to submit photographs, artwork or drawings for possible use in the publication. Please write or call the editor for information.

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