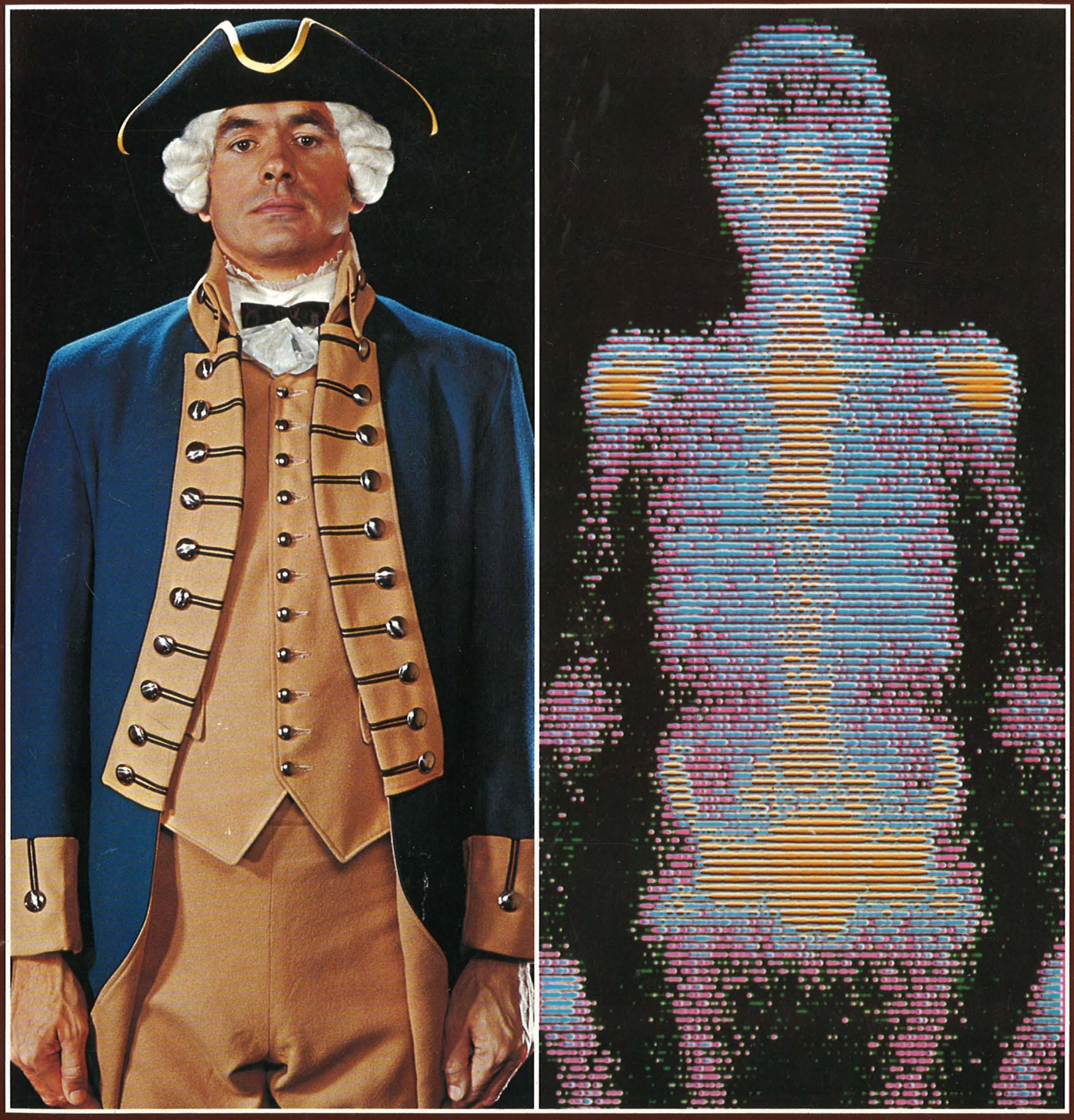
HEALTH SCIENCE

SPECTRUM



Colonial Medicine: a Bi-Centennial Reflection

A Message from the President

Representatives of this institution recently completed a thoroughgoing overview of its past, present and future. As a result of a series of introspective studies, a useful statement has been produced articulating the "Mission of The University of Texas Health Science Center at Dallas." This document reaffirms our philosophic commitment to the traditions of medical scholarship, while recognizing a need to maintain proper balance between these long-held traditions and the tug of other forces at work in society, in order to arrive at an appropriate contemporary role for the health science center during the balance of this century and perhaps beyond.

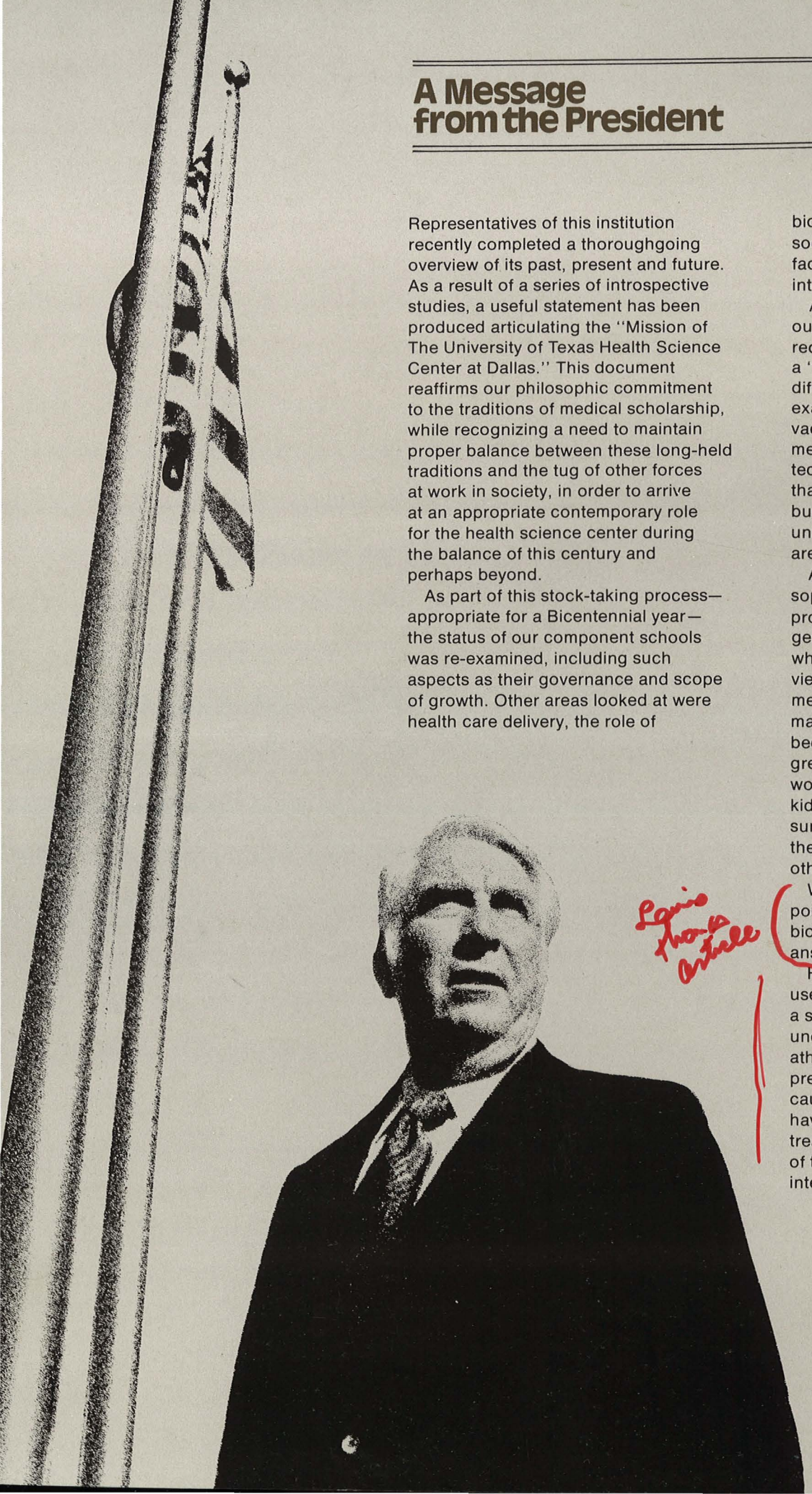
As part of this stock-taking process—appropriate for a Bicentennial year—the status of our component schools was re-examined, including such aspects as their governance and scope of growth. Other areas looked at were health care delivery, the role of biomedical research and the impact of societal expectations. These latter facets, it seems to me, are inexorably interrelated.

As the "Mission" statement points out, medical discoveries of relatively recent decades have indeed ushered in a "new age of therapeutics." It is difficult to conceive of a world, for example, without penicillin, polio vaccine or insulin. Or devoid of nuclear medicine's diagnostic imaging techniques or the innovative methods that now can save the once hopelessly-burned patient. Clinical procedures unheard-of even five or 10 years ago are today recognized as routine.

At the same time, advent of new sophisticated medical means for protecting and prolonging life has generated elements contributing to what the general public increasingly views as intolerably high costs for medical care. To put it bluntly, many patients who earlier would have been lost are now being saved but at great cost. Nowadays, instead of wonderment at such marvels as the kidney transplant or heart bypass surgery, we are more apt to hear about the admittedly high cost of these and other restorative techniques.

Which brings me to the principal point I wish to make here: support for biomedical research is the *only* ultimate answer to high medical costs.

How much better even than the widely used arterial bypass surgery would be a solution to the cellular riddles underlying the disease process of atherosclerosis; how infinitely preferable would be discovery of the causes of cancer *before* it wreaks its havoc, requiring costly forms of treatment, support and rehabilitation of the cancer patient. These labor-intensive activities are sending costs



Photography: David Hills

of patient care soaring—and they are essentially palliative approaches.

A major ongoing thrust of this institution, as described in the "Mission" document, is to maintain an environment for the continued creative interaction of the various segments of medical science in pursuit of answers to the nagging unsolved questions of disability and disease. We are fortunate to have a faculty and staff rich in talent and accomplishment. Just as the significant medical findings of the past didn't happen accidentally, future solutions to those remaining riddles will come only as a result of painstaking laboratory work by dedicated medical scholars such as ours.

A secondary goal, and one that is absolutely essential to successful pursuit of the first, is to communicate the need for continued support of medical research—a job that's not going to be easy in a deteriorating national atmosphere of mounting fiscal stress and declining optimism. As competition for limited funds increases, it will seem simpler — but, of course, would be entirely shortsighted — to trim those activities whose benefits are less immediate and less obvious. Esoteric-sounding research, not easily understood nor often fully appreciated by a tax-pressured public, often becomes the handiest target of budget-cutters.

So a primary "mission" for the community of medical educators and scientists is that the value of their companion role of research must be better explained—in dialogues with our city, state and nation. Research actually is an investment, a long-term debenture that affords the very real prospect of paying off in future savings of life, and of the resources which could make that life better.

CHARLES C. SPRAGUE, M.D.
President.

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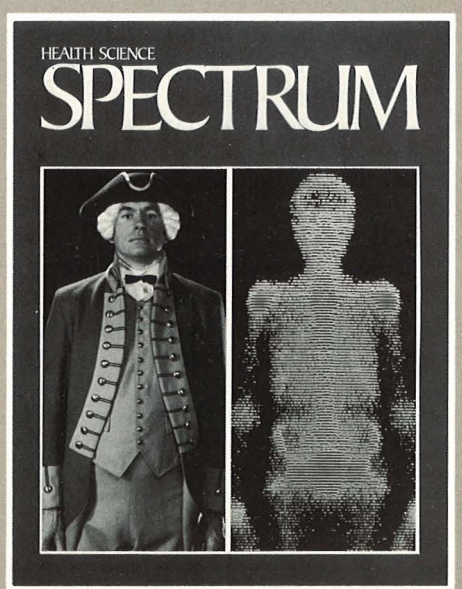


ON THE COVER — A 1776 man and a 1976 scan symbolize two centuries of progress in American medicine. These contrasting figures are designed to whet your interest in Silvi Taylor's fascinating backward look at the shaky state of medical care during the fight for Independence. Her story begins on page 14. Tom Sweeney posed as the Revolutionary War soldier for Terry Webb's color picture, and photographer David Hills provided the color treatment of the scintigram that typifies today's space-age diagnostic imaging techniques.

NEW UNDERSTANDING OF HUMAN GROWTH, SEXUAL FUNCTION, AND METABOLISM EMERGING IN U.T.H.S.C.D. STUDIES OF 'RELEASING HORMONES' – GLAND-GUIDING CHEMICALS SHOWN TO BE . . .

BODY'S 'BRAIN' MESSENGERS

By BOB FENLEY

Teams of researchers at The University of Texas Health Science Center are attempting to understand a group of the brain's "executive action" chemicals which turn you on or turn you off in a variety of ways.

The chemicals come from the hypothalamic region in the middle of the brain and go to the pituitary, a pea-shaped gland just below, where they instruct it to secrete hormones regulating growth, ovulation and other sexual functions, thyroid stimulation of metabolism, reaction to stress and even milk production.

Since environment and events seem to influence the hypothalamus to secrete these so-called "releasing hormones," it may be that this is one area and process where brain and body merge.

Of eight known releasing factors, at least two were discovered by scientists associated with the Physiology Department of the UT Health Science Center.

Dr. Samuel McCann, department chairman, and Drs. Ladislav Krulich, Peter Fawcett, Sergio Ojeda and others have been working on these chemicals for a number of years. McCann and associates discovered the substance which instructs the pituitary to release "luteinizing hormone" some 15 years ago. It is luteinizing hormone which triggers ovulation and stimulates the ovaries to produce estrogen and progesterone, the most widely known female sex hormones.

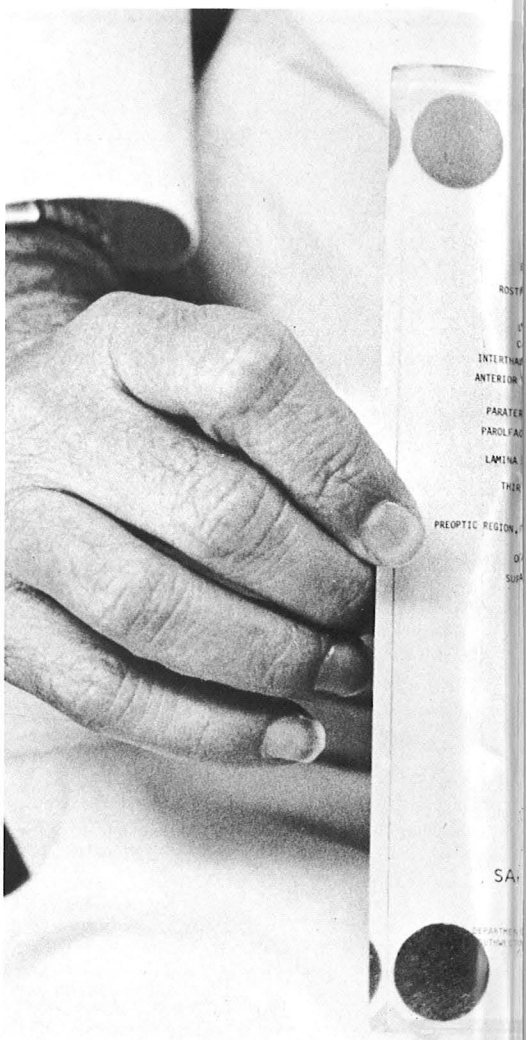
"Today, most birth control pills are made up of derivatives of one or both of these two substances," notes Dr. McCann. "Luteinizing releasing hormone has been synthesized and work is proceeding in several laboratories to produce analogs (similarly structured chemicals) which might induce ovulation in infertile patients and other analogs which might block ovulation, thus opening up new means for fertility control."

A number of other investigators on the Health Science Center campus, including Dr. John Porter, also have been pursuing a variety of questions about the releasing hormones.

A fascinating link between brain, behavior and body is being explored in the work of Dr. Robert Moss. Drs. Moss and Keith Cooper found that mating in rats would cause an extra release of luteinizing hormone distinct from that produced during the regular ovulation cycle.

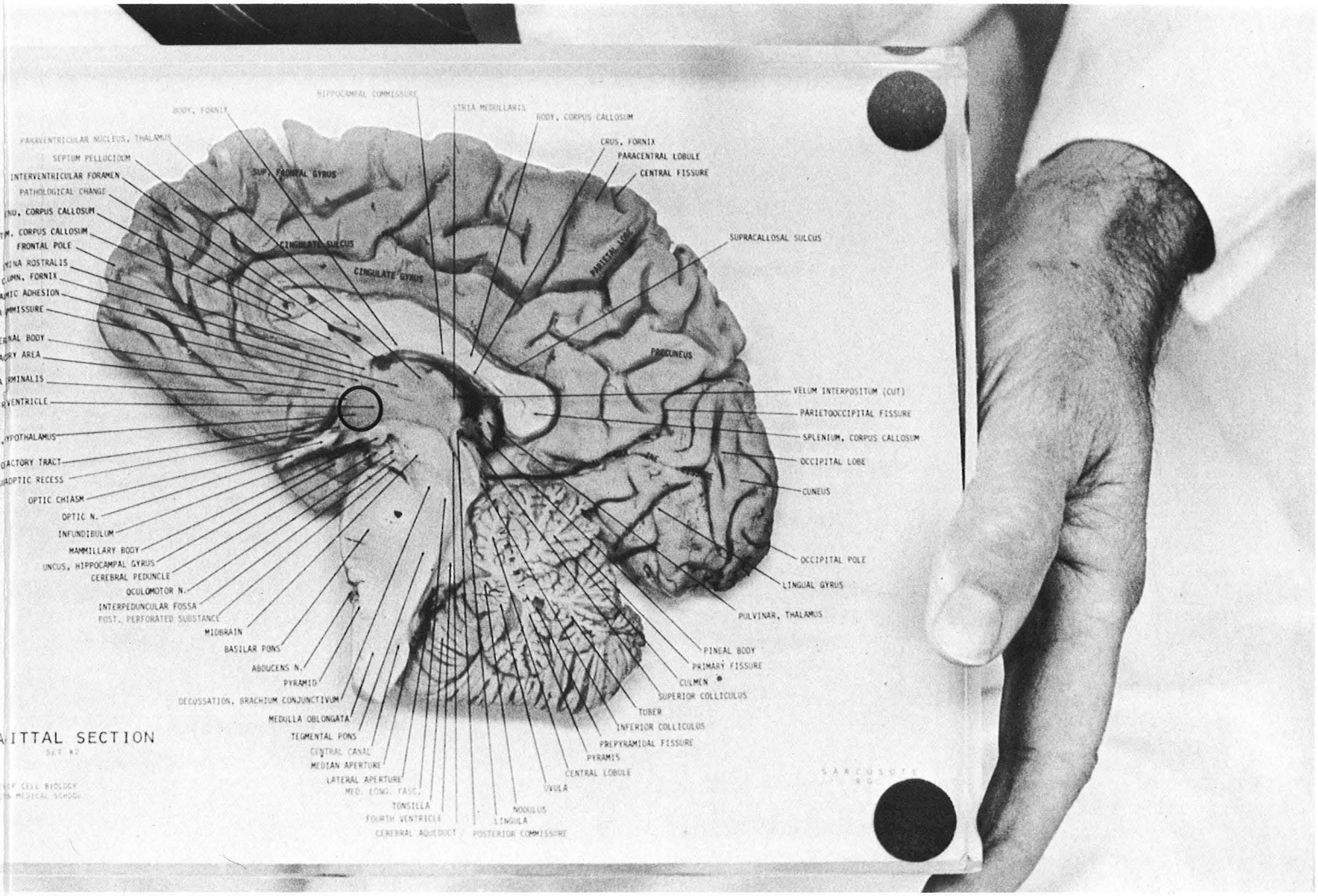
If there is a similar process in humans, it could explain failure of the "rhythm method," pregnancy in girls who had no previous menstrual cycles and extra ovulations, including those following rape.

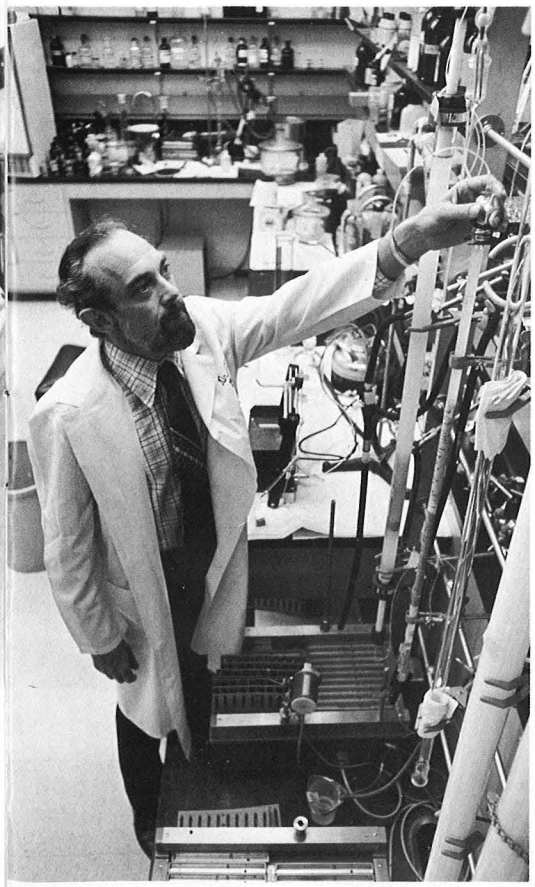
Rats given doses of luteinizing hormone-releasing hormone (LRH) show intensified mating activity. Moss and Drs. McCann and Ivan Danhoff are conducting human trials with the release factor but results won't be announced until the work



Above: Drs. Samuel McCann, Hideki Nakano
Right: Dr. Peter Fawcett

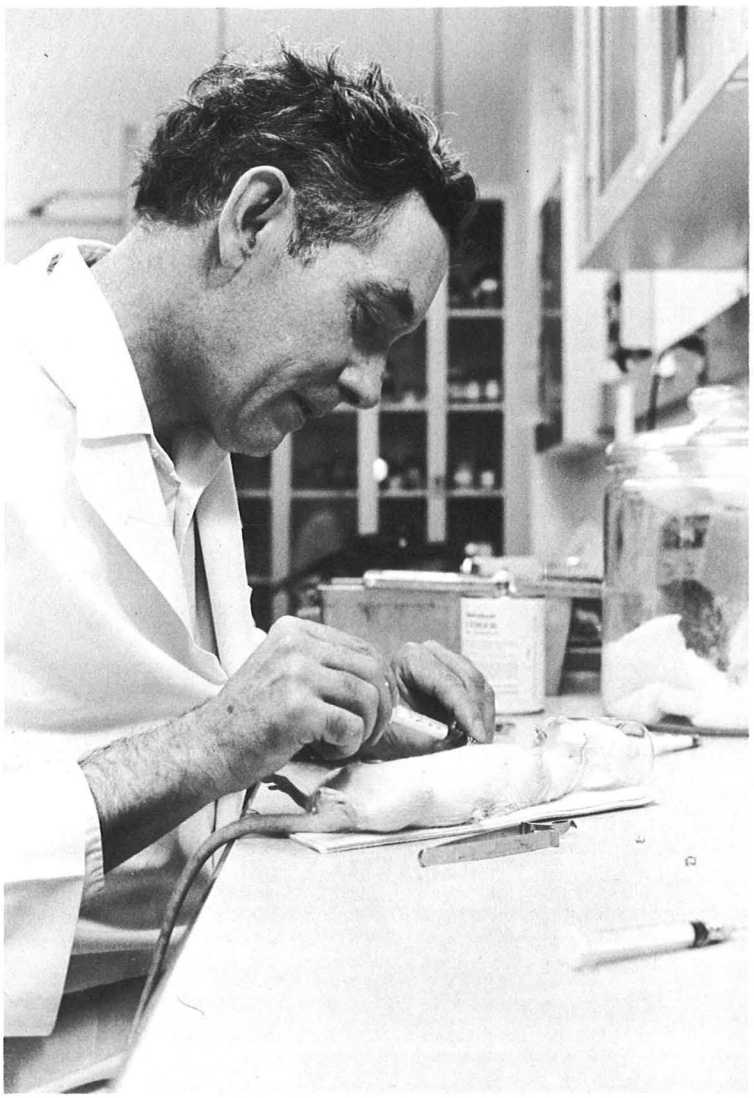
Photography: Dan Barsotti





Above: Hypothalamus (circle), tiny seat of 'super-hormone' secretions

Left: Dr. Robert Moss, technician Carol Dudley



Dr. Ladislav Krulich takes blood sample

Dr. Nakano oversees preparation of pituitary cells by laboratory assistants

is complete. However, the researchers say it's still too early to say whether humans will react like rats.

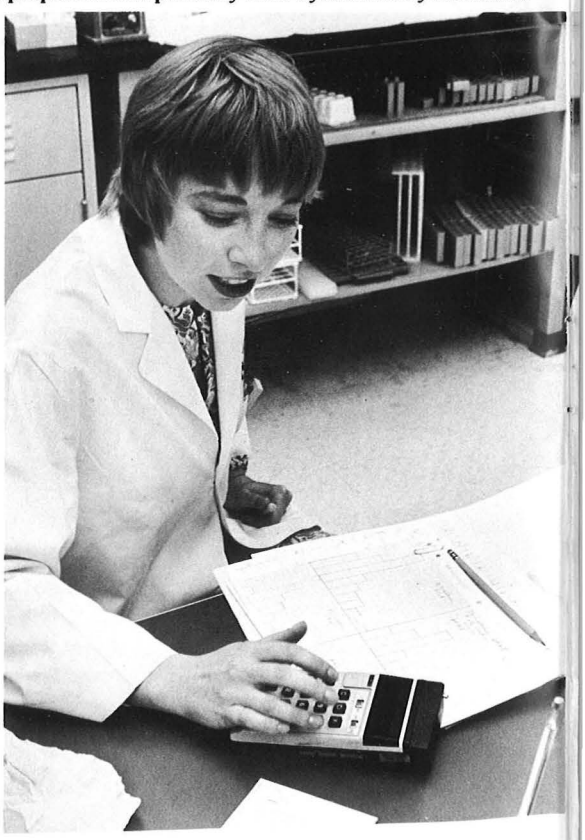
At the moment, scientists are intrigued by the possibility that diabetes may be more readily controlled by a hypothalamic factor. This is "somatostatin" which was originally described on the basis of its ability to inhibit release of growth hormone.

Dr. McCann credits Dr. Krulich with discovering the first tiny amounts of somatostatin in his Dallas health science center laboratory. It was later synthesized by a group in California.

The secretion of one curious releasing hormone depends on age: In babies, exposure to cold will release a factor which tells the pituitary to release thyrotropin—a substance which acts on the thyroid gland and causes it to secrete thyroxin to stimulate body metabolism. But this is not the case in an adult.

"Benefits from any of the several research avenues could be enormous—pills to cure sterility or impotence, a new superpill for birth control, more efficient ways to control diabetes, aids to growth, and the list goes on," says Dr. McCann.

The Physiology Group is especially interested in encouraging graduate students and postdoctoral fellows to train in this area in view of its tremendous potential. The scientists believe best results will come from a team approach by neuro-physiologists, endocrinologists, physiologists, cell biologists, biochemists and some of the clinical disciplines involved, such as obstetrics and gynecology. ■



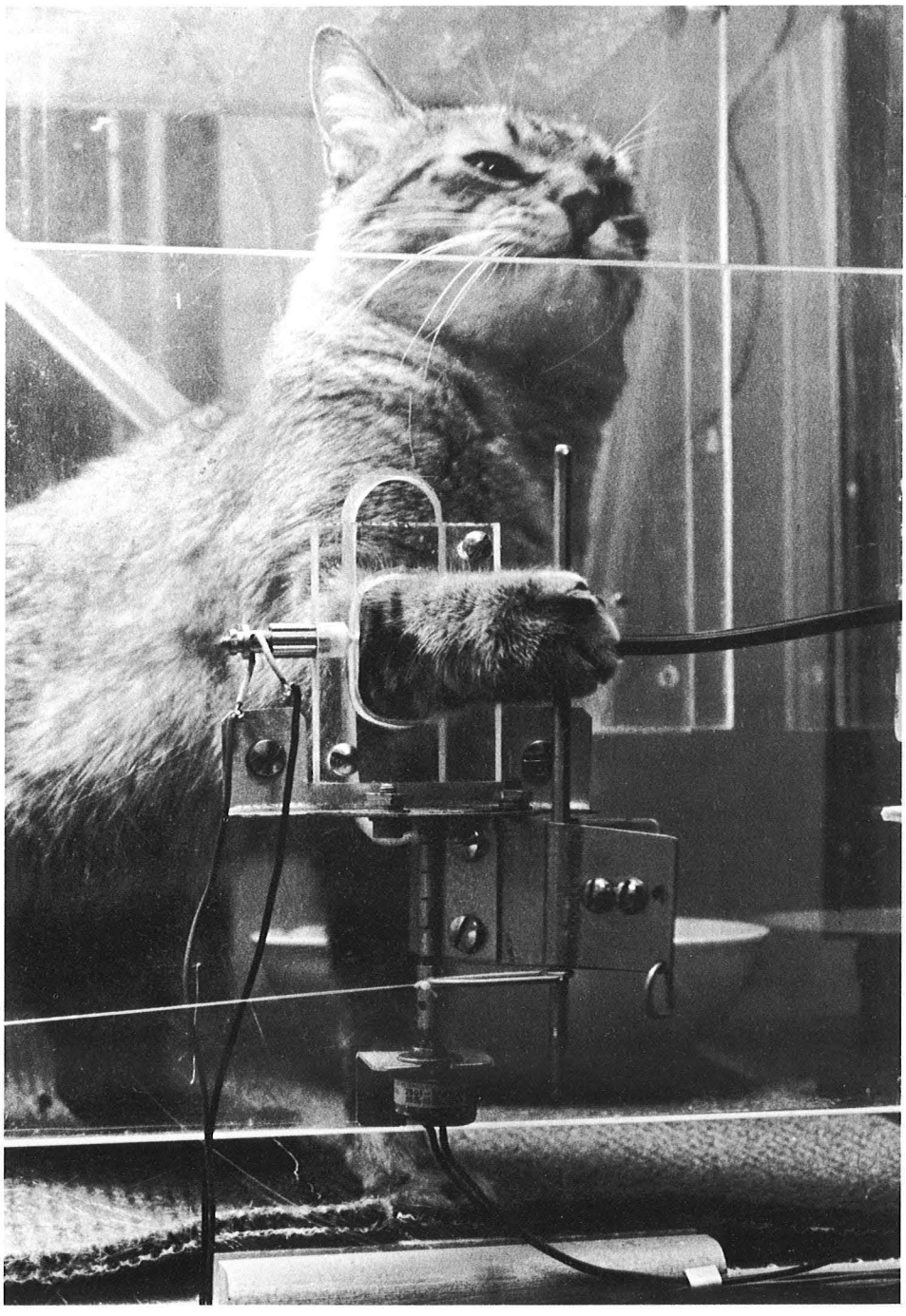
Dr. Sergio Ojeda performs surgery on rat brain

Left: Ann Beezley calculating data; above: Thelma Criddle handing hypothalamic extract to Dr. McCann; right: assistant Suzan Raymond loading radioactivity counter

paws for exercise

Cats' weighty workouts giving a lift to research on heart, other muscles

By Silvi Taylor

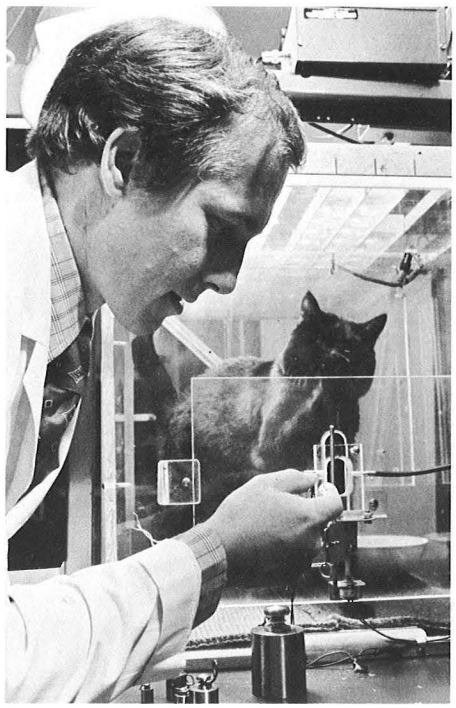


The procedure is simple: take any cat, pedigree or alley-type, with a good appetite, a strong curiosity and a fairly intelligent appearance, and you have an excellent candidate for Dr. William Gonyea's rigorous exercise program in weight-lifting.

Dr. Gonyea, an assistant professor of cell biology and a comparative anatomist at UT Health Science Center at Dallas, has developed this unique research project to study muscle hypertrophy and atrophy — that is, the process by which a muscle increases in size and strengthens when exercised, or weakens and decreases when not exercised. Because of his interest in cat behavior and its relationship to the cat's anatomical structure, Dr. Gonyea felt these animals would be the best models for the study.

"History shows the cat's forelimb was used in hunting 35 million years ago," he noted. "His whole success depended on his ability to grab his prey before biting them. This same trait exists today."

Thus he has taught the felines to do isotonic exercises by grasping and pushing a bar attached to various sizes of weights, as well as isometric exercises (pushing and holding the weighted bar for a certain period of time). As



Take that! Pugnacious pussycat belts exercise bar, at left—and reward of food's in the offing. Above: awaiting a workout, kitty watches Dr. Gonyea make adjustments on exercise equipment.

muscle strength increases, the amount of weights is increased.

Training begins by placing a cat inside an enclosed box with only a small opening on one side. This hole faces the weight bar.

"His natural curiosity is aroused," Dr. Gonyea said.

This instinctive curiosity and clutching characteristics are then utilized. When he peers out the hole, he thrusts out one paw and is immediately rewarded with a high-protein food.

"It's very important that he's fed immediately each time he performs a correct procedure," Dr. Gonyea commented. "Otherwise he won't learn it properly."

Next the feline is given food for hitting the bar only with his right paw. The final objective is reached when he pushes the bar and lifts a weight with his right paw.

"The average weight lifted is 400 grams in the beginning," Dr. Gonyea pointed out. It generally takes eight weeks for each cat to double this amount. One cat lifted 1000 grams after 11 weeks of exercise, while another, a seven-pound female, has lifted 1350 grams (three pounds), or 46 per cent of her body weight. Of the 17 felines now "in training" at the center, one has reached the 1300-gram mark (or 2.9 pounds).

A side discovery was the animals did not lose their knowledge of the procedure even after long periods of non-training. "Somehow it's a long-term learning process that stays with them," Dr. Gonyea remarked. One cat was not exercised for 11 months, but "when we put him back inside the box after this time, he took up weight-lifting again with no problem," he said.

Another study using the muscular animals determines the effect and adaptation of stress on the cardiovascular system. One cat is doing the isometric exercises, gripping and holding the bar for up to 30 seconds. Blood pressure and heart rate are monitored by an electronic device which records any blood pressure change when pressure is increased, and the amount of blood flow per heart-beat.

Dr. Jere H. Mitchell, chief of the center's cardiopulmonary laboratories and director of the Moss Heart Center, is collaborator with Dr. Gonyea on the heart-exercise studies — designed, Gonyea says, "to find out more precisely whether exercise is really good for you.

"We know that jogging, after awhile, has a tendency to lower blood pressure, while weight lifting has a tendency to raise it. The question is, how far these activities can be carried out without inducing harm or death."

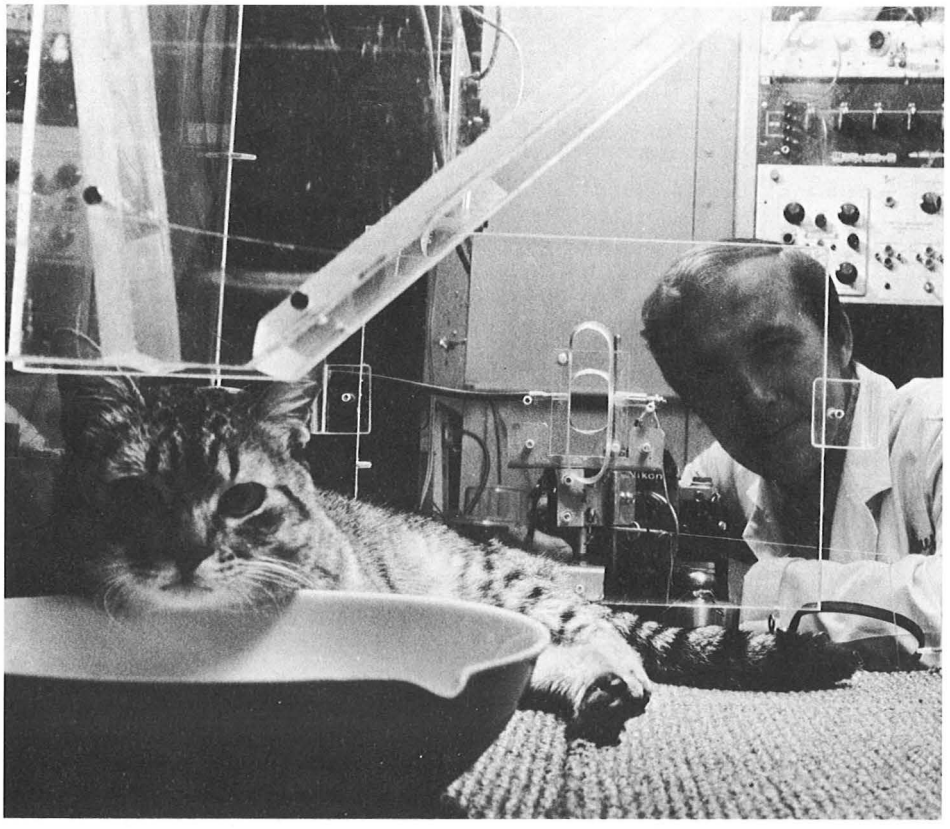
Support for the cat-exercise studies comes from two grants by the National Institutes of Health; from the Texas affiliate, American Heart Association, and the Moss Heart Fund.

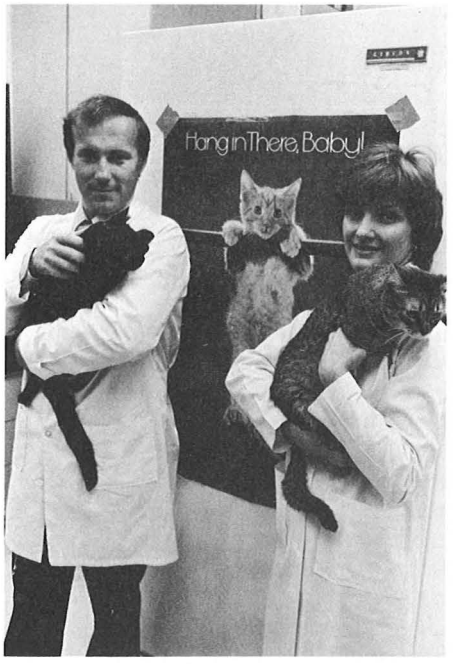
A primary goal of Dr. Gonyea's work is to determine how the neuromuscular system adapts to various forms of stress. "No one has discovered how adult muscles grow or weaken," he said. "We hope to see how a muscle works and why selected muscles strengthen or weaken as they do."

He has found that in the cats, there is an increase in the total number of muscle fibers after exercise.

By achieving this goal, he hopes a process ultimately can be developed to eliminate such conditions as the muscle weakness associated with muscular dystrophy.

Meanwhile, Round Two is continuing at the center as the 17 cats undergo training in the art of weight-lifting. And one thing is certain—no pussyfooting around will be tolerated for long. ■





Pooped after bout with weights, burly feline rests while Dr. Gonyea takes a picture, at left. Plexiglass trough overhead delivers food to dish when lever's pushed. Above: Dr. Gonyea and wife Francine, his research associate, hold pair of willing workers.

Photography: David Hills

TRYING TO EASE THE SNEEZE

By JOHN WEEKS

Immunologists at The University of Texas Health Science Center at Dallas are taking microscopic ragweed particles apart in a promising cross-continent search for a way to snuff out the sneeze in hay fever.

Utilizing highly sophisticated, automated equipment, UT scientists Drs. J. Donald Capra and David Klapper are sorting out the chemical components of one of the culprit allergens—a handful of protein molecules in ragweed pollen which trigger the wheezy autumn allergy that afflicts millions.

The work in Dallas is part of a cooperative research effort that links laboratories here, in Baltimore, Md., and in Montreal, Canada. Progress already made has raised cautious hopes among the scientists that the project may yield a much more precise — and thus more effective — treatment for the familiar affliction. Within time, they hope, they may eliminate it entirely.

A seemingly impossible task? Yes, but impressive steps have already been taken. So far, the Dallas research team has succeeded in chemically "dismantling" two of the four ragweed proteins known to cause hay fever.

This intricate sequencing process — to determine the exact arrangement or sequence of the parts of each molecule — requires countless laboratory procedures and consumes months of time, even with swift automatic devices. The involved process is the essential step in singling out those minute parts that provoke allergy.

Already, notes Dr. Capra, scientists had discovered that of the hundreds of proteins in ragweed, "people are allergic to only four." This first big step toward a better hay fever vaccine came several years ago when Dr. Lawrence Goodfriend of McGill University in Montreal isolated those proteins.

Dr. Goodfriend's remarkable achievement narrowed the needle-in-a-haystack search dramatically, focusing on this handful of active allergen molecules. Next came a detailed examination of those molecules' chemical structure — and that's where Dr. Capra and his team came in.

Taking purified allergen supplied by Dr. Goodfriend's lab, the Dallas scientists achieved the next major benchmark—when they determined for the first time the exact chemical makeup of a protein allergen. This has enabled researchers to delve even more deeply into the intricate biochemical riddle of ragweed, looking for those parts of the active allergens which may trigger the hay fever response.

Dr. Capra, professor of Microbiology at UTHSCD, explains: "We may find that the molecule has one portion that triggers the allergic response, and another portion that triggers the protective response that you get from the immunization process. If that is the case, we could simply treat people with that part of the molecule that does not contain the allergic material."

The result could be a more effective immunization, which could create enormous numbers of protective antibodies against allergen—without making the patient's disease worse during the treatment.

"One of the major limitations of desensitization treatment," he said, "is that you are giving the patient something he is allergic to."

A key element in the Dallas research has been the scientists' ability to "scale down" traditional laboratory separation and measurement procedures—steps made necessary by the minuscule amounts of ragweed allergen available.

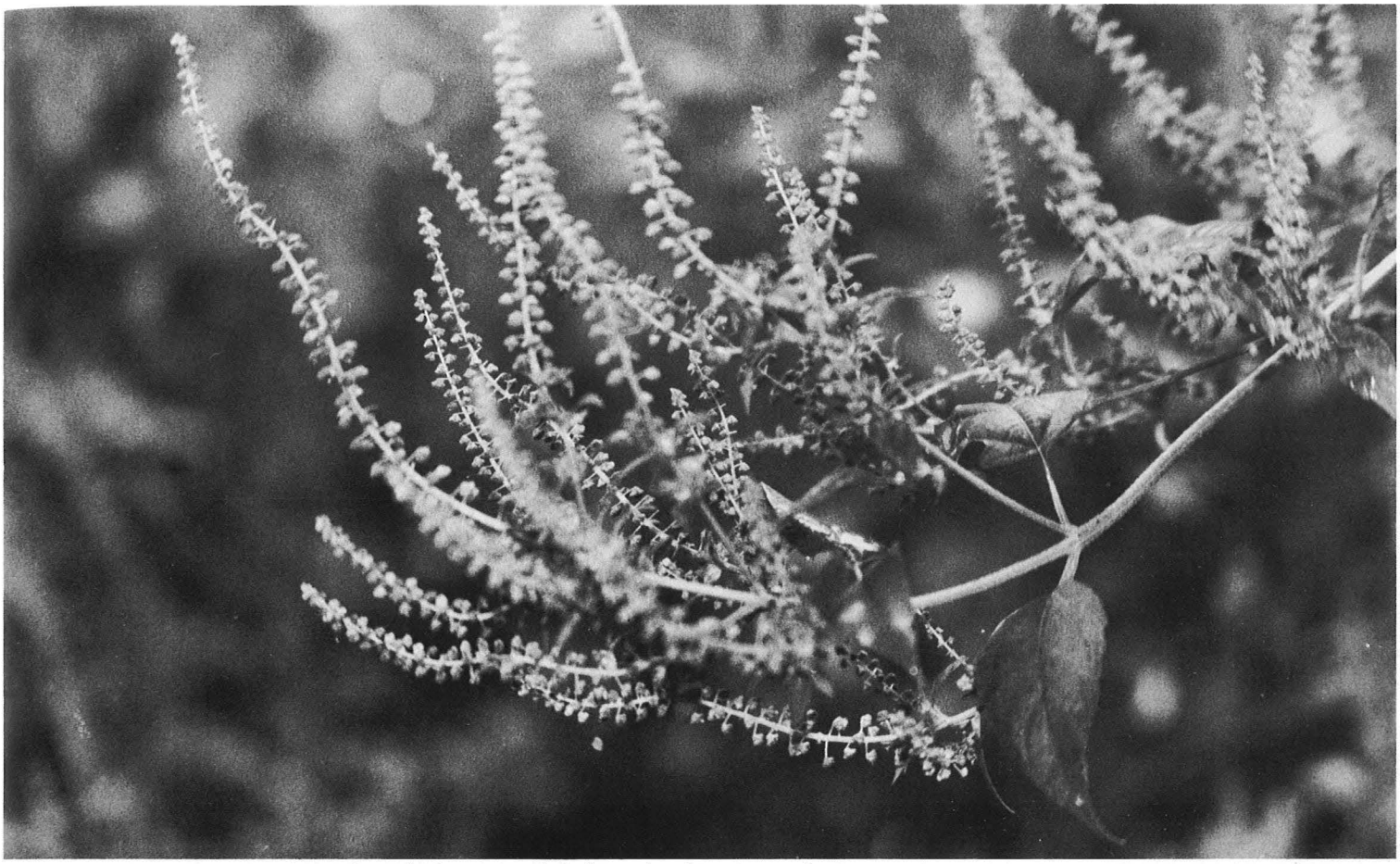
Innovative, miniaturized "fractionating" hardware was developed so molecular separation and protein sequencing could be accomplished on a reduced scale. The entire process so far has utilized a tiny batch of proteins weighing far less than one-tenth of an ounce, Dr. Capra says. Even though that's "enough to keep all of Dallas sneezing," it represented a staggering challenge to the researchers.

Because of the tediousness and difficulty in isolating even this much material, conventional laboratory methods requiring larger amounts would not have worked, he added.

The Dallas research is partially funded by a grant from the National Institutes of Health.

Dr. Capra compares the current state of the quest for improved hay

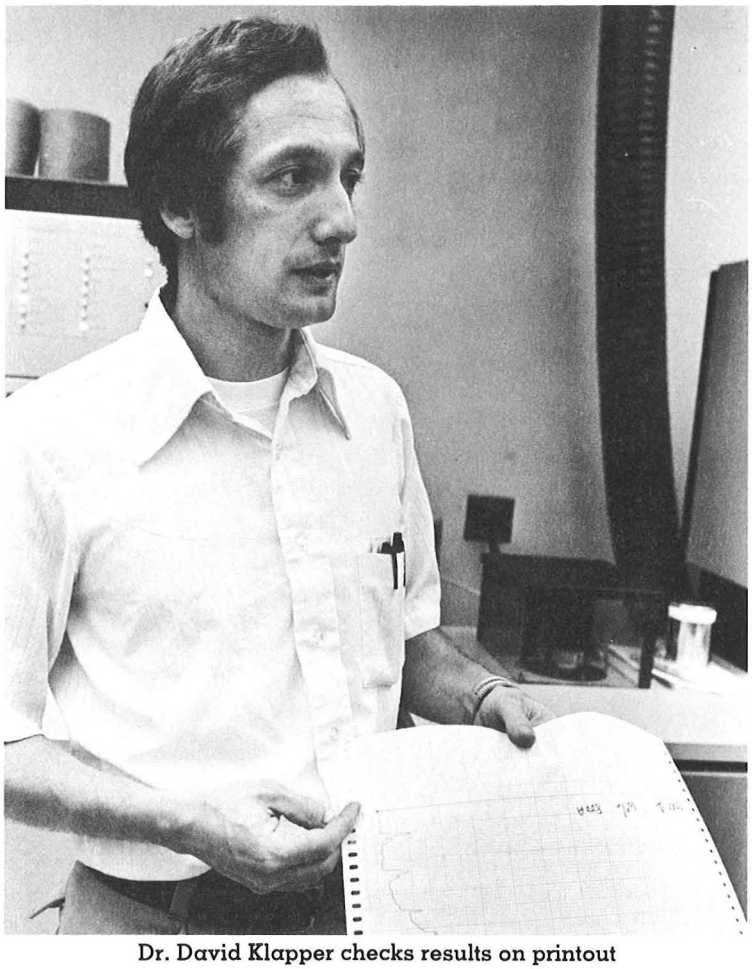
Photography: Dan Barsotti



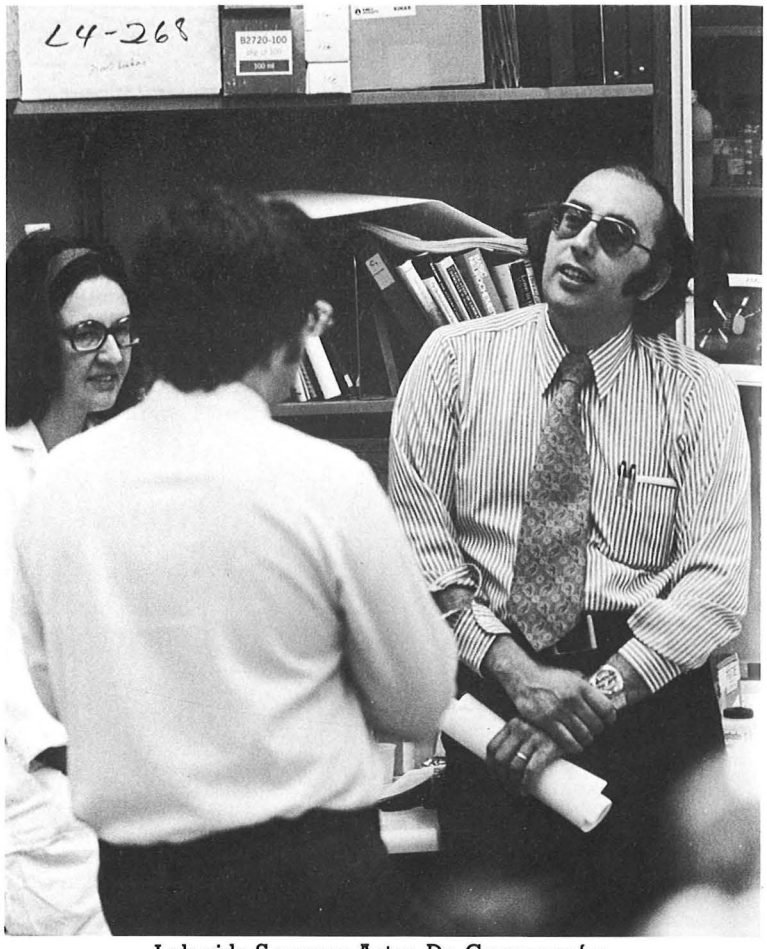
This is the culprit: ragweed, its branches bursting with about-to-be-released pollen

Dr. J. D. Capra . . . overhead, antibody model hovers

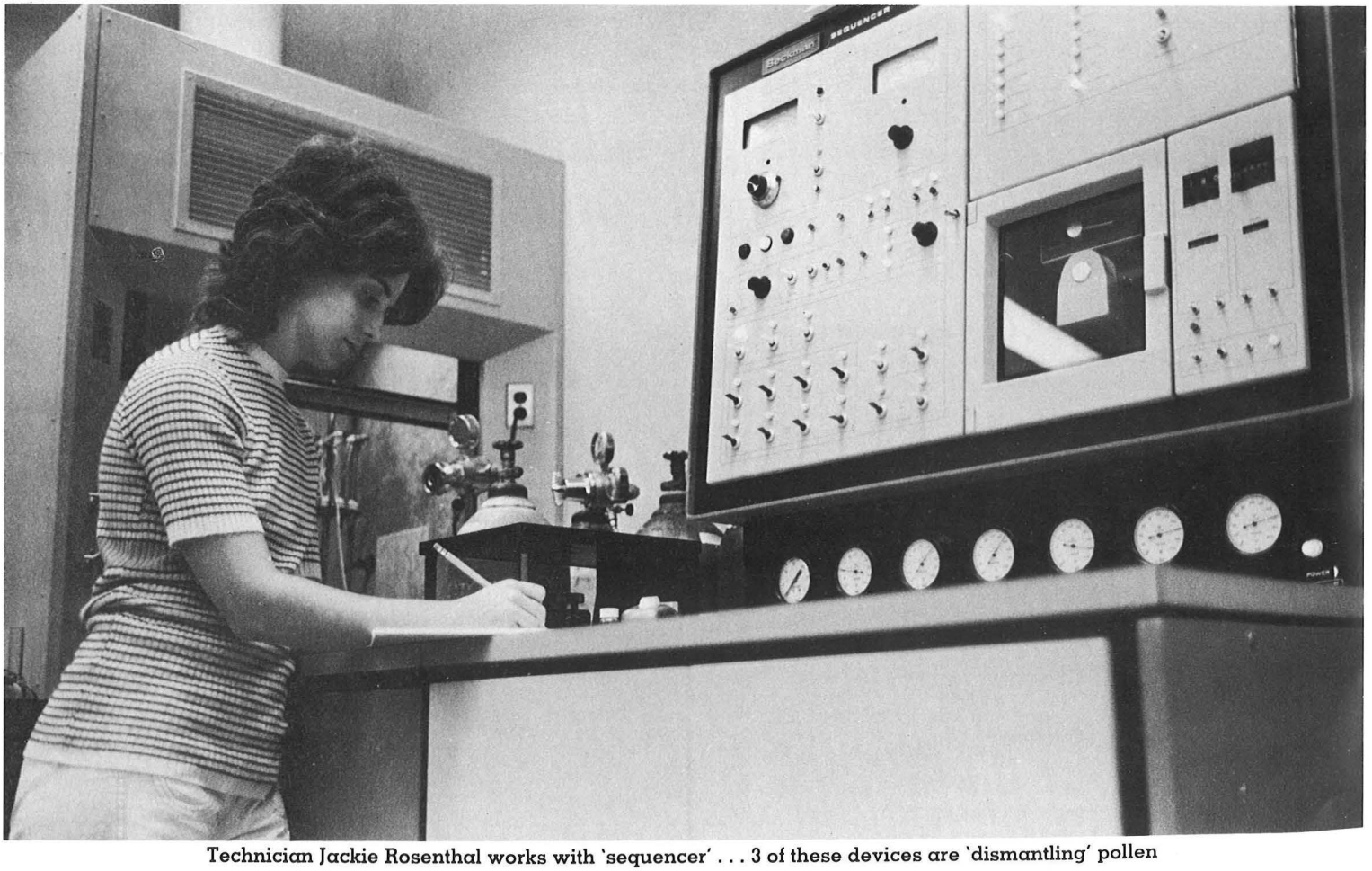
Amino acid samples are collected by Margaret Cason



Dr. David Klapper checks results on printout



Lab aide Suzanne Astor, Dr. Capra confer



Technician Jackie Rosenthal works with 'sequencer' . . . 3 of these devices are 'dismantling' pollen

HAY FEVER FIGHTERS PROBE RAGWEED MOLECULES FOR NEW WAY TO ERADICATE ALLERGY'S MISERY

fever immunization with earlier searches for successful vaccines against such diseases as lockjaw and diphtheria. In both instances, he noted, scientists found a way to modify the harmful portions of the active molecules, leaving only those parts which stimulated a protective immune response.

In the case of tetanus, he pointed out, "tetanus toxin would kill you if it were injected into your body. But a way has been developed to inactivate the toxic portion by heat or chemical treatment, so the part of the molecule that causes the paralysis is destroyed.

"The rest of the molecule is still there, to give you the protective antibodies. That's the kind of thing we hope that we can be able to achieve."

Recent findings indicate this "pie-in-the-sky kind of hope"—to use Capra's words — is not an unrealistic goal.

Thus far Drs. Capra, Klapper and their associates at The UT Health Science Center have succeeded in disassembling two of the four ragweed proteins: Ra (for ragweed allergen) 5, and Ra 3.

Ra 5, smallest of the lot and the first to be completed, was found to be made up of 45 chemical building blocks, known as amino acids. From this structure they have isolated pieces or "chains," called peptides. Pieces of Ra 5 in turn have been sent to the third major participating lab in this extraordinary cross-country research effort: that of Drs. David Marsh and Lawrence Lichtenstein of Johns Hopkins School of Medicine in Baltimore.

The Hopkins scientists are conducting clinical test injections, giving volunteer patients only these carefully separated and sequenced segments of ragweed proteins sent from Dallas, with dramatically encouraging results.

"In all the people they have tested so far with the pieces of Ra 5," reports UTHSCD's Dr. Klapper, "only two of these peptides have been found to provoke the allergy. Most of them are totally innocuous."

This raises the exciting possibility of developing a hay fever vaccine with concentrated amounts of these "non-allergenic" peptides — thus giving immunity — without the two peptides which cause the weepy symptoms.

Once the exact chemical sequence of all four of the active allergens is known, Dr. Capra predicts, it should even be possible eventually to construct synthetic allergen molecules in the laboratory — molecules possessing the chemical ingredients to stimulate production of protective antibodies against the real allergen, but otherwise harmless to the individual.

Dr. Capra says these nonreactive allergens could be mass-produced on a device known as an automated peptide synthesizer — an instrument designed to do precisely the opposite task of those sequencers (three of them) now at work breaking down the ragweed allergens. In this case, the machines would build molecules rather than take them apart.

"In the future, any time an individual encounters an active hay fever allergen, the offending protein would be inactivated by the antibodies," he said. "The whole procedure would be like getting a smallpox or any other common vaccination."

But don't throw away your boxes of tissue and antihistamine — yet.

While results are promising, the size of the task confronting the scientists — to develop a meticulously formulated substance that is chemically correct for each of the four active ragweed proteins — is almost unbelievably complex.

Just dismantling Ra 3 — the second protein allergen, with twice as many molecular components as Ra 5 — took the Dallas researchers a year.

"A pollen is a very big, complicated conglomeration of molecules," Dr. Klapper points out, "and when you get down to individual allergens, they themselves are complicated molecules." And the process already evolved for the smaller Ra 5, and now under way (nearly finished) for Ra 3, must be repeated for each of the other two, which are even larger. So much remains to be done.

Dr. Capra, who began the chemical sequencing work in association with Dr. Goodfriend while he was at New York's Mt. Sinai School of Medicine, before joining the Dallas health science center in 1974, says the best way to explain the complex job of unraveling the hay fever riddle is by comparing it to the "bee sting story."

Prior to about a year ago, he said, allergists were forced to treat persons having a potentially life-threatening allergy to bee stings (some 100 persons in this country die each year from such reactions) with an injection made by grinding up the whole bee — wings and all.

"A bee contains maybe 10,000 proteins," he observed. "Now, obviously, the only thing you're allergic to is the venom.

"Now that someone has isolated the venom of a bee, the physician skin-tests the patient with just the bee venom, and if he's allergic you desensitize him with just the bee venom — you don't use the whole bee."

So, in essence, that's what the hay fever-fighters are in the process of doing right now — culling out the precise chemical villains that cause the allergy and treating hay fever patients experimentally in a sophisticated way that generates the desired levels of immunity.

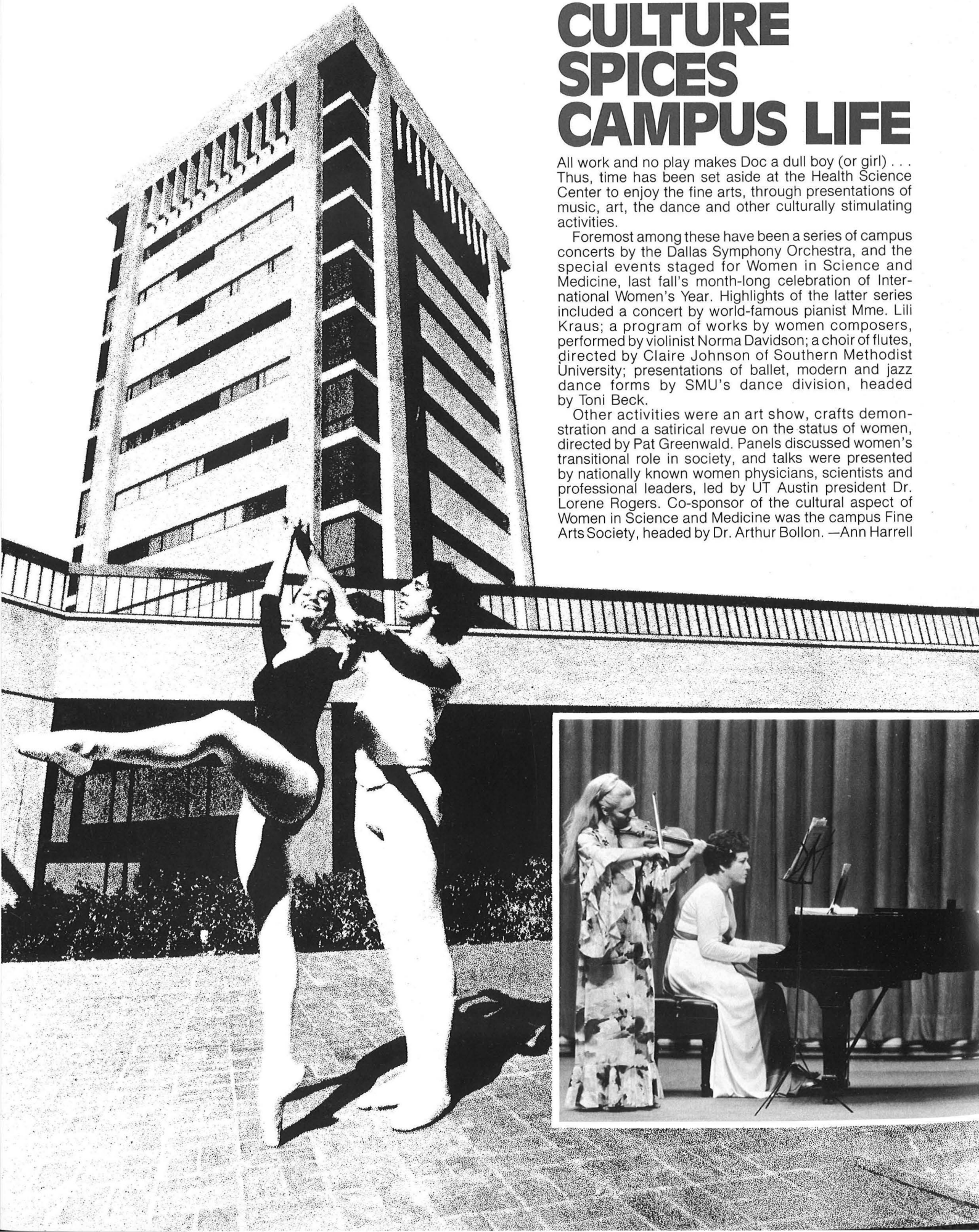
Without giving them "the whole bee." ■

CULTURE SPICES CAMPUS LIFE

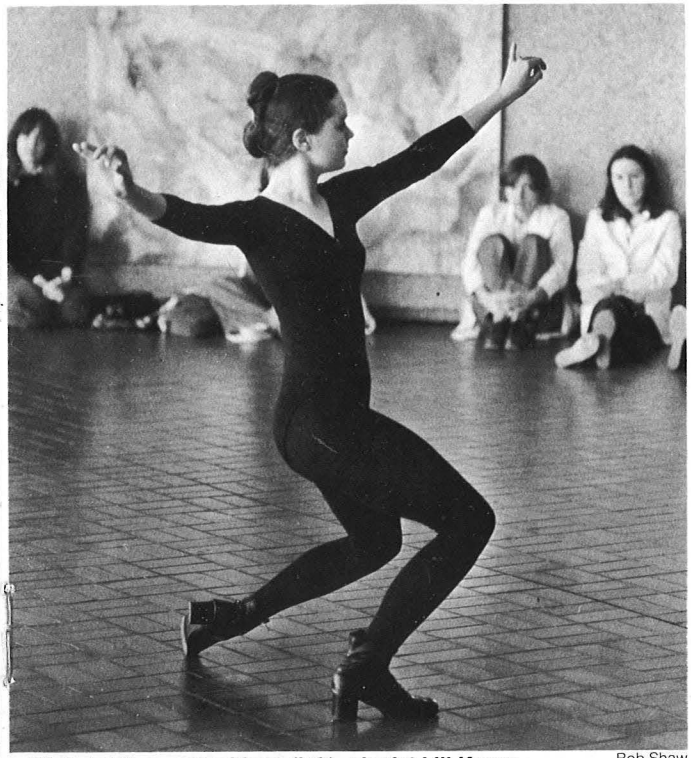
All work and no play makes Doc a dull boy (or girl) . . . Thus, time has been set aside at the Health Science Center to enjoy the fine arts, through presentations of music, art, the dance and other culturally stimulating activities.

Foremost among these have been a series of campus concerts by the Dallas Symphony Orchestra, and the special events staged for Women in Science and Medicine, last fall's month-long celebration of International Women's Year. Highlights of the latter series included a concert by world-famous pianist Mme. Lili Kraus; a program of works by women composers, performed by violinist Norma Davidson; a choir of flutes, directed by Claire Johnson of Southern Methodist University; presentations of ballet, modern and jazz dance forms by SMU's dance division, headed by Toni Beck.

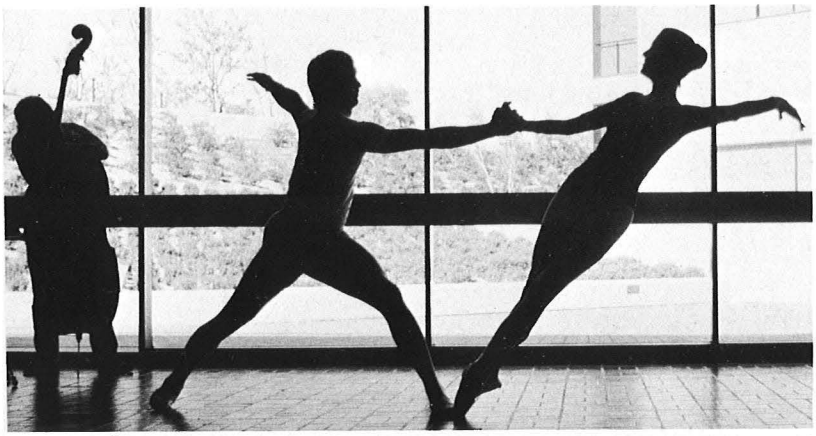
Other activities were an art show, crafts demonstration and a satirical revue on the status of women, directed by Pat Greenwald. Panels discussed women's transitional role in society, and talks were presented by nationally known women physicians, scientists and professional leaders, led by UT Austin president Dr. Lorene Rogers. Co-sponsor of the cultural aspect of Women in Science and Medicine was the campus Fine Arts Society, headed by Dr. Arthur Bollon. —Ann Harrell



Dan Barsotti



Bob Shaw



Dan Barsotti

Dan Barsotti

Violinist Norma Davidson (left), pianist Lili Kraus (top of page) and talented teams of dancers and musicians from SMU delight audiences at the center

Dan Barsotti

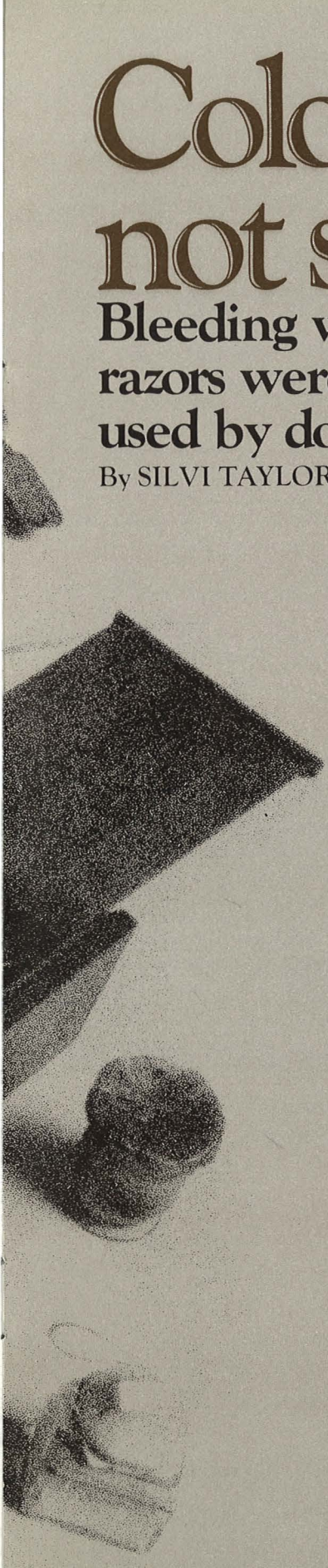
Dr. Rush's medical kit,
a relic of the 1770's

Photography: Leonard Kamsler
for Medical World News, courtesy
the Mutter Museum—the College
of Physicians of Philadelphia

Colonial Medicine not so Revolutionary

Bleeding was still a cure, razors were battlefield surgical instruments used by doctors attending our nation's birth

By SILVI TAYLOR



THEY used razor blades and wooden spoons in surgery. Anesthesia was yet to come. Cupping or bleeding was so popular as a medical technique that three well-meaning doctors and an overseer may have hastened the death of a famous Revolutionary figure by tapping 90 ounces of blood from him. The patient's name was George Washington.

Such was the state of medicine 200 years ago. It was tough on both patient and physician, yet there were successes. Washington's army was "variolated," or inoculated, for smallpox with only four deaths. And six physicians were among the signers of the Declaration of Independence in 1776. The best known of these was Dr. Benjamin Rush.

In a time when the doctor did not enjoy the status of today, most colonial physicians, particularly those in the Continental Army, fought with the best of their ability and knowledge such formidable opponents as lack of sterilization, smallpox, dysentery, cholera, and, not the least, political jealousies.

The physician in the War for Independence not only battled disease but fought the enemy in hand-to-hand combat, sometimes losing his life. Confrontations abounded as physicians pleaded for supplies and Congress issued muddled decrees.

But despite these drawbacks, several basic standards emerged that contributed to the framework of medicine and medical practices today.

The major problems facing colonial medical practitioners were poor transportation, lack of drugs and medical supplies, and lack of qualified training. "There supposedly were 3500 doctors in America at this time," Dr. Jonathon Erlen, medical history librarian at The University of Texas Health Science Center at Dallas, noted. "However, because there were few licensures or examinations to test medical skills, almost anyone who said, 'I'm a doctor,' was considered one." Of these 3500, only around 400 had any formal training, he related.

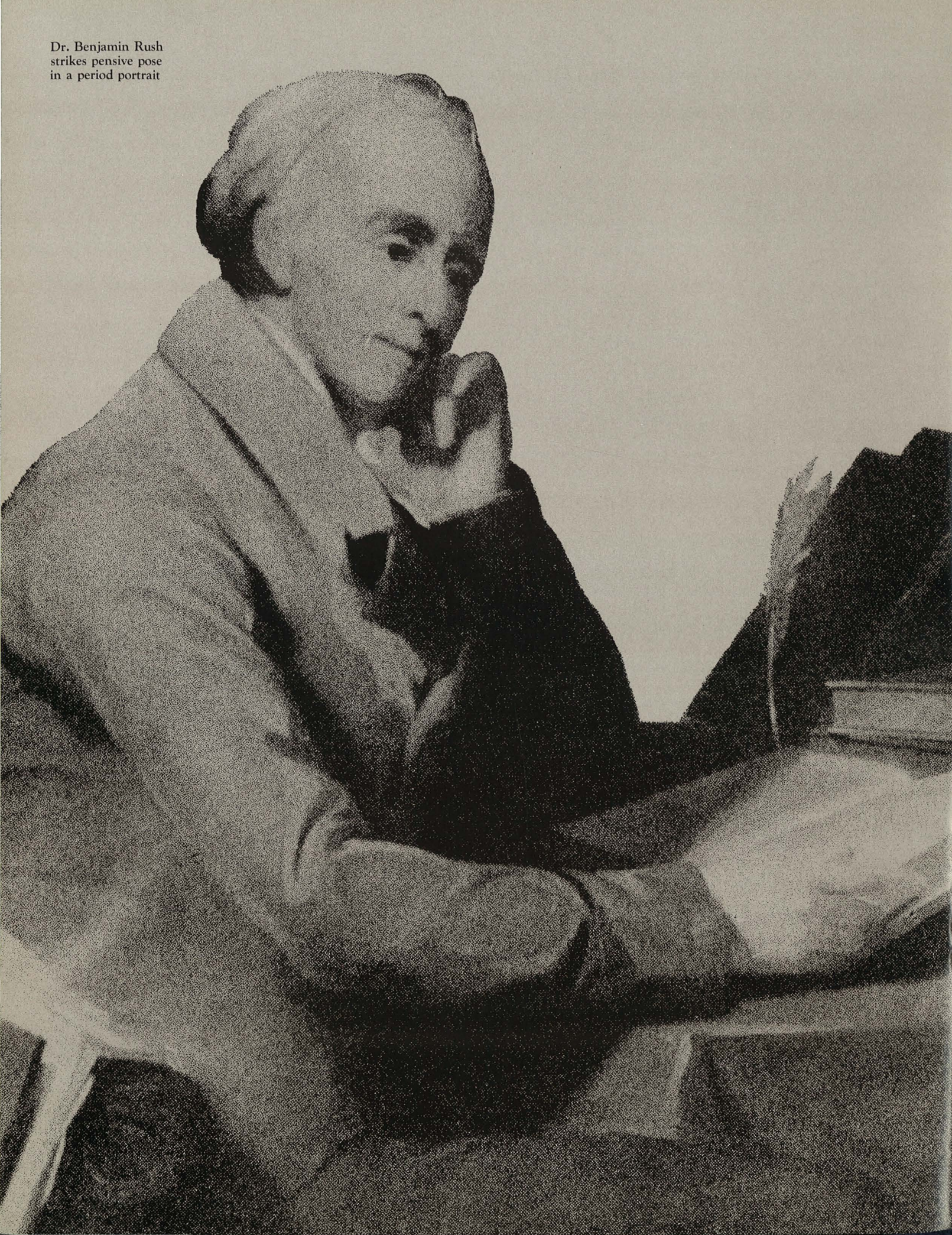
The best qualified doctors were trained in the British Isles at the University of Edinburgh. Prominent colonial physicians, such as Dr. Benjamin Rush, Dr. John Morgan, Dr. Samuel Bard and Dr. William Shippen, were graduates of this institution. However, their early medical training began with apprenticeships to local American doctors, a common practice during this time.

"This meant they began their training at age 12 to 18," Dr. Erlen said. The apprentice not only observed and learned from the doctor under whom he served, but acted as stable boy and personal servant as well. He was then graduated into his own practice and received a certificate stating he had successfully served his master.

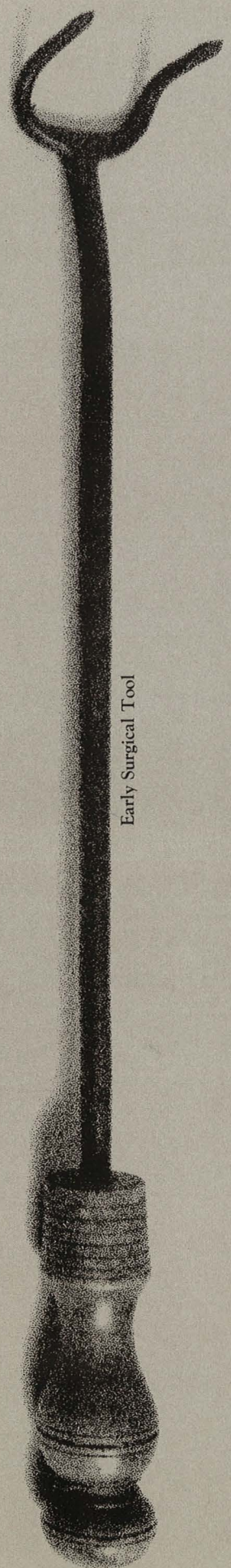
"Thus the apprentice only became as good as the doctor he worked with," Dr. Erlen noted. Most of the best physicians were found in Philadelphia, he added.

Unfortunately, we were guilty of the poor medical practices of the day, he explained. "No sterilization was apparent anywhere, even in England where formal medical training was best."

Two American medical colleges were opened immediately preceding the war — the College of Physicians in Philadelphia in 1765, and King's College in New York City (now Columbia University), which began in 1768. The College of



Dr. Benjamin Rush strikes pensive pose in a period portrait



Early Surgical Tool

Physicians was established by Dr. John Morgan, and Dr. Samuel Bard founded King's College, from which the first legitimate American M.D. degree was awarded in 1770.

BUT what about the medical treatment of the day? With the blockade of English and European goods, American doctors had to rely on their own ingenuity and knowledge to produce the treatment needed. Dr. Rush advocated "bleeding" the patient to relieve the tension in the blood which he and other doctors believed caused disease. Another common practice was blistering the patient. Some physicians even refused to extract a bullet that was beyond a finger's reach.

A variety of mixtures was concocted from such diverse ingredients as cream of tartar, arsenic, anemone and Jesuit's bark (a forerunner of quinine) to generate the healing process for a wide range of ills. "Most mixtures were made up of native herbs," Dr. Erlen noted. "When a certain ingredient worked on one disease, the doctors usually tried it on someone with another illness just because it had done well previously."

However, one major practice did make a significant improvement in and effect on the fighting troops – variolation for smallpox. This treatment, advocated in America by the fiery Puritan minister, Cotton Mather, and Dr. Zabdiel Boylston, a Massachusetts physician, required that a person be infected by inoculation with a small amount of the smallpox germ, which gave him a light case of the disease and made him temporarily immune to further smallpox.

Of the 500 men in General George Washington's troops who were variolated under the general's orders, only four died. This was the first time this procedure had been used on a mass military basis.

But these practices only made a small dent in fighting the malnutrition, dysentery, typhus, scurvy, cholera, pneumonia and other diseases resulting from crowded, unhygienic conditions that plagued the American troops. It has been estimated that almost nine American soldiers died of disease for every one killed by the British. But the Americans weren't the only ones affected – at one time, approximately two-thirds of British General Charles Cornwallis' men were down with illnesses, making battle difficult.

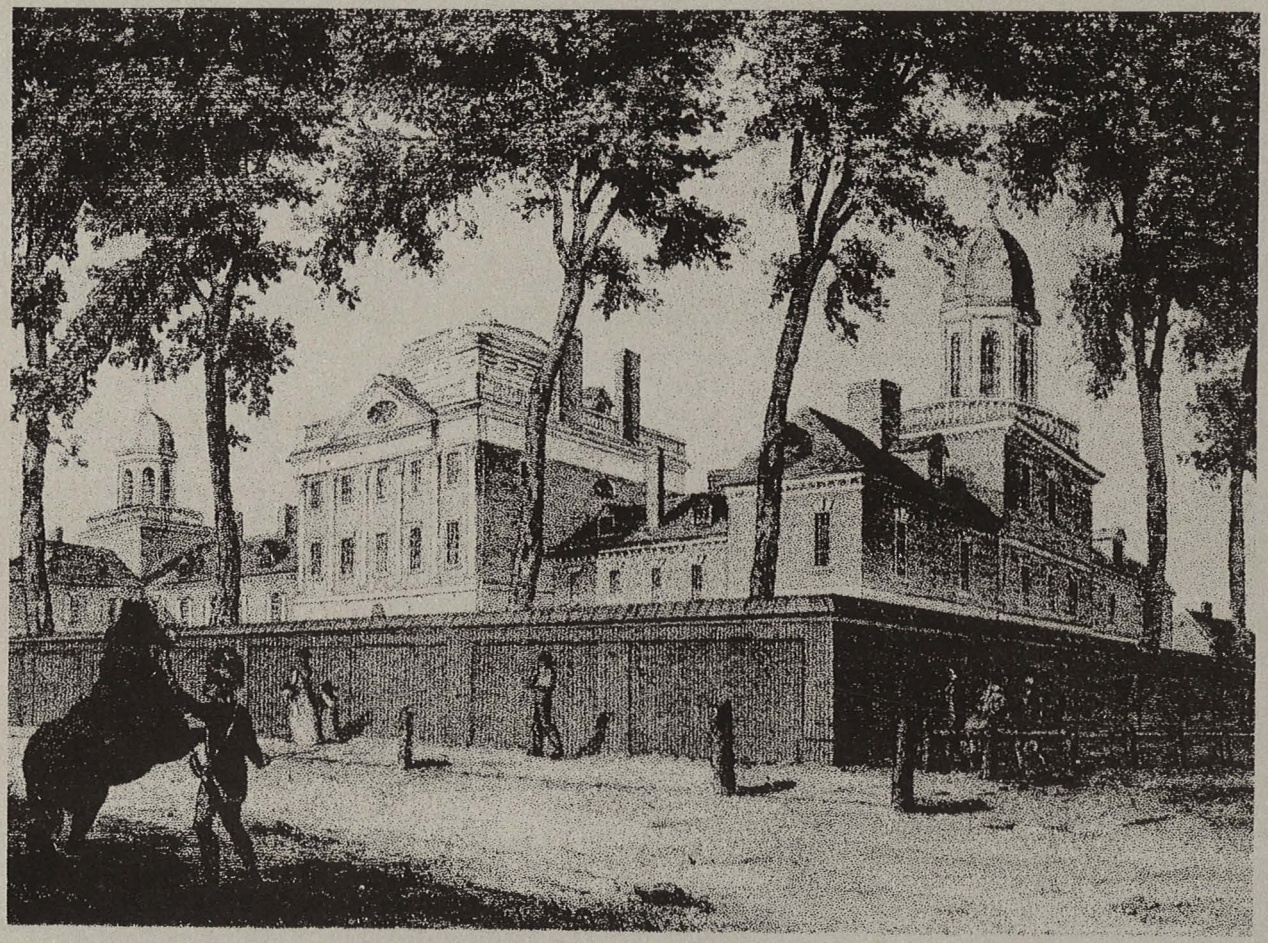
Colonial doctors had to serve as physicians, surgeons, apothecaries and soldiers. Many times more doctors died of diseases encountered in their care of patients than did commanding officers. A prime example of the soldier/physician is Dr. Joseph Warren, a general in the Continental troops at Bunker Hill, who was killed by a musket ball while directing his men. It was General Warren who sent Paul Revere to arouse the Minutemen.

Medical tools were elementary, Dr. Erlen said. Physicians often used razor blades in place of scalpels, or wooden spoons for forceps in surgical proceedings. "But with no way of giving blood transfusions and no anesthesia, the lack of instruments only added to the medical problems," he said.

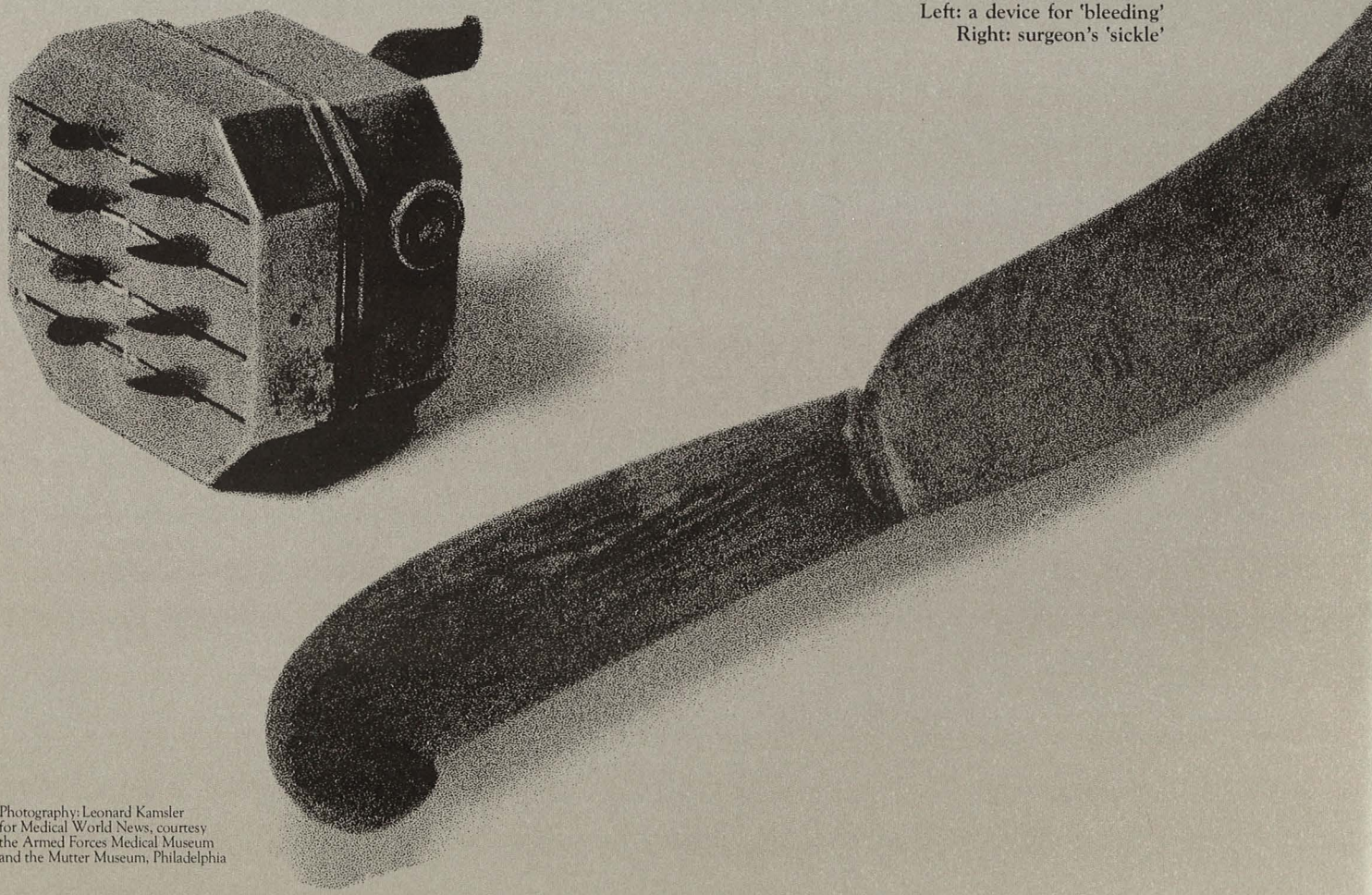
Hospitals were usually established in homes or tents. Poor ventilation and overcrowding prevailed, spreading diseases even further. Recovery chances were slightly improved when Dr. James Tilton, director of the general hospital at Trenton, N.J., built several "hospital huts," log enclosures with no connecting doors and numerous windows. These provided the much-needed ventilation, with space maintained between patients.

As ludicrous as it seems, however, one of the physician's greatest obstacles was Congressional political maneuvers. Not until General George Washington demanded that fresh medical supplies be supplied for the army doctors did Congress finally vote, on July 17, 1775, to establish the Hospital Department for the new government. Dr. Benjamin Church, a well-known and respected Boston physician, was appointed its first Director General and Chief Physician. He was to be aided by four surgeons, one apothecary, 20 surgeon's mates, one clerk, two storekeepers, one nurse to every 10 sick, and occasional laborers. But for numerous reasons, he never got all of them.

Dr. Church faced a major situation beyond his control when Congress failed to bring all medical men under his jurisdiction. Many doctors only served in certain



Above: the Philadelphia Hospital
Left: a device for 'bleeding'
Right: surgeon's 'sickle'



Photography: Leonard Kamsler
for Medical World News, courtesy
the Armed Forces Medical Museum
and the Mutter Museum, Philadelphia

states or battle regiments, refusing to aid anyone outside their self-imposed borders. This resulted in competition for very limited supplies. Jealousies and accusations arose, and during investigation of these attacks, Dr. Church was arrested for treason. He was found guilty, imprisoned briefly, and exiled. On the trip out of the country, he was lost at sea.

The second Director General, Dr. John Morgan, took office in October, 1775. He was also plagued by petty politics and professional envy. Though he spent much time with the troops, choosing sites for new hospitals and supervising patient evacuations, he was dismissed in January, 1777, without an explanation or hearing. Not until June, 1779, was he brought before a Congressional committee and vindicated.

The next director, Dr. William Shippen, was appointed in April, 1777. A bitter rival and former Edinburgh contemporary of Dr. Morgan, he probably had a hand in Dr. Morgan's unexplained dismissal. Dr. Shippen did institute a new reorganizational plan for the medical department along with Dr. John Cochran, but otherwise neglected his responsibilities and was far removed from the battlefield hospitals and patients.

This negligence as well as his speculation in hospital supplies was ultimately discovered by General Washington and Dr. Rush, and Shippen was court-martialed and dismissed in August, 1780. Although reappointed in October of that same year, he voluntarily resigned on Jan. 3, 1781.

Dr. Shippen was succeeded on Jan. 17, 1781, by Dr. John Cochran, who had been highly recommended to Congress by General Washington four years earlier. Cochran was beset by acute shortages and inflated currency, but he served harmoniously for the remainder of the war. Afterwards, President Washington named him Commissioner of Loans for the State of New York, basing the appointment on "cheerful recollection of his past services."

IN spite of these drawbacks and political flurries, four basic medical values emerged from this period, Dr. Erlen believes. The first was that major textbooks were published dealing with military medicine, such as "Incident to Armies with a Method of Cure," by Baron Van Swietan, in 1776, and "Directions for Preserving the Health of the Soldier," by Dr. Benjamin Rush, in 1778. These books greatly added to the limited medical literature which consisted primarily of one manual written by Dr. John Jones of King's College in 1775 titled, "Plain Concise Practical Remarks, on the Treatment of Wounds and Fractures."

Another noteworthy aspect of Revolutionary War medicine was that licensing of physicians was advanced. Not all states required the licensure, but those that did, such as Massachusetts, set up medical examining boards which gave final approval and status to physicians wanting to treat the wounded. Such testing, however, was dropped after the war, but formal medical training was rapidly becoming more popular and advocated.

Then, because of the British paper blockade, medical drugs and tools had to be manufactured on native ground. This was the initial stage of the American pharmaceutical industry.

A final benefit of the war was that overall colonial medicine was improved. The uninstructed American doctors were brought into contact with learned French physicians who came to help during the war, and as a result the Americans garnered more advanced methods of treatment. Hospital practices improved as well.

Available history seems to paint a bleak picture of early American medicine, with several factors working against any initial advancements the colonies might have made in their medical training. Even without the political conflicts, it would have been hard to remedy the lack of supplies, poor medical knowledge, overcrowded hospitals and devastating epidemics. As Dr. Erlen reported, "We were guilty of the medical practices of the day."

Fortunately for Americans 200 years later, our medical predecessors were not content to leave the profession in its primitive state but used knowledge gained from these experiences as the foundation of the nation's strong practice of today.

A COMMUNITY'S CARES INVOLVE MED STUDENTS

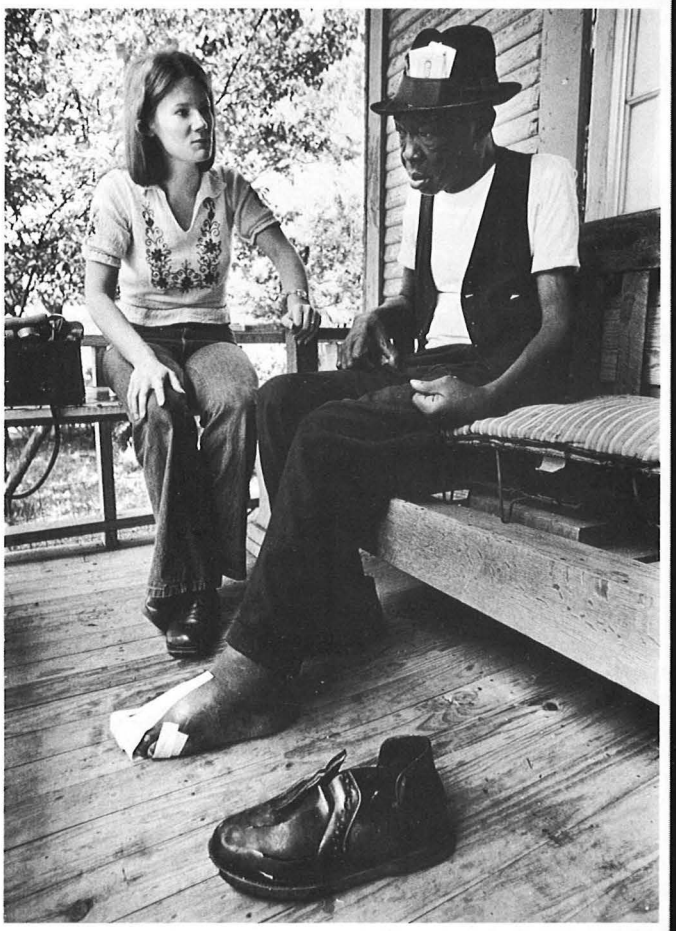
A special group of second-year medical students at The University of Texas Southwestern Medical School has been given the opportunity to be exposed to public health and community medicine before they reach the clinical years of their medical school training.

Seven participated in the summer experience, spending one month each with the Dallas Visiting Nurse Association, the center's Children and Youth Program clinics in West Dallas and with the city health department. The students received first-hand knowledge of a wide range of medical and health-care problems in these varied settings. In a sense, the health resources of the whole community combined with the individual students so that together these resources became the "teacher," explained Dr. Marion Zetzman, acting chairman of Environmental and Community Medicine at the Health Science Center, who heads up the program.

Not only did the students get the opportunity to be involved with the care of patients of all ages, but they gained an understanding of the workings of a large city's public health department – doing such things as controlling potential disease-carrying mosquitoes, watching as restaurants and dairies were inspected, observing a venereal disease clinic, sampling air and water for pollution testing.

Dr. Zetzman, a public health specialist, hopes to repeat the program in the future. "It was a fantastic experience for the students," he said, "I believe those who participated gained a sensitivity and a working knowledge of the scope of preventative medicine and community health that they would never have encountered in the classroom."

—Ann Harrell



Left, bubbly baby greets Viki in C&Y clinic; above, she visits man who's mending at home after surgery

Left, medical student Viki Rudkin samples contents of a stream; above, she checks blood pressure of an elderly patient

Photography: Skeeter Hagler courtesy, The Dallas Times Herald

Campus Recap

Major gifts assist research, teaching

The continued growth of the health science center in 1975 was supported with major contributions of funds from local and national sources:

The Harry S. Moss Heart Center has been established at Southwestern to mount a sustained scientific attack on heart disease.

Under terms of an agreement with trustees of the Harry S. Moss Trust for Prevention and Cure of Heart Disease, the center will receive a minimum of $250,000 annually for a ten-year period.

Director of the new center will be **Dr. Jere H. Mitchell,** professor of internal medicine and director of the cardiopulmonary laboratories.

Mr. and Mrs. J. Erik Jonsson have given approximately $1,200,700 to the Southwestern Medical Foundation to establish here at the center the Paul J. Thomas Chair in internal medicine, the Alvin Baldwin Jr. Chair in surgery and the Philip R. Jonsson Endowment Fund. The two chairs have been named in honor of two Dallas physicians – Dr. Thomas, who is a prominent internist, and Dr. Baldwin, a well-known surgeon. Both are members of the clinical faculty here.

On May 1, approximately 80 civic and university leaders witnessed the official designation of the **Philip R. Jonsson Basic Science Research Building.** The building, completed in 1972, was formerly known as the Basic Sciences Research Center.

Dan Barsotti

At the dedication of the Philip R. Jonsson Basic Science Research Building: (from left) J. Erik Jonsson; Mrs. Jonsson; their son, Philip R. Jonsson; Mrs. Allan Shivers; former Gov. Shivers, chairman of The UT System Board of Regents.

Funds raised by the 1976 **Crystal Charity Ball** will help support research by Drs. Joseph Goldstein and Michael Brown into genetically caused heart attacks and a Southwestern team led by Dr. Paul C. MacDonald, chairman of obstetrics and gynecology,into premature birth disabilities.

The Dallas Regional Perinatal Program has been funded for up to $2.2 million by the Robert Wood Johnson Foundation. Regional program director is Dr. Paul C. MacDonald.

Foundation support

Additionally, the Southwestern Medical Foundation gave during the past year $472,969 to the health science center to support research and teaching programs and $14,000 for student scholarships:

Eugene McDermott Human Growth and Development Fund . . . Department of Pediatrics under the direction of Dr. Heinz Eichenwald, $32,500.

Eugene McDermott Fund . . . construction of additional anesthesiology laboratories under direction of Dr. M. T. Jenkins, $70,000.

Eugene and Margaret McDermott Fund . . . Margaret Milam McDermott Chair of Anesthesiology, $26,758.

Winans Professorship Fund . . . Department of Internal Medicine under the direction of Dr. D. W. Seldin, $1,461.

Evelyn L. Overton Fund . . . Evelyn L. Overton Hematology-Oncology Research Laboratory, $1,598.

Virginia Lazenby O'Hara Fund . . . Virginia Lazenby O'Hara Chair of Biochemistry, $13,652.

Virginia Lazenby O'Hara Bequest . . . research in biochemistry, $12,000.

Kinsler Williamson Brown Fund . . . cancer research project under direction of Dr. P. O'B. Montgomery, Jr., $12,000.

Chilton Foundation Fund . . . Fellowships in the Department of Biochemistry under direction of Dr. Ronald Estabrook, $12,000.

Southwestern Medical Foundation General Funds . . . annual grant support for Southwestern Medical School, $132,500.

Abbie K. Dreyfuss Fund . . . cancer project under direction of Dr. P. O'B. Montgomery, Jr. and Dr. Eugene P. Frenkel, $11,600.

Abbie K. Dreyfuss Fund . . . cancer project under direction of Dr. John S. Fordtran, $66,700.

Holley-Franklin Medical Research Trust . . . cancer project under direction of Dr. John Shadduck, $23,000.

Adolph J. Weinberger Bequest . . . Pauline and Adolph Weinberger Cardiopulmonary Laboratory under direc-

tion of Dr. Jere H. Mitchell, $5,000.

Dr. Lee Hudson Fund . . . Hudson-Penn Chair, Department of Surgery, $500.

Xi of Phi Chi Benefit Association Fund . . . expenses of Student Research Forum 1976, $1,700.

Roberta Coke Camp Fund . . . aid in purchase of portable Gamma camera and data processing device, $50,000.

Scholarship Awards: **E. H. Cary Fund,** two $1,000 scholarships; **Fred F. Florence Fund,** four $1,000 scholarships; **Helen Maurine Jacobs Scholarship Fund,** six $1,000 scholarships; **J. W. Simmons Scholarship Fund,** $1,000; **John Q. Adams Scholarship Fund,** $1,000.

New administrators

Dr. Albert D. Roberts joined the center as associate dean for clinical affairs and professor of internal medicine . . . **Dr. Edward Johnson,** assistant professor of anesthesiology and director of clinical anesthesiology at Parkland, accepted additional duties as assistant dean for student affairs . . . **Kamal El-Din,** assistant professor of rehabilitation science, was named assistant dean for student affairs at the School of Allied Health Sciences.

Community projects

An interacting relationship has been created between The University of Texas Health Science Center and the Dallas community through a beneficial exchange of resources.

Last year, with the $40 million expansion program nearing completion, area health professionals and the public were eager to see and utilize the new facilities through shared projects. Highlights:

The Harry S. Moss International Heart Symposium attracted national and area physicians and scientists to the center.

Heart Career Day is an annual on campus event co-sponsored by UTHSCD and the American Heart Association. It is an opportunity for high school students to examine careers available to them in the medical field.

"Que Pasa?" on Channel 8 has devoted a 5-minute segment of each show to health care. Dr. Otto Munoz, assistant professor of Radiology, is the medical advisor. The "M.D." show with Dr. Dan Foster, professor of Internal Medicine, continued to provide a vital link between the medical community and the public.

The American Cancer Society, Texas Division held a cancer seminar on campus. The program for cancer volunteers and interested public included lectures and lab tours.

compiled by **ELLAINE CLAY**

FACULTY UPDATE

New chairman takes surgery helm

Dr. William J. Fry, holder of the Frederick A. Coller Professorship at the University of Michigan Medical School, is the new chairman of the center's Surgery Department.

The prominent vascular surgeon's acceptance climaxed a two-year search for a replacement for Dr. G. Tom Shires.

Since Dr. Shires' departure in December, 1973, Dr. Ronald Jones, professor of Surgery, has been acting chairman of the department. Under his leadership, the graduating medical students placed first in surgery in a national competitive examination.

In making their selection, the committee considered all of the outstanding figures in American surgery and concluded that Dr. Fry was the man most suited to the needs of Southwestern.

"While the Department of Surgery enjoys an excellent reputation now, Dr. Fry's coming signals the beginning of an era of even greater achievements," Dr. Frederick Bonte, dean of Southwestern commented.

In addition to his duties as chairman, Dr. Fry assumes the Dr. Lee Hudson–Robert H. Penn Chair in Surgery and becomes chief of the surgery service at Parkland Memorial Hospital.

Key awards, honors

Dr. David D. Daly, professor of neurology, has been appointed chairman of the new National Commission for the Control of Epilepsy and Its Consequences. The commission has been established by Congress to confront the problems of epilepsy in the United States.

Dr. Michael S. Brown, associate professor of internal medicine, and **Dr. Joseph L. Goldstein,** associate professor and head of the division of genetics of internal medicine, were given the American Chemical Society's Pfizer Award in Enzyme Chemistry for their research into genetic factors causing high blood cholesterol.

Dr. Paul A. Srere, professor of biochemistry and internal medicine and chief of the preclinical science unit at the Veterans Administration Hospital, was awarded the William S. Middleton Award, the national Veterans Administration's highest honor for medical research.

Dr. Donald W. Seldin, chairman of internal medicine, was awarded the Founders Medal of the Southern Society for Clinical Investigation.

Dr. Jack Reynolds, vice-chairman of radiology, has been named recipient of a Piper Professorship, for excellence in teaching.

School mourns Gregory

UT Southwestern Medical School suffered the loss of its distinguished chairman of orthopedic surgery March 31 with the death of **Dr. Charles F. Gregory.** Dr. Gregory, 56, had been ill since suffering a heart attack last Dec. 27.

Chairman of orthopedic surgery since 1956 and holder of the William B. Carrell Scottish Rite Professorship, Dr. Gregory was an internationally recognized authority in his field. His many high-ranking offices and honors included presidency of the National and Texas orthopedic associations, the American Board of Orthopedic Surgery and the national Association of Orthopedic Chairmen.

Two memorial funds have been estab-

FACULTY UPDATE

continued...

lished in his honor: one, to support the annual Charles F. Gregory Memorial Lectureship in Orthopedic Surgery; the other, to assist in residency training in orthopedics.

Dean Frederick Bonte called Dr. Gregory "an inspirational leader . . . a skillful surgeon who served many a member of the Southwestern family, a wise and thoughtful man whose advice was sought often when difficult problems were at hand. Although he rose to international prominence . . . his presence was always felt on this campus, for he was truly one of the founders of a great medical faculty."

Chairs, professorships

The Jack A. Pritchard Professorship in the Department of Obstetrics and Gynecology has been established with $100,000 accumulated by Professor Jack Pritchard's departmental faculty members. **Dr. Peggy Whalley,** professor of obstetrics and gynecology, is the first holder of the professorship.

Dr. Jean D. Wilson, professor of internal medicine, was named to fill the Eugene McDermott Chair for Study of Human Growth and Development.

Scholars, recognition

Dr. R. Graham Smith, assistant professor of internal medicine, selected for support as a Scholar with the Leukemia Society of America . . . **Dr. Eric R. Hurd,** associate professor of internal medicine, received the clinical scholar award from the Arthritis Foundation . . . **Dr. Larry A. Bruce,** assistant professor of physiology, received the "Outstanding Young Men of America" Award by the Junior Chamber of Commerce . . . **Dr. Peggy Whalley,** given the Laurel Award of the Dallas Branch of the American Association of University Women . . . **Dr. Robert Walker,** chairman of oral surgery, named consultant to the Surgeon General, United States Air Force and to the Council on Education, Canadian Dental Association . . . **Dr. Richard Finkelstein,** professor of microbiology, named CIBA Geigy Lecturer in microbial biochemistry at Waksman Institute, Rutgers University . . . **Dr. C. R. Hackenbrock,** professor of cell biology, asked to be Nobel Symposium Lecturer on the Structure of Biological Membranes . . . **Dr. Terry D. Allen,** associate professor of urology, asked to be consultant to the American Board of Urology . . . **Dr. John A. Shadduck,** associate professor of comparative pathology and comparative medicine, appointed director of the World Health Organization collaborating center for mammalian hazards of insect pathogens . . . **Dr. Irving C. Stone, Jr.,** made a fellow in the American Academy of Forensic Sciences . . . **Dr. Maximilian L. Buja,** assistant professor of pathology, selected as a fellow of the American College of Cardiology . . . **Dr. Roger H. Unger,** professor of internal medicine, received the Solomon A. Berson Memorial Award and Lectureship from the Canadian Society of Endocrinology and Metabolism and will be the Francis D. W. Lukens Honor Lecturer at the University of Pennsylvania School of Medicine . . . **Dr. Robert N. Berk,** chairman of radiology, elected to the board of directors of the Society of Gastrointestinal Radiologists . . . **Dr. Morton F. Mason,** professor of pathology, was the first to be certified by the American Board of Forensic Toxicology . . .

Journal appointments

Dr. George McCracken, Jr., associate professor of pediatrics, Editorial Board of the Journal of Pediatrics . . . **Dr. Bettie Sue Masters,** associate professor of biochemistry, Board of the Journal of Biological Chemistry . . . **Dr. Arthur Grollman,** professor of experimental medicine, pathology, Board of Drugs Under Research . . . **Dr. John A. Shadduck,** associate professor of pathology, Board of the American Journal of Veterinary Research . . . **Dr. Robert N. Berk,** chairman of radiology, Board of Investigative Radiology and associate editor of the Journal of Gastrointestinal Radiology . . .

Offices, memberships

Dr. Paul C. MacDonald, chairman of obstetrics and gynecology, voted president-elect of the Society for Gynecological Investigation . . . **Dr. John S. Fordtran,** professor of internal medicine, is president of the American Society for Clinical Investigation . . . **Dr. Ronald Estabrook,** chairman of biochemistry, accepted membership in the Institute of Medicine of the National Academy of Sciences . . . **Dr. Gladys J. Fashena,** professor of pediatrics, elected president of the Dallas County Medical Society . . . **Dr. Bryan Williams,** associate dean of student affairs, named chairman of the Board of Governors of the American College of Physicians . . . **Dr. Marion R. Zetzman,** acting chairman of environmental and community medicine, membership in the Governing Council of the American Public Health Association . . . **Dr. Michael Blaw,** professor of neurology and pediatrics, vice-president of the International Child Neurology Society . . . **Dr. David D. Daly,** professor of neurology, chairman of the International Federation of Electroencephalographic Societies committee on standards of practice in electroencephalography . . . **Dr. Charles B. Mullins,** professor of internal medicine and chief of clinical cardiology, chairman of the Board of Governors of the American College of Cardiology . . . **Dr. F. A. Bashour,** professor of internal medicine, membership in the Circulation Group of the American Physiological Society . . . **Dr. James N. Gilliam,** assistant professor of internal medicine, fellowship in the American College of Physicians . . . **Dr. M. T. Jenkins,** chairman of anesthesiology, chairman of the American Medical Association's Interspecialty Council . . . **Dr. Fred L. Christen,** chairman of biomedical communications, president of the Association of Biomedical Communications Directors . . . **Dr. John Nelson,** professor of pediatrics, chairman of the Interscience Conference on Antimicrobial Agents and Chemotherapy . . . **Dr. Heinz F. Eichenwald,** chairman of pediatrics, membership on the Board of Maternal and Child Health Research, National Academy of Sciences . . . **Dr. Burton Combes,** professor of internal medicine, membership on the Advisory Council of the National Institute of Arthritis, Metabolism and Digestive Diseases . . . **Dr. Albert Roberts Jr.,** associate dean for clinical affairs, governor-elect of the North Texas chapter of the American College of Physicians . . . **Dr. Donald W. Seldin,** chairman of internal medicine, Master of the American College of Physicians and Councillor of the Association of American Physicians . . . **Dr. R. E. Billingham,** chairman of cell biology, member of scientific advisory committee of the Massachusetts General Hospital . . . **Dr. Donald V. Moore,** assistant professor of pathology and microbiology, secretary-treasurer of the American Society of Parasitologists . . . **Dr. Maximilian L. Buja,** assistant professor of pathology, member of the Southern Society for Clinical Investigation and the American Association of Pathologists and Bacteriologists . . . **Dr. Arthur Grollman,** professor of pathology, member of the revision committee of the U.S. Pharmacopeal Convention . . . **Dr. Paul C. Peters,** chairman of urology, member of the council on urology of the National Kidney Foundation and director of postgraduate education for urology of the American Urology Association . . .

compiled by **ELLAINE CLAY**

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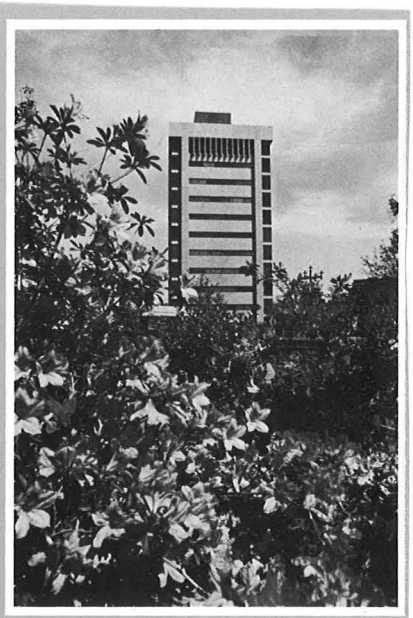

ON THE BACK COVER — A brief bu
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Ellaine Clay.

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