The adult woman is no longer an anomaly in the classroom. Increasing numbers of women are returning to college to update their education and are finding great personal and professional benefits. As adult women return and prove themselves to be serious and qualified students, universities are becoming more receptive to their particular needs. Mary Lou Allen is a librarian and one of the many adult women who visited the University's Office of Continuing Education for Women, seeking advice. After nine years of part-time course work, she will complete her bachelor's degree in June. See story on page two.
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CONTINUING EDUCATION FOR WOMEN

TODAY, colleges and universities across the country are under crossfire for their failure to provide more flexible educational opportunities. The most vocal critics are undergraduate students seeking work-study programs, fewer restricting course requirements, more freedom in curriculum development. But the movement toward a more individually tailored education is not limited to the young activist. His goals are to a large extent shared by another, less cohesive, but equally determined, segment of the population—adult women, many of them wives and mothers, who return to school to update their education. Their protest is a quieter one, but they have made their mark on higher education and are gradually gaining a new respect for the adult female student and her right to pursue an education in a manner compatible with family life and career.

These rumblings of discontent began in earnest in the late fifties and early sixties, when women, in increasing numbers, continued to join the labor force. For many, this meant a return to the classroom—to begin a college education, to complete a degree, to brush up on professional skills. Almost always, these women encountered obstacles. As one critic put it: higher education in the United States was designed for the full-time college-age male; its procedures, rigid timetable, and cost all but prohibit its use by women, particularly mature women who wish to return to school slowly or on a part-time basis. Underlying inflexibility was a condescending attitude toward “the little lady” who wanted to go to school.

Official recognition of the problem was implicit in President Kennedy’s 1961 decision to name a Commission on the Status of Women. Two years later the Commission warned: Countless women of every educational and socio-economic level in our society are specialized kinds of drop outs—their intellectual and educational potential unrealized. The extent to which this potential is fully developed and put to use can appreciably determine the quality of our personal and national life.

The response was immediate, with much of the sixties devoted to articulating and researching the problem. While social scientists and the popular press rushed in to
Sparked by curiosity and an intense desire to know more about China and the Far East, Carolyn Holliday went directly from a belated bachelor's degree into Washington University's two year master's program in Asian Studies. The program, which she will complete in June, includes written and spoken Chinese. She is married and has two children.

"I guess I always planned to finish my bachelor's degree some day, but my husband had been working long hours and I just didn't have the time or the money. Gradually, this lack of education became a real stumbling block. It wasn't just the degree, I had questions, and I wanted to know the answers.

"When my youngest child started school, I said now is the time and checked into several schools in the St. Louis area. I was able to go to Lindenwood on a part-time basis with all the privileges of a first class student. This is important. Just because you're part time, you shouldn't be denied certain courses.

"While I was at Lindenwood, I took a survey course in Asian Studies at the University of Missouri. I learned very little, but enough to give me a real feeling of insecurity about the Far East. I didn't like some of the things the professor said and didn't know enough to refute him. This is really a critical problem in the United States. There is no area of the world that we misunderstand as much as we do the Chinese. And there are so few qualified teachers. In school we learn about the French and Russian Revolutions, but what is really pertinent today?—the Chinese Revolution.

"My family has been great. Throughout my education, I have been very careful not to let school interfere with my role as a wife and mother. I make it a point never to study between the time my children come home from school and their bedtime.

"I do hope to teach on the college level, but the past five years have meant much more than simply a career. My whole family has become fascinated by the Far East and sometime we hope to visit Taiwan. But most important, the feeling I have as a person is worth more than anyone can really put into words."

examine the total status of women in American society, a small band of educators focused on the female student and the existing structure of higher education. They began to voice a long-held conviction: that the two are often incompatible.

The primary educational problem for most women, particularly mature women, has been timing. Universities were created primarily to accommodate the male student, who can, for the most part, insure his own uninterrupted progress from kindergarten through a bachelor's, master's, or doctorate. These expectations have often proved unrealistic for the female student anticipating marriage, children, and the prospect of moving from city to city with her husband. By insisting on full-time and continuous education, universities have frequently and unnecessarily penalized women, relegating them to the status of second-class students.

On the brighter side, there was convincing evidence that interrupted education is a wise course for many women to take. Studies indicated that no matter how well a girl of 18 to 21 does in college, she performs better when she returns to college at 28 or 35. At this later stage in her life, she is also likely to select a career that is more compatible with her interests and capabilities.

What changes were needed? A more realistic attitude toward the needs of the female student, an attack on the problems of admissions procedures, credit transfer, and residence requirements, and recognition of the fact that interrupted and part-time study can be natural, effective, and desirable.

Gradually, university administrators began to sit up and take notice, following the lead of the University of Minnesota, Radcliffe, and Sarah Lawrence, early pioneers in innovative educational programs for women. As increasing numbers of women returned to school and did well, universities began to commit themselves to providing more flexible opportunities for adult women.

The sixties were a time of research, an attack on attitudes and harsh procedures, but what about the seventies? The demand for flexible educational opportunities will increase. The United States Department of Labor
reports that half of the women in the population between the ages of 18 and 65 are in the labor force. It predicts that the young American woman who never marries can expect to have a paying job for forty years; the woman who does marry will work for thirty years.

As attitudes toward women in the work force change and educational programs become more flexible, more and more women are beginning to think in long-range terms, returning to school before joining the labor force, choosing a career over a routine job. This trend is already apparent among younger women. In past years, the majority of women who returned to the classroom did so in their thirties or forties, after a long interruption. Today, an increasing number return in their twenties or early thirties.

As educational programming becomes more flexible and increasing numbers of women return to school in anticipation of working, the emphasis is shifting to a new kind of responsibility for both the student and the university—the responsibility to direct these energies and talents toward existing professional opportunities. This means a push for more informed counselling services and in many places an all-out effort to convince employers to adopt a more flexible attitude toward the professionally competent woman who wishes to work part time.

Throughout this evolution, Washington University has kept pace. In 1962, a year before the President's Commission issued its report, Chancellor Eliot appointed a committee to study Washington University's role in providing education for adult women. That same year the committee appointed a part-time coordinator of continuing education for women. The response from the community was immediate, clearly indicating the need for a permanent office. In 1965, the University hired a full-time coordinator, a very determined and energetic individual named Jean Pennington. It is her responsibility to counsel women who are contemplating continuing their education and to help develop programs that will make it easier for them to do so.

As coordinator, Mrs. Pennington, who herself completed a master's degree almost twenty years after receiving a bachelor's, last fall, Karen Davis made the transition from part-time night student and full-time employee to full-time day student and part-time employee. But she didn't find the adjustment overwhelming; most of her adult life she has been involved in one educational program or another. Karen is a licensed beautician, has studied pattern drafting, and has taken various college courses off and on for several years. Now working on her bachelor's degree, she has chosen sociology as her major field. She works at the University's Child Development Center and has a nine-year-old son.

"I attended W.U.'s University College for two semesters, then was granted a full scholarship last fall that would enable me to go to school on a full-time basis during the day, something I never really dreamed would be possible. At the time I was working full time, but everything went smoothly, even rearranging my work schedule. When I got my scholarship I told my supervisor I wanted to work part time. I was really expecting her to say they needed someone full time, but she didn't. She hired another woman and we split the job.

"I do notice a difference between the day school and the evening school. Although the course work is similar, the approach is different. The students in night school have been out working in the world and they expect a practical education. Most day school students are just out of high school and are more idealistic. Theory sounds good to them. I guess I'm more likely than they are to question what a professor says. Theories are nice, but you know the world doesn't always work that way.

"When I first made plans to go back to school I thought I wanted to be an occupational therapist, but I really didn't know what the job involved. Mrs. Pennington arranged for me to watch an occupational therapist at work. I decided that was not what I wanted to do and chose sociology. I have considered being a case worker, but I want to remain flexible. If I wait to commit myself, I may find something even more rewarding. I don't want to get hung up on just getting that degree, I want to take it easy, enjoy my course work, and make the right decision in the end."
The problem of continuing education for women is not strictly an American phenomenon. In fact, for Catherine EI Younsi, it has become an international one. In France her home, she studied medicine; in Tunisia, she studied mathematics; now in St. Louis, while her husband completes his master’s at Washington University, she is once again a student. Working as a lab technician at Jewish Hospital and taking night courses at University College, she hopes to complete her bachelor’s degree in mathematics before they leave the U.S. The EI Younsi’s have two small children.

"The educational system in France is very different from here. Everyone is highly specialized. You go from high school to an intense professional program and at the end you take an exam. Then you are qualified to work in your field. Education is free and classes are crowded, so if you fail your exams, you are not permitted to start again; you have to change fields. I started out to be a pediatrician, did very well in my courses, but I took my exams before I was ready and failed them. In Tunisia, I studied mathematics, then we moved here. We waited nearly a year and a half for my transcripts to come from Tunisia. They have finally arrived and if my credits transfer, I could complete my degree in another year.

"Other things are different, too. If you are going to school in France, the teacher is in a very high position and you never question him. When I met the dean of mathematics here it was a big surprise. He had on sandals and a sportcoat and was not at all frightening or unapproachable. This informality makes education easier.

"Education has been a problem for me, because I married young and we have moved so often. I don’t know what will happen when we go back. Although many women work in France, they can’t afford to go back to school to learn a profession after they have had their families. It has been hard for me. And I really am a pessimist. If I could finish my degree before we move, it would mean more opportunities in France or Tunisia. But I think we’ll go back to Tunisia this spring. Maybe, when we return to Washington University for my husband’s PhD, I can finish."

When Mimi Bricker returned to school in 1967, she already had a solid education behind her. After receiving her bachelor’s degree, she completed law school, passed the Colorado Bar, and then became a full-time wife and mother, never putting her training to work. After a ten year period, which she describes as a “total withdrawal” from professional responsibility, she enrolled in undergraduate and then graduate programs at Washington University, finally transferring to the then-new master’s program in urban law, completing the program on a part-time basis in three years. She is an administrative assistant at the St. Louis County Juvenile Court and in April, 1970, was elected an alderman in Clayton, Mo.

"After my youngest child was in kindergarten, I realized that the time had come to do something. But how do you re-enter after being away from the academic and professional world for so long? Two things bothered me: The idea that I must brush up on my training and a certain doubt if I was really worth something in the outside world. I think fear keeps many women away and this is terrible. They represent such a tremendously important untapped resource.

"I started back in sociology as an undergraduate for six months, did very well, and went directly into a master’s program. But I was in the wrong area for me and when the urban law program opened, this was exactly what I wanted. Born and raised in New York City, I have a very special feeling for urban problems.

"This education gave me the courage to take, and pass, the Missouri Bar examination. While studying for the bar, I ran for alderman and that also was a product of going back to school. It was like a jigsaw puzzle coming together.

"I guess one of the things a woman needs is a family behind her. My husband has very strong feelings about women working to their capabilities and my three teen-age daughters are very pleased by it all. It has given them a feeling of their own potential and has made our lives much fuller all the way around. The big thing is just getting started."
ing her A.B., sees her primary challenge as confidence-restorer and bridge-builder: “Although the University is committed to providing flexible opportunities for qualified women whose education has been interrupted at various stages by marriage, family, career, that flexibility—as at most other colleges and universities—has been possible only within established academic parameters and procedures. This means that in many respects a coordinator must function like a tax expert—with full knowledge of all requirements, but with an eye open for legitimate exceptions and changing requirements.”

During the past five years, she has seen a number of changes that directly affect the returning female student. Washington University’s Daytime Adult Study Program enables qualified students to complete requirements for a bachelor’s degree on a part-time basis during the day. The first ninety hours may be taken one, two, or three courses at a time; the last thirty hours must be completed in two years. Three years ago, Washington University’s University College, the first in the city to offer a night-time program of study leading to the bachelor’s degree, adopted use of the CLEP (College Level Equivalency Program) examinations, advanced placement exams that allow qualified students who are just beginning a bachelor’s degree to test out of certain requirements.

Most recently, the faculty of the College of Arts and Sciences voted to drop the language requirement. Graduate programs are also becoming more flexible, but this varies from department to department, and some still frown on the part-time female student. Perhaps most encouraging is the general change in attitudes. Most deans, department heads, and faculty are increasingly receptive to the needs of part-time female students, often working directly with them in independent study units.

In her office on the ground floor of the Women’s Building, Mrs. Pennington meets with and counsels women who want to continue their education. They come for different reasons. Some are excited about the prospects of a new career, others need financial aid or have problems with scheduling. But the most common concern is that of a woman who, after years of being a housewife, asks, “How can I enter (or re-enter) the working world?”

It is Mrs. Pennington’s job to assist them in any way possible: to help them select a career by providing a realistic impression of what the job involves and the opportunities available in that field, to help with details of financial aid and admissions, to lend encouragement and to follow them through their program at the University. She is adamant about the importance of counseling. “Too often, women literally shop in the school catalogues, piecing together an education that does lead to a degree, but not to a meaningful education. Sequential development of an educational program is essential. Close coordination with academic deans and advisers prevents penalties which can arise through careless oversights of degree requirements.”

In addition to counseling, Mrs. Pennington works closely with deans and department heads to work out flexible programs for part-time and returning students and coordinates a series of courses: “the Arts, the Humanities, and the Sciences,” short noncredit courses attended by both men and women.

Although the emphasis of the program has been on in-
A year and a half ago, Joan Pearlman, her husband and their three children moved to St. Louis. It was their tenth move in twelve years of marriage, and hopefully, for a while at least, their last. Why all the moving? Her husband was completing his medical training. Now Joan is ready to update her own education. After a careful examination of the master's programs available to her and the kinds of careers they might lead to, she will begin a master's program in guidance and counselling this summer.

"When I was an undergraduate, my total conditioning was toward the adult status of being married. I was never really trained to look beyond that point toward a career of my own. I chose elementary education, although at the time it wasn't my primary interest, because it would enable me to find a job in whatever city we were living in so my husband could complete his training. But, we have spent the past two summers in Woods Hole, Mass., and last summer I had my first real exposure to Women's Liberation. It had a definite effect on me...it was an eye-opener in terms of the kind of value I place on myself. When I came back, I began looking into the fields of study that were available and how they would relate to a meaningful career.

"I was surprised by the inflexibility of many master's programs, and the unavailability of others. Although I am not familiar with the logistical set-up of graduate departments I do feel that any department that offers programs only on a full-time basis definitely discriminates against women. Women who are raising small children simply cannot attend graduate school on a full-time basis without making tremendous sacrifices.

"I have been busy during the past years and there are many things I've considered doing and have done along the way—teaching art in Boston, supervising an adult literacy program, political work, and certain kinds of social service. Currently, I am teaching art at Craft Alliance Galleries. And there are many wonderful courses offered every semester that are just fun to take. But now I do feel the need for a structure, a definite commitment to something long-range."

Increasing educational options for women, a very real corollary is increasing employment opportunities, particularly flexible ones. Recently, Mrs. Pennington and 150 women volunteers began research that may have far-reaching implications and applications. In early February of this year, they polled by mail nearly 7,500 college-educated women, asking them about their previous educational and work experience and their knowledge of flexible job opportunities for women in the St. Louis area.

Mrs. Pennington plans to follow up with information pooled from employers: "How long has it been since you've rethought your employment attitudes toward women? Would you be willing to hire two part-time employees to do one full-time job? Do you have opportunities for a woman who has good professional training, but has not completed the required professional degree? Do you have seasonal needs?" The results of the survey will be an invaluable resource for counseling, providing a much better indication of the nature and flexibility of existing employment opportunities.

On a broader scale, she has received two planning grants from the Johnson Foundation of Racine, Wisconsin, which resulted in plans for a National Coalition for Research on Women's Development. Explaining the importance of such a central clearing house, Mrs. Pennington commented, "In the past there have really been two separate tracks—research and programs. Through this coalition we hope to bring the two together, providing an opportunity for colleges and universities to share their experiences and coordinate their resources to respond more effectively to the particular needs not only of the adult student, but undergraduate students as well."

The prospects for progress—both on a national and local level—are encouraging. Very much a part of our times, the movement toward a more flexible education for women shares a history with civil rights, Women's Liberation, student protest—the movement toward more respect for the individual, more personal freedom. This after all is precisely what women students are seeking: the opportunity to pursue an education in a more individually meaningful way.
Most people take sleep for granted and have little trouble sleeping. But sleep eludes a sizeable minority who spend many millions of dollars a year in the United States alone on sleeping pills.

Both groups, however, regard sleep as a simple process. It is accepted with little thought for its blessings by the former group; while the latter, however preoccupied by sleep, thinks it simply can be bought with drugs.

Oversimplified notions about sleep are always with us. Recently, for example, data from one research project were interpreted in the press to show "conclusively" that people who sleep eight hours or more are introverted and neurotic, while those who sleep six hours are outgoing and adjusted. Washington University scientists who do research in the Medical School’s sleep laboratory—like most of their associates in some eighty different institutions where sleep research is done—would be dismayed at such caricatures of research. They have enough knowledge to know that sleep is indeed too complex for simple conclusions. At the same time, people who do research on sleep are aware that they are working in an exciting frontier of science, where results are pouring in at a tremendous rate.

One recent example at Washington University was an experiment in which new and intriguing data on human growth hormone were measured. The original work was done by a leading investigator in the field of growth hormone regulation, Dr. William Daughaday, professor of medicine, and his associates in the metabolism division, Dr. Yasuro Takahashi (now of Tokyo University) and Dr. David Kipnis, director of the Medical School’s Clinical Research Center. Dr. Daughaday developed the technique for identifying growth hormone in the blood tests of the sleeping subjects who took part in the experiment. Secreted by the pituitary gland, growth hormone is critical in human development. If a child is deficient in...
Dr. William H. Daughaday, M.D., professor of medicine (left) and Dr. Ekkehard Othmer, M.D., Ph.D., assistant professor of experimental psychiatry, go over EEG pattern of woman at sleep, shown on infrared monitoring receiver. They are part of a University team which has measured growth hormone levels during sleep.
growth hormone, he will not grow properly without hormone replacement therapy.

In adults, growth hormone is an important mediator in absorption by cells of amino acids and their synthesis into proteins which all adults needs to replenish cells.

The Washington University study showed for the first time in adults that the bulk of their growth hormone was secreted during so-called deep sleep, which makes up most of a person’s sleep early in the night. These findings were confirmed in further tests by Dr. Daughaday, Dr. Kipnis, Dr. William Malarkey, and Dr. Ekkehard Othmer, head of Washington University’s sleep laboratory. More recently, Dr. Othmer, Dr. Donald Goodwin, and their associates in the Department of Psychiatry have done studies of alcoholics in whom growth hormone levels suggest a possible link between malnutrition in these individuals and sleep disturbance.

To define deep sleep—as much as it is possible to define this phase of sleep briefly, in non-technical terms—Dr. Othmer outlined the various stages of sleep and how they are measured in volunteers who have been tested in sleep labs. In a typical sleep study, such as the study done with Dr. Daughaday to measure growth hormone in normal subjects, twelve volunteers—mostly medical students—were measured over a twenty-four-hour period.

Usually, the volunteer arrives at the lab between 7-8 p.m. for instructions. He or she will sleep in a soundproof bedroom, constantly monitored at an outside station via a television receiver. TV-monitoring of the sleeping subject in a darkened room is possible through the use of an infra-red-sensitive camera. The blood samples are drawn from the subject through a small polyethylene tube, inserted into the antecubital vein of the arm (the vein through which intravenous feeding frequently is done).

The electrical activity of the brain, or so-called brain waves, are recorded by an electroencephalograph, which amplifies minute electrical potentials between regions of the cerebral cortex. The electroencephalograph is hooked up to the subject simply by taping small, lightweight disks to his scalp. A roll of moving paper fed through an ink-writing device makes visible in graph form the tiny voltage changes in the sleeper’s cortex. These graphs are called electroencephalograms, or EEG’s, the tracings of the brain waves. Despite these attachments, the volunteer sleeper can move about freely and comfortably in his bed. He can communicate any needs to the nurse outside the bedroom through an intercom.

Although EEG’s of sleeping subjects, Dr. Othmer explained, were initially done about forty years ago, it wasn’t until the past decade that the various distinct stages of sleep were clearly understood. In addition to a state of relaxation characterized by “alpha waves” on the EEG and a phenomenon called REM sleep (which will be detailed later), these basic stages of sleep progress as follows:

Stage One. A sort of port of entry, lasting a few minutes. The tracing of the EEG is small in amplitude and shows lower voltages than EEG’s of a conscious state, and the peaks are uneven.

Stage Two. The volunteer is sound asleep, but may be awakened by a noise or voice. The EEG shows large amplitudes with sudden sharp bursts of waves of a characteristic modulation and frequency range. During this quality of sleep, which is most prominent during the second half of a night’s sleep, one’s threshold against being awakened is increased considerably over that of Stage One.

Stage Three. There is a significant drop in blood pressure and heart and respiratory rate, and it takes a louder or more unusual noise to awaken the sleeper. The bursts in the EEG script are mixed with large slow waves.

Stage Four. This is the deepest phase of sleep and the EEG shows an uninterrupted series of slow waves with high peaks. These waves signal a still higher threshold against possible awakening. The sleeper would become oriented to his surroundings very slowly if awakened in this stage. The sleeper goes through four to five cycles of varying amounts of these stages, including REM sleep, during a night’s sleep. During the first cycle there

Mrs. Eva Roeder, who doubles as both volunteer and technician in the University’s sleep laboratory, is having her EEG pattern recorded. She is hooked up to the recording devices with lightweight discs taped to her scalp.
is much more deep sleep than in the subsequent cycles.

The highest peak of growth hormone was recorded in the first cycle of sleep, and growth hormone peaks also appeared in later periods of deep sleep. During the first cycle, the hormone level was increased by up to fifteen times—the highest peak for the hormone measured in a twenty-four-hour period. When a volunteer’s sleeping was shifted to the daytime, the growth hormone peaks shifted with sleep—definitely linking the hormone secretion to sleep. Interrupting a subject’s deep sleep interfered with growth hormone secretion; but this manipulation in itself is not enough to prove that the secretion process is linked with deep sleep alone. It could be, for example, that simply fracturing the volunteer’s overall sleep pattern disrupted the growth hormone process. It is possible that the deep sleep-growth hormone relation on the EEG’s is due to another physiologic process which is common to both, but nonetheless, the growth hormone surges during sleep are a provocative phenomenon, deserving more study.

Also extremely interesting were observations in ten volunteers who are alcoholics. This study was done by Professors Ottmer, Goodwin, and William LeVine as part of a general project on alcoholism under the direction of Dr. Sam Guze. Their measurements showed that alcoholics lacked both normal deep sleep patterns and parallel growth hormone peaks (their subjects had been off the drug of alcohol before and during the experiments). There has been speculation that sleep disturbance is a factor in malnutrition, which is frequently found in alcoholics. Although malnutrition in alcoholics is possibly related to several factors, an alcoholic’s chronically disturbed sleep pattern and growth hormone suppression could play an additional role in his malnutrition.

Initial data from a third study just begun at Washington University on depressed people indicate that typical weight loss associated with depression may be also related to sleep disturbance. A much broader speculation, of course, is that sleep disturbance may contribute to malnutrition in individuals in general, but there are so many variables involved that considerably more data are needed from other groups of patients and volunteers before general conclusions can be made about malnutrition and sleep.

Another area of research at the University’s sleep lab has been Rapid Eye Movement or REM sleep, sometimes called paradoxical sleep. (This study was done by Drs.
Othmer, Juan Corvalan, and the Metabolism Division.)

After about ninety minutes of sleep, an individual begins to drift back up through the four sleep stages described above and typically will resume Stage Two sleep. Suddenly, an extraordinary event occurs: The amplitude and frequency of the EEG starts to resemble that of stage one, and at this point the sleeper’s eyes dart back and forth under his closed lids. Some investigators believe that the sleeper is following the imagery of dreams.

And, indeed, awakening of subjects during REM sleep invariably results in reports of dreams—at a rate much higher than in any other state of sleep. In stark contrast to deep sleep, the heart rate, blood pressure, and breathing change rapidly in REM sleep. REM sleep really is more akin physiologically to the conscious state in respect to the intensified body reactions taking place. (REM sleep was first elucidated by Dr. Nathaniel Kleitman and associates at the University of Chicago sleep lab.)

The Washington University study confirmed that people deprived of REM sleep at night and in naps throughout a twenty-four-hour period will do more REM sleeping in subsequent nights. The same catching-up process will occur in an individual who is deprived of deep sleep, showing the body’s critical need for these two qualities of sleep. In addition, it was noted that deprivation of REM sleep augmented growth hormone secretion in some subjects. This indicated a possible functional relationship between the area of the brain that regulates REM sleep and the area that controls secretion of growth hormone, suggesting a metabolic role of REM sleep.

Evidence of metabolic events that may be uniquely related to sleep is coming from many sleep labs.

To give a more specific idea of how physiologically complex sleep is, more than seventy different physiologic processes undergo changes during sleep. The EEG patterns which are correlated with these changes are voluminous; over 4000 feet of tracings are recorded per twenty-four-hour period. Despite the overall sameness of rhythms observed in these scripts of sleep, individuals have remarkably characteristic patterns and a sleep lab scientist can actually recognize a patient by his novel EEG scripts.

Some sleeping drugs alter normal sleep EEG’s, often for the worse, Dr. Othmer pointed out, as do the onset of various mental and physical disorders. The following summary about drugs and chemicals influencing sleep is from a National Institutes of Health publication, Current

Research on Sleep and Dreams:

Recent sleep researches have begun to describe how we alter the natural pattern with various drugs, changing the brain’s activity during the several sleep stages and thus, perhaps, affecting many body functions including metabolism. Sleep no longer looks like a unitary process and sleep disorders appear to arise from many different sources—involving the behavior, training, environment of a person, his body chemistry, and activity at various sites within the brain. Sleep therapy in the future will undoubtedly be tailored to the specific disorder, as we discover more about the little known chemistry of sleep and the way in which body chemicals exert their influence on the brain.

All of which underscores both the very pioneering feature of sleep research and the hope it holds for potential therapy.

This, of course, sounds fine, but does sleep research offer any help to people who have sleep problems now? Dr. Othmer pointed out some possibly helpful guidelines to those with sleep problems. One of the most important guides to whether one is getting proper sleep is how well he feels in the morning—with de-emphasis on how well someone thinks he should have slept. Mild exercise in the morning may sometimes be needed to get oneself fit for the day’s activity. A regular bedtime also is most important to sound sleep.

Another suggestion based on sleep lab findings is that a person with sleep problems should not start trying to “tire himself out” by doing sudden strenuous exercise such as tennis or jogging in the evening, immediately before his regular time for sleep. This has been observed as usually having a negative effect. Another important observation, Dr. Othmer noted, is that 90 per cent of all people admitted to one hospital for therapy in sleep disturbances had been on heavy dosages of sleeping drugs.

Dr. Othmer stressed that sleep problems are often cleared up when a patient is taken off drugs and can adhere to a natural regime conducive to sound sleep. When prescribed by a physician, the proper drug can be temporarily helpful in certain sleep disorders; but the long-range, side-effects of most drugs work against healthful sleep.

In any event, if one persistently has serious sleep troubles, he should see an internist or psychiatrist who has special knowledge of sleep disorders. Sleep is too important a “nourisher in life’s feast” to be left to the vagaries of patent medicines or old wives’ tales.
Jim Sterritt is a burly, barrel-chested boulder of a man with the sinewy muscles of a blacksmith and the talent and temperament of an artist. Trained as a painter and sculptor, he has in recent years focused all of his enormous energies on sculpture.

As a sculptor, he is one of the new breed who revolted against the "homage to General Sherman's horse" school of public art and rode off in a new direction. Their art is of our age—shaped with the torch from steel and cast iron, molded of concrete and aluminum, and fabricated of plastics that foam and fuse.

For such men, today's junkyards and government surplus depots are quarries where they unearth the chunks of scrap and hunks of metal which are the flotsam and jetsam of this technological age. These they transform into abstractions which symbolize the spirit of our time.

Such creations are classified as "assemblages" and those who spawn them as "Constructivists." Their works of art express in mass, line, volume and space the planned obsolescence and transitory nature of our mechanistic civilization. But regardless of whether they are curiously contorted complexities, or soaring, severely simplified structures, the sculpture is architectural or environmental.

Sculptor Sterritt, appointed a professor in the School of Fine Arts at Washington University last year, arrived in town with several moving vans of huge sculpture which now line a drive at Tyson Valley, where the University has a vast research center.

There in an enormous warehouse once used for the storage of Army chemicals is Sterritt's studio—a cluttered, cavernous place with mountains of cast-off steel, piles of second-hand titanium rods, and bargain equipment—compressors, band-saws, grinders and everything else needed to sculpt today's image.

The artist divides his time between that place and Bixby Hall. His teaching style is informal but it is not casual. Warning notes admonishing students to "Stop, you are getting nowhere" are appended to several half-finished works.

And sculptor Sterritt knows whereof he speaks. The winner of innumerable honors, he is one of three finalists in a Martin Luther memorial competition in Milwaukee. Such recognition, however, does not change his style. He continues on his independent way—a man in a brilliant blue Ford pickup truck which he believes is as essential to a contemporary scavenger sculptor as a chisel was to Michaelangelo.
A. "1-2 Arch-Ramp 4-5." The aluminum part of this sculpture has a ground surface so that its spiral patterns pick up light. The other section is of wood with a 200-year-old patina.

B. Another work in the "Architectural Group III" series. These enameled steel columns at Tyson Valley reflect Sterritt's interest in shingles, louvers, and wedges. Ten to eleven feet tall, they are painted varying shades of red.

C. "Corner Piece," an Alodine aluminum sculpture. Related to "Architectural Group III," this sculpture with its three louver sections is intended for interior display.

D. Scrounging for usable materials, Sterritt (under crane) and students discover a mass of steel rods. Sculptor Ralph F. Buckley (foreground) lugs off some of the loot.
E. "Meadow Two," another welded aluminum sculpture, was displayed at the Faculty Art Show. More recently this landscape piece was exhibited at St. Joseph, Mo.

F. Sterritt ponders a sketch by Steven Weinberger as another student, Tom Schwarze, uses a special shears to cut a piece of metal at Bixby Hall.

G. While Sterritt supervises, student Marilyn Poeppelmeyer completes a "direct plaster build-up." It can be sanded, painted or a mold can be made from it.
When I took stock of my scientific capital, at the age of thirty, I found essentially I hadn't got any. There was really nothing I knew about terribly well at a modern level. You may think that is a handicap, but I thought it was an opportunity, because since I hadn't got an investment I could take the risk of going into whatever it was I wanted to. But, I had some difficulty discovering what it was that I wanted to go into.

The advantage of doing things when you're that age is that you don't feel that you have to follow your nose. You can ask yourself: What are the reasons I really want to do things? And if you haven't got financial restrictions or large family responsibilities, it does give you a chance for a second start. How do you go about it when you're fortunate enough to find yourself in such a situation? There are certain general things you would be wise to do. You would be wise to choose something you enjoy doing, because, by and large, if you don't enjoy your work you are not likely to be good at it. And by that time you probably have a feeling of the sort of work which you have some facility for and would like to do. This is probably the easiest part.

The difficulty I had was to find something that was really significant. I realized that I was not likely to be able to have a second opportunity to make a major change in my interest and that any decision would not be easy to alter. I wanted something which I felt was of some significance.

So, what were the areas that appealed to me? There were certain areas which might have appealed to me, but for a number of reasons I didn't actually go into them. One, for example, being a physicist, would have been to go into the question of fundamental particles. I was brought up in the period just after the revolution in physics, which really culminated in 1925. Physics in those days was a very exciting subject because you could see how the whole foundations of the thing had been overturned and a new synthesis in quantum mechanics, and to a lesser extent in relativity, had been made. One could see that this was not necessarily the end of the process and that the world, to the modern physicist, was looking totally different from the way it had looked since the beginning of civilization.

However, I didn't go into that field, partly I think, from the feeling that I hadn't the ability to do the theoretical work, and experimental work was becoming a matter of large apparatus and large teams, for which I didn't have a particular taste. On the other extreme, I was interested, but didn't know very much about subjects like cosmology and astronomy. But there again I felt perhaps that they didn't touch one nearly enough. And the two areas which I decided would be of great interest to learn about and if possible to contribute something to were: the borderline between the living and the nonliving, which in those days did appear to be very mysterious, and, at the other extreme biologically, the problem of consciousness and the working of the nervous system.

So I had these two areas: the living and the nonliving, on the one hand, and the nervous system on the other. I had a great struggle deciding between these two until eventually one day I realized that what I knew already was nearer the first, to what we now call molecular biology, and I'd stick for that.

You mustn't think that when I made that decision I knew a lot about the subject which we now call molecular biology or biochemistry and genetics. My knowledge was intelligently superficial. So I think it was a matter of luck rather than perception that I went into this particular area. It was, of course, true, although I didn't know it at the time, that although the subject wasn't ripe, it was on the verge of becoming ripe, which is perhaps the most interesting stage of all.

Molecular biology is essentially the problem of gene replication and gene expression. The greatest mystery was probably that of gene replication. That's where people had the trouble. They had it there and they didn't realize also the intricate, interlocking control elements which we now know exist in cells. Without these two pieces of knowledge, it was extremely difficult to imagine. It needed really an act of faith, by which you could explain simple bacteria cells and viruses, for example, in
Dr. Francis H. C. Crick, F.R.S., Nobel Laureate, head of the Department of Molecular Genetics at Cambridge University, gave the annual Evarts A. Graham Memorial Lecture this year. Dr. Crick and his colleagues, James Watson and Maurice Wilkins, won the 1962 Nobel Prize in medicine and physiology for defining the chemical structure of the DNA molecule—the famed “double helix” model. In these pages are some of the highlights of Dr. Crick’s discussion of “Why I Study Biology”—with a few sidelights on astrology, American values, religion, population, geriatrics, and cosmology.
terms of physics and chemistry. These involve biochemical terms—proteins, nucleic acids. I first started to work on nucleic acids as only sort of a hobby. It just happened that Jim Watson was there. I was writing my thesis on proteins at the time that we worked on DNA.

The work of these last twenty-five years has made us see that although we cannot yet explain everything in terms of molecular biology, it’s difficult to point to a situation where we don’t see even how we might explain it. Moreover, the techniques are becoming extremely powerful. Large numbers of people are working on the subject. And so, although we know many of the answers in outline, there is much work still to be done, but there is a feeling that all of these problems can be solved simply by application and hard work.

I don’t want to give the impression that everything in classical molecular biology is known. When you look at what we don’t know, it’s very embarrassing. We still don’t know exactly how DNA replicates even after all these years. It is very important that there should be a massive research effort in this particular area. Equally true, I think, is that the pioneer days are over. Probably, the area in which we know the least and would like to know more is the molecular biology of the higher organisms leading up to our cells, for example, as opposed to bacteria and the blue-green algae.

So I was confronted with the situation, one which I certainly never thought that I would have to face when I started on this, that the major problems in which I was interested—DNA replication, enzyme action, the genetic code, protein synthesis—were to some extent solved, at least in outline. I had the choice as to whether to go on working in that field which would have been something I could do rather easily. It’s a terrible business learning molecular biology now because there’s so much of it. If you grow up with it, it was easy, because there was so little in the beginning and you just accreted it rather than having to study the subject. I wondered whether it might not be sensible to make a second change. I doubt if I would have done this but for the fact that I have a very brilliant scientific colleague, Dr. Sidney Brenner, who is ten years younger than I am, and he was keen to make a change. I felt that if he’s going to do it, even if I find it difficult and don’t contribute very much, at least it would be a lot of fun. So our division of the lab I have at home has now changed its name from molecular biology to cell biology and we are mainly interested in problems involving cells and interaction between the cells of higher organisms.

There are a number of things which we didn’t go into which we might have. I might, of course, have gone into one problem which I think is very interesting—the origin of life. But that was less to my temperament, partly because it involves a fairly deep knowledge of chemistry. But also because it’s a subject in which the evidence is going to be very difficult to get. And I must say that I like situations where you can have an idea and there is a chance of it being proved right or wrong within a reasonable number of years. And I don’t call fifty a reasonable number of years, I mean two or three or four or five, because then you have a chance to test your ideas against future experiments as they come along, and you can see the sort of mistakes you make and it improves your thinking enormously.

If you are in a subject in which your ideas are very difficult to test, sooner or later you become too fond of them. The whole subject becomes theological, that is to say, there are many different schools, each of which thinks it is right and there is no way of distinguishing between them. So we started off by getting interested mainly in the nervous system which, of course, you can look at from many different points of view. We weren’t merely interested in what you might call the molecular biology or the biochemistry of the nervous system. Our interest, if not our scientific knowledge, extended into the whole, or the overall behavior of the nervous system, and there are many layers in between in which you could apply yourself.

It’s turned out that I personally have found this an area which has been very difficult to learn and very difficult to study. And the other area which we decided we would be interested in, because we wanted to know how the nervous system developed, was that of embryology, or what is now called developmental biology. It has turned out that I have found this a subject which at least I can understand more easily and have ideas about more easily. So the present state of my interest is that I really have a major interest in developmental biology and I have more of a layman’s interest in the nervous system.

My own main motivation, which I have only touched on up to now, is rather elsewhere. It is difficult to say it in a few words. If you had to find a simple description of why I do biological research, it is for philosophical and what you might call religious reasons. I want to start off with a trivial example of the sort of thing that upsets me. Because I want to get this clear first and then we’ll go on to more profound ones. I’ve noticed, it may be quite different in the Middle West, but in California anyway, that if I went to a party and met some charming girl, almost the first thing she said to me was “What is your birthdate?” At first, I thought she meant “birthday,” and wanted to give me present. But she wanted to know my birthdate because she believed in and wanted to know whether I was Aquarius or whatever.

I was used to this in show biz circles where they are not exactly intellectuals, but I was a little distressed to go to a campus bookstore and see there a big section on astrology. I think one has to say that scientifically, astrology really is complete nonsense. I have tried very hard to think of a way in which it could make some sense and it’s too much. I wonder whether people who feel that way should be at a university.

The major conclusion which one draws from present day biology is the importance of natural selection. The essence of natural selection, and this is the thing that people find very hard to accept, is that it’s motivated by chance events. It is not pre-programmed but is driven by chance events. You can make an argument that chance is the only real source of true novelty.
Now chance is something the human mind does not easily grasp and it certainly doesn't grasp it at that level. It has the consequence that the future evolution of the world and, of course, other possible worlds which we don't know about, is open-ended. You cannot lay down a general trend; natural selection is cleverer than that. It will think of combinations and ways of doing things which haven't been foreseen. Now there is a restriction on natural selection called structural stability: not everything is possible at any one time; certain things are stable. To go back to a nonbiological level, if you start off everything with hydrogen atoms, you are going to get up to a stable combination which is called helium. If you go to atoms in chemistry you know you are going to get a stable conformation which is a benzene ring. These are the nature of the structure of matter and they depend on the way things interact. This is true of biological situations except that the interactions are infinitely more complicated. So the fact that one says that things are due to chance does not mean that anything can happen. On the contrary, the number of possibilities is restricted by these interactions. There are things which are not so easy to change. It doesn't mean that you can't change them but it does mean that there are constraints.

There is a very large imaginative literature, starting in classical times and including people like Kepler, about going to the moon. From Kepler's period on, it was quite common. It isn't something that started with Jules Verne and H. G. Wells. They went to the moon in a variety of ways. Some of them just dreamed they were transported to the moon and others were taken there on the backs of flying birds. Now their aim of going to the moon was very clear, but they didn't know enough of mechanics and the nature of the world to know how to achieve that end in a practical way.

They also had very fallacious ideas of what the moon was actually like. They didn't realize, for example, that the moon didn't have an atmosphere. Kepler was a very perceptive man who did realize that one side of the moon could see the earth and the other side could not. In part of his fantasy, Kepler mentioned things of that kind. So it was conceived in a scientific way. But there were some scientific things they didn't know about. They didn't know Avogadra's number, and if you don't know Avogadra's number, you can't do much with the kinetic theory of gases and you can't calculate that a body the size of the moon will lose the ordinary common gases. If you didn't know that, then you would reasonably assume that the moon had an atmosphere.

The point about scientific knowledge is that the constraints on what you want to do become real and you have a chance of achieving your ends. If I were to look at biology as a physicist and ask if natural selection is really proved to the degree, for example, that the existence of atoms is proved, I'd have to say yes, that it's clear that natural selection acts as a mechanism, but it is not yet proved that it is the only mechanism. To do that you have to be in a position to calculate the rate of evolution from other parameters and we are not in sight of doing that now. So I have to put in this reservation, for al-
This leads us to the area of which I'm least at home in because it is not my particular temperament: the question of biology and politics. One must realize that when you look at a political situation that it has two facets. It has a historical one which grows out of the political situations in the past, and there is also what is politically practical at a particular time. One can't look at it in a naïve way and say because such a course is desirable, then it should happen. Nevertheless you must realize that much of the political thinking of this country is very difficult to justify biologically. It was valid to say, in the period of the American revolution, when people were oppressed by priests and kings, that all men were created equal. But it doesn't have biological validity. It may have some mystical validity in a religious context, but when you ask what you mean by all people being created equal, it is not the same as saying that they should all have equal opportunity. It's not only biologically not true, it's also biologically undesirable. If you had a population in which everybody was the same, any biologist would say that it was a very bad situation, that it was too homogenous. You must have variety in biological situations. Yet, this is not the sort of thing that is regarded as particularly tactful to say. But sooner or later people have got to be saying these things. We all know, I think, or are beginning to realize, that the future is in our own hands, that we can, to some extent, do what we want.

Now what is happening at the moment? What is happening is that we know that with technology we can make life easier for human beings; we can make changes. What we are really doing is learning to tinker with the system. But there is very little thinking at the fundamental level as to what sort of people we would like to have. In the long term, that is the question you are bound to come up with. I think that you have to realize that in many contexts what will happen if we go on in the present way is not what people actually want.

Now let's just take a very simple example. We are all agreed that the population has to become stable. Never mind at what level. Never mind if your population should go from 210 million to 400 million. But sooner or later, the population has got to be stable. There doesn't seem any way out of that. It doesn't look as if you want to stabilize it by wars and famines. So what you would do to stabilize it is by keeping the birthrate at a reasonable level. It's the aim of medical research to try to cure as many diseases as possible, in particular cancer and heart conditions. Those are probably the major killers. But what is going to happen under that situation? What is going to happen essentially is that you can easily work out the age distribution, under a stable population, from the death rate. It means that gradually the population is going to become very old. What medical research is aiming for at the moment is to make the world safe for senility.

We have to think about all these things within this period. How soon something will have to be done has been estimated, and not by me incidentally, but by Sy Leventhal, who asks the question, "Which will be the first generation to realize that the population is going to be like retirement acres in Florida?" It's going to be the people now between fifteen and twenty-five who are going to have to face it, so they may as well start thinking about it now.

I cannot give you an easy answer to the long-term problems, but I can't believe that they won't be discussed before long. We've just seen that the discussion as to how many people there should be in the world has now, as it were, become quite acceptable. It is not acceptable, at the moment, to discuss who should be the parents of the next generation, who should be born, and who should have children. There's a general feeling that if we are all nice to each other and if everybody has 2.3 children, everything will pan out. I don't think that is true. For good genetic reasons, even though you have more medical care, transplantation of organs, and all these things, it would be an unhealthy biological situation. Some group of people should decide that some people should have more children and some should have fewer.

There is a general term that says you can't be nice to all the people all the time. You either have to be beastly to them after they're born, which we are all trying to avoid, or you have to be beastly to them before they're born. You have to decide who is to be born.

Biology is indeed a revolutionary subject when you look at it in this way. It is, in fact, the major revolutionary subject. It is the one that's going to make the new concepts which will come into social thinking. Biology is not simply, as it were, what you can do with herds of cattle. There are much more intricate things involving people at the psychological level interacting in society, but I don't think you're going to solve all these problems by just tinkering with the genetic material. I think it will turn out that thinking along these lines will have to take place, and if you don't do it in this country, it will start in another country.

One of the most striking things I've seen in this country was the impact when sputnik went up. It isn't true that what happens in another country won't influence you. So you'll have to realize that there may be other countries trying to do something about population, and you'll be confronted with the issue of whether you like it or not. It isn't equally clear to me what one should do. There is the question of where the money is going to come from, because the whole drive in this country at the moment is away from these fundamental problems and towards the applied ones, and it's very important that money should go into many of these applied problems. But it's equally important that these fundamental ones shouldn't be neglected. Of all the minority groups probably needing education in your country, I would think that millionaires and senators probably need it the most.

This comes to probably the basic thing that I would say. That really what is wanted is education—an education at the level of younger people. It's nice to read articles in Time and Life, but if you learn something when you're in school, you're forced to learn it in a more regular way. You absorb it, to some extent, at a more impressionable period; you're made to do exercise on it. And I think really there should be some thinking if we're to take this new view of looking at man.
Twelve years ago, Carroll Behrhorst, AB 43, MD 47, gave up his established medical practice in Kansas to become a gringo doctor to 200,000 Indians in the remote highlands of Guatemala. This "Physician to the Mayas," who has been called the "Albert Schweitzer of the Third World," treats as many as 200 Indians a day in his clinic. But Dr. Behrhorst is not satisfied only to cure his patients; he is also vitally interested in preventive medicine and has organized an innovative project to bring modern public health and agricultural methods to them. Dr. Behrhorst attributes his success to his staff and a corps of Indian nurses and medical-agricultural helpers who function as a team serving the Cakchikel on their rugged, volcanic plateau a mile and a half above sea level.
PHYSICIAN TO THE MAYAS

His biographer in a new book, Physician to the Mayas, calls him a giant. Journalists who have just discovered him report, "He is another Albert Schweitzer." He himself says disparagingly, "I'm just a country boy from Kansas."

What manner of man is this Washington University alumnus who abruptly gave up a lucrative medical practice in the Midwest twelve years ago to become the gringo doctor to some 200,000 Cakchikel-Maya Indians scrounging for a living in the volcanic highland of Guatemala?

On the Today Show, the Mike Douglas program, and Monitor, commentators recently probed his psyche; in the press dozens of reporters struggled to discover what made him tick. All of them learned what he did, a few of them managed to find out why he did it, but nobody was able to explain the essence of Dr. Carroll Behrhorst and probably nobody ever will because he is not given to introspective musings.

He just doesn't have time. The Behrhorst schedule in Chimaltenango, Guatemala, an easy drive but a rural world away from cosmopolitan Guatemala City, is tight, and understandably so, for he sees about two hundred patients a day. Such a program doesn't leave much margin for self-analysis. But even if it did, it is doubtful if Carroll Behrhorst, M.D. 47, would ever produce an autobiography, for he is not one to ruminate about himself. The Behrhorst concern is for others, and his mission is to serve, with all that that implies. Dr. Behrhorst is no Pepys scribbling away in a diary for posterity. He is too preoccupied with the living.

But neither is he the unsophisticated fellow straight off the Kansas prairie that he professes to be. His conversations reveal a complicated personality; his unpublished manuscripts an erudite mind. In one of his most illuminating papers, in which he sets down his thoughts "On Community Work in Low-Production, Physically Deprived Nations," there are references to Terence, Tennyson, and Walt Whitman.

The style is original, if not exactly graceful, with an old-fashioned candor and use of words that ring true. "Dandy," a term that was in vogue circa four-legged Quickmeal stoves, crops up again and again to express ironic disapproval . . . i.e., "Dandy. So we do all we can to think of the needs of the other guy. But where from there?"

Some have ascribed Dr. Behrhorst's decision to liquidate his assets, uproot his family, and take up residence among a people who have traditionally distrusted the white man to a "divine call." But Dr. Behrhorst denies it. Perhaps the best explanation of what motivated him is expressed in a passage from Terence which the doctor uses as the opening sentence of his remarkable paper: "I am a human being, so there is nothing human that I do not feel to be my concern."

To one who holds such a belief, service, even if it requires sacrifice, is a necessary way of life. The idea of such service was not something that Dr. Behrhorst undertook impetuously or impulsively. "My parents were service-oriented," he explained a few months ago when he was in St. Louis on a hurried visit. "I grew up in that kind of an atmosphere." He first considered becoming a preacher, but changed his mind while studying at St. John's Lutheran College, and decided to become a doctor instead. After a year at Kansas University, Behrhorst transferred to Washington University, where he earned a bachelor of arts degree in 1943 and a medical degree four years later.

Following three years of additional training in St. Louis and Cincinnati, Dr. Behrhorst returned to his native sunflower state to take up the practice of medicine in Winfield, Kansas. There he led a busy, productive life for about ten years, but he was restless. As one of nineteen physicians in a town of about 10,000, Dr. Behrhorst felt there was a greater need for him in some remote part of the world where medical specialists were not so plentiful.

One day he chanced to read in a Lutheran periodical that a doctor was wanted in Guatemala. After three investigative trips there, he concluded, "This is the place for me." Many factors influenced his decision, including the desire for his six children, then ranging in age from one to twelve, to experience another culture. But it was the personality of the Indian people that persuaded him that Guatemala was where he truly wanted to serve.

On his first visit to the Guatemalan highlands, Dr. Behrhorst sensed that the Cakchikels, descendants of a people who have lived in Central America for five thousand years, were something special, and time has reinforced this belief. The stocky, 48-year-old doctor made this clear on his jet stopover in St. Louis in early October. "These Indians," he began, "are a very important force in my life. For me, they are the most perfect of humans. They have a great feeling of dignity and respect for themselves. The Indian knows that it is essential that a man experience for himself—that he enjoy himself.

"That's the prerequisite for having feelings for other people. How can you ever care for anybody else if you don't care for yourself?" Eric Fromm asked this question in a slightly different way when he inquired, "How can you love somebody if you don't love yourself?" These people learned this truth centuries ago, and it is still the dominant force in their lives and culture.

"The Indian has this great feeling of confidence in himself," he continued, "which is why the Cakchikel people don't have psychological problems. If you have confidence in yourself and know what to expect of yourself you don't need other crutches. You don't, moreover, develop duodenal ulcer, ulcerated colitis, or all these other problems that we have around here."

Precisely because he admires the Indians so fiercely, Dr. Behrhorst is impatient and indignant with those who
Dr. Carroll Behrhorst, AB 43, MD 47, "gringo" doctor to 200,000 Guatemalan Indians.

would force them "to compromise themselves because of us." He believes, unquestionably, that their traits of pride and dignity must be preserved. "If we tarnish their dignity and respect for themselves and all others, then we have failed regardless of how many buildings and privies we have built, or how many new 'Christians' we have put on the rolls, or how many bodies we have rescued from disease. If we cannot maintain absolutely the dignity of the native people, then better that we go back to Kansas or New York or wherever we had our origin."

On this subject, Behrhorst the doctor becomes Behrhorst the preacher, and he is eloquent. He is also courageous, for he knows that such views are not those of a typical medical missionary, which is what Dr. Behrhorst was technically considered to be when he first went to Chimaltenango. It was the Medical Missions Council of the Lutheran Church-Missouri Synod which sponsored his first two years in Guatemala, and it is from Lutherans that Dr. Behrhorst still derives considerable support. Nowadays, however, Dr. Behrhorst characterizes himself as "a man with a mission or message" rather than as a missionary.

Albert Schweitzer, in Dr. Behrhorst's opinion, was much more representative of the old-fashioned missionary, which is why he discounts comparisons between himself and the famous physician who practiced for so many years at Lambarene. Dr. Behrhorst respects the late Dr. Schweitzer for his qualities of dedication and humanitarianship, but he believes that his predecessor in Africa "never responded to the total community needs of the natives." It is precisely at this point that Dr. Behrhorst differs so radically from most other medical practitioners who have left home to serve in the field.

For Dr. Behrhorst believes that it is not enough for a doctor to cure in Central America, or Africa, for that matter. In Guatemala, where the death rate for children under five years of age is more than 50 per cent, it would be easy to forget all else but curative medicine, but such action would be folly in Dr. Behrhorst's view. "One could treat three hundred patients a day in Guatemala for one hundred years and still not reduce the incidence of disease in the population," he reasoned as he resolved "to find a way to make the people healthy."

Building on this concept, he successfully devised a method to extend his effective medical practice to some fifty villages and several hundred thousand Cakchikel-Mayas by training and supervising "medical assistants"—native Indians who have graduated from his school of practical medicine and agriculture.

Before Dr. Behrhorst could accomplish anything in the Guatemalan highlands, however, he had to win the trust of the Indians, and this task was perhaps the most difficult of all. For two years he travelled throughout Central America as a student and observer, learning and gradually perfecting his Spanish. He also boned up on all phases of medicine in Guatemala and, after an exacting examination, became the first American to be passed and licensed by the Guatemalan Medical Examining Board in twenty-six years.

Then he went to Chimaltenango, sat down on a bench in the middle of the square with his black medical bag at his feet and a book in his hand, and waited. Every day for two months, he took up his lonely vigil there, hoping to allay the fears and hostility of the Indians who watched him with mingled curiosity and suspicion.

For four hundred years, ever since they had abandoned their fertile lowlands to the Spanish conquerors and fled to the rocky highlands to avoid enslavement, these Cakchikel Indians had taught their children never to trust a white man. It was not easy for a man of Dr. Behrhorst's temperament and energy to sit waiting so quietly, but in time his patience was rewarded. One of the natives, Pablo Chicon, passed by the doctor on his way to buy a coffin for his baby who lay dying in a mud-brick house near the square.

This "burying box" would be the fourth coffin Chicon had bought. It did not occur to him to ask the help of the gringo doctor, but fortunately his neighbor, Teofilo,
the one man in town who had dared to make friends with Dr. Behrhorst, persuaded Fablo to tell the physician his troubles. Dr. Behrhorst listened attentively, and then agreed to examine the ailing baby.

In the windowless, smoke-filled room, Dr. Behrhorst found the child near death from the usual causes—respiratory infection, prolonged diarrhea, and extreme dehydration. It was a critical moment not only for the desperately ill baby but for Dr. Behrhorst, who knew that if the infant died, he could never expect the Indians to have faith in him. Fortunately, with intravenous feeding and modern drugs, he saved the infant.

Word of the doctor's accomplishment spread quickly, and ever since that crucial experience in 1962, Dr. Behrhorst has been accepted as the senior Doctor by the Cakchikel Indians. Following this incident, they came not just from Chimaltenango, but from villages like Comalapa and Tecpan, a day's walk away. Old people unable to travel on foot appeared strapped to the strong backs of their sons; babies arrived wrapped in shawl slings fashioned by their mothers; and now and again an Indian with a severe infection was bundled on a mule and brought to the gringo curandero. The square was filled to overflowing with Indians, and still they came in such numbers that Dr. Behrhorst found himself treating people long after sundown, and making do with four hours sleep a night in a humble pension or on his own examining table.

Suffering from all sorts of ailments—kawashiokor, epilepsy, pellagra, tuberculosis, even acute pneumonia—some died while waiting in line to see the doctor. Desperately, Dr. Behrhorst sought help and persuaded a registered nurse in Guatemala City to assist him. Together they trained four native women as aides—the first of a corps of Cakchikel females whom they have taught the fundamentals of nursing. In time, Dr. Behrhorst moved his al fresco office into a twelve-room empty house with a courtyard just off the corner of the square, which became the Behrhorst Clinic.

Later he rented what became known as the “House Across the Road” to serve as a hospital. Neither establishment conformed to the North American's stereotyped conception of health facilities. The atmosphere was informal, with crates used as filing cabinets and nurses clad in their colorful huipils and woven skirts rather than in stiffly starched white uniforms. In the hospital, the families of patients brought bedding, supplied the food for their ailing relatives, and cared for their needs.

With such an arrangement, the only kind acceptable to the Indians, Dr. Behrhorst managed to operate his hospital for a charge per patient of only fifty cents a day including medicine. Clinic patients from the beginning paid one quetzal (about a dollar) for Dr. Behrhorst's services. These modest fees were necessary to cover his expenses, which spiraled as his patient load increased to about 30,000 a year.

For the poverty-stricken Indians, however, even one quetzal is sometimes hard to spare, and Dr. Behrhorst worried at first that they might not be willing to pay for his services. But the Cakchikel-Maya tribe are a proud people who want no charity. Indeed, their respect for the doctor increased when they heard that there was a fee for his care. One Indian was heard telling another, “Señor Doctor’s medicine is strong so he must charge much money for it.” Because the Indians cling so tenaciously to this conviction, Dr. Behrhorst has not found it easy to persuade those who are destitute to accept free services or treatment on credit.

Some Americans who have visited Dr. Behrhorst in Chimaltenango have objected to the sort of “country-fair” atmosphere which pervades his facilities. One visitor exclaimed disdainfully, “My gosh, your place is sure dirty.” Dr. Behrhorst didn’t argue. Instead he replied simply, “That’s the way the Indians live at home. They wouldn’t understand it if we tried to pop them between freshly ironed white sheets.” Dr. Behrhorst added, “In my opinion, the danger of cross-infection is not great. I always say kindness is much more important than cleanliness. You can help a lot of people by being kind, but you don’t assist very many by just being clean.”

Even his new ninety-bed hospital, completed last spring, is, by “Yankee” standards, unpretentious and devoid of frills. This new “House Across the Road” con-
continues to reflect its founder's philosophy that service must be oriented to the Indian's culture. "We are not so much interested in the building," he explains, "as in the guy who walks in the door."

The doctor also happens to be vitally interested in preventive medicine and in improving the nutrition of the Indians. Ninety per cent of the children in the Cakchikel country who survive are undernourished. And 15 per cent of the entire population has tuberculosis. The average protein intake is so low that most people do not have the antibodies to combat infection," Dr. Behrhorst reports. "A better diet is the best solution to health problems in our population," he maintains.

For these reasons, the fifty-six native practitioners whom he has trained to go out into the villages in the Guatemalan highlands have not only learned how to recognize and treat simple illnesses, but also how to grow better and more diversified crops through the practice of certain rudimentary scientific agricultural principles. In establishing this ambitious program, Dr. Behrhorst has been aided generously by a non-profit organization called World Neighbors.

His corps of native helpers undergo intensive training for about a year before they are permitted to treat patients, and none of them is allowed to dispense drugs with potentially dangerous side-effects such as steroids or digitalis. "We not only teach the student what he can do, but what he cannot do," Dr. Behrhorst emphasized.

The Indian assistants learn how to recognize the symptoms of serious illness such as heart failure, and they are warned never to administer aid themselves in such cases, but to bring the patients to Dr. Behrhorst immediately—strapped in chairs on the backs of porters, if necessary. Even after a medical aide becomes proficient enough to make "rounds" in the outlying villages, he is expected to continue to take classes at the Behrhorst compound.

"Nearly all those who began training five years ago still return every week for instruction," Dr. Behrhorst said.

In their dual role as medical-agricultural assistants, however, these Indians also serve as community catalysts, providing the people with fertilizers and better seeds, informing them about new methods of raising chickens and the fundamentals of animal husbandry. These men don't charge for their services, but they make a modest profit on the medicines and fertilizers which they sell. (Their fee for medication, for example, is about half that charged by the local pharmacist.)

In the early days, the assistants were more enthusiastic about their medical responsibilities than their role as agricultural extension agents, probably because more prestige and glamour is associated with the man who cures. And as medical aides they have been quite successful. Dr. C. Michael Murphy, of the University of Kentucky's department of community medicine, surveyed the work of a representative group of these Indian practitioners and found, according to Dr. Behrhorst, "that the students generally did accurate and acceptable work, with the percentage of error low. We have demonstrated," he noted with satisfaction, "that a fellow who can barely read and write can recognize and treat common medical problems."

Despite discouragements with his agricultural program, however, Dr. Behrhorst has persevered, and with the help of the American Friends Service Committee and Peace Corps volunteers cooperating with a World Neighbors full-time coordinator, it is now better oriented and organized. The use of new fertilizers, for example, has increased the corn yield three to five times.

Dr. Behrhorst has other grand plans that are still largely unfulfilled. He dreams of returning some of the land to its original owners, the Cakchikels. He does not propose to do this through revolution, but by buying up some of the large fincas which are for sale, dividing them into small farms, and selling them back to the Indians at prices they can afford on a ten-year mortgage arrangement. Dr. Behrhorst has made a modest start toward this goal, and he sees it as the ultimate solution to the need for land reform in the Guatemalan highlands. "The Indian," he says, "is a businessman, and he understands buying and selling as does no other race. He is, in fact, the world's best capitalist."

"The Indian," he emphasizes, "abhors violence. It is not a part of his culture and heritage." Che Guevara failed in Bolivia, Dr. Behrhorst believes, because he did not understand the non-violent nature of the Indian. If the Indian is ever to regain a portion of his lost land, it will come through peaceful acquisition. Dr. Behrhorst contends, "I want a white man to return some of this land to its rightful owner and I want to be that white man."

Meanwhile, he and his full-time staff of thirty-two people, augmented by students from Columbia University College of Physicians and Surgeons, continue their mission of curing the sick and teaching the undernourished to vary their diet of tortillas with leafy vegetables. In the villages, his visiting nurses go quietly about the job of informing the Indians about family planning, and his medical-agricultural representatives bring new hope to the sick and protein-starved population.

Some view what Dr. Behrhorst and his team have done in Guatemala as a miracle. But he, himself, says there is no mystery about their success. "The secret of the program," he says, "is that it has not been simply a one-man project. It started out with only me, but many others have helped."

Nowadays, he looks forward to a time when the local government can take over his program, because he maintains that "we should never create anything that cannot be self-sustaining." When that time comes, he plans to move on to another bench in some other corner of the world and start all over again.
Armchair strategists generally agree that Sigel was an inept Union general, but among his German brethren he was considered a Civil War hero. Their proudest boast became a slogan of the early 1860's, "I Fight Mit Sigel."

Composer Con Conrad, who later became the first songwriter to win an Oscar for his "Continental," wrote the music for this little ditty. Published in 1918, it could also be bought for "your talking machine or player piano."
DOWN MELODY LANE

The song cover with sales appeal is as uniquely an American art form as Norman Rockwell's beloved Saturday Evening Post illustrations. The best, such as the lithographed title pages executed by Currier, are collector's items, and the rest are a melange of Americana with a charm and quaintness all their own.

As one astute writer, Lester S. Levy, has so aptly observed in a book on the subject, such sheet music can be viewed as the "Grace Notes In American History," providing us with insight into a bygone age.

Washington University's Gaylord Library has what is probably the largest collection of such music in the Middle West—some 23,000 individual pieces categorized and filed in mint green boxes with a treasure trove still to be sifted and sorted. This collection owes its origin and development to a scholar-musician, Ernst C. Krohn, who taught courses in the history of music in Washington University's University College. Through his influence, the University received the nucleus of this vast accumulation from the St. Louis Public Library, and over the years as Honorary Curator, he has added to it with gifts from his own magnificent musicological library, which in 1966 became a part of the University's holdings. Miscellaneous contributions have also been received and are still being sought because it is now widely recognized that such sheet music collections are important, as Mr. Krohn himself has stated, "as an expression of the growth of culture in American civilization."

BOBBY NORTH'S TERRIFIC HIT!

HE'D HAVE TO GET UNDER-
GET OUT AND GET UNDER
(TO FIX UP HIS AUTOMOBILE)

Words by
GRANT CLARKE &
EDGAR LESLIE
Music by
MAURICE ABR AMS

Bobby North, apparently the Tom Jones of his day, introduced this song in a 1913 revue, "The Pleasure Seekers," and Al Jolson later plugged it. Millions of copies were sold, making it a top contender for the "All-Time Hit Parade."

IF THAT'S YOUR IDEA
OF A WONDERFUL TIME-
TAKE ME HOME

Words and Music by
IRVING BERLIN

In these days of X-rated flicks, the old Nickelodeon and this gentle lady's indignation seem quaint hangovers from a distant past, but in 1914 this song made a bundle for Tin Pan Alley ace, Irving Berlin.
Jenny Lind, the "Swedish Nightingale," came to the States in 1850 for a $150,000 concert tour promoted by P. T. Barnum. Jenny Lind Songsters flooded the market as men fought for tickets to hear the "Sweet Warbler."

Louis Antoine Jullien was the French sensation of his day. When he introduced this work, his own composition, at New York's Crystal Palace in 1853 to the accompaniment of real firebells, ladies swooned and all bedlam broke loose.
The composer of "After the Ball," Charles K. Harris, wrote this song, which became a sentimental favorite during the Spanish-American War. Based on a Civil War incident, the ballad moved even sophisticated New York audiences to tears.

Over the years there have been many songs about dolls—"Oh You Beautiful Doll," "I'm Gonna Buy a Paper Doll That I Can Call My Own," and this little ode to a bisque cutie. It was as big as "Raindrops" in its day, which was 1909.
ON BLACK INTELLIGENCE

"If a tree is to be judged by its fruit, if the intelligence of a race bears any relation to its accomplishment, it seems difficult to draw any conclusion other than that the black and brown races are inferior to the white race." . . .

The dispute over the intellectual inferiority of Black people and the corresponding problem of measuring Black intelligence has generated a great deal of heat during the past two decades. Because of the political, social, economical, educational, ethical, and legal considerations involved, discussions of racial differences in intelligence have created more controversy than any other single issue in the field of psychology. Some of the central disputants have compromised on occasion, but essentially there has been produced a sharp cleavage of opinion about the intelligence of Black people and intelligence testing. In a word, opinion is split over whether lower scores by Blacks on traditional ability tests are attributed primarily to genetic heritage or to such environmental factors as discrimination, poor diet, bad living conditions, inferior schools, or biased intelligence tests. It is seriously questioned today whether traditional ability tests may serve as valid measures of Black intelligence. In spite of the vast array of research accomplished during the past twenty years with regard to cultural bias in ability testing, no satisfactory, culture-fair tests were developed.

The meaning of intelligence is rather diverse, and although considerable attention has been given this concept, it is still ill used and poorly understood. The ambiguity and senselessness of the nature of intelligence is exceeded only by the research on ESP. Definitions of intelligence are so diverse that it would be impractical to list them here. A few representative examples are given:

1) Intelligence is what the intelligence test measures.
2) Intelligence is defined by a consensus among psychologists. It is the repertoire of the intellectual skills and knowledge available to a person at any one period of time.
3) Intelligence is the totality of an individual’s learning experience.
4) Intelligence refers to one’s global capacity to deal effectively with one’s environment.
In this article, based on his address presented as part of the University's inaugural series for new professors, Dr. Williams points out that "it is seriously questioned today whether traditional ability tests may serve as valid measures of Black intelligence." Since standard I.Q. tests are "biased in favor of middle class whites," he maintains, appropriate measuring instruments and educational models for Black children must be developed.

It is clear from the preceding examples that not only is there lacking a consensus among psychologists regarding the definition of intelligence, but there is no absolute definition as well. From a Black perspective, the real concern is not merely that of defining intelligence, but one which challenges the basic scientific considerations of validity, reliability, and standardization of intelligence tests.

Validity: Validity pertains to the extent to which a test measures what it is intended to measure. Does the traditional ability test measure the intelligence of Black children? It is doubtful that current ability tests measure a Black child's "global capacity . . . to deal effectively with his environment." It is obvious enough that a Black child engages in many intelligent behaviors which are not validated in white, middle class society. For example, a Black child might respond with, "My mother told me to hit 'em back if anybody hits me," to one of the standard I.Q. test questions. That answer actually represents "a summation of the learning experiences" for that particular Black child in his Black culture. It would be less than intelligent for the child to exhibit responses contrary to his teachings and to the dictates of his cultural norms. If one child is taught not to hit back and another is taught to hit back, it is a value judgment as to which is more intelligent teaching. Most tests take the philosophic frame of reference that white, middle class standards are the correct ones.

Reliability and Objectivity: The reliability of a test refers to the extent to which a person earns the same score or rank each time he is measured. One of the most common causes of unreliability of a test is the inclusion of items which are scored on the basis of subjective judgment. For example, persons from different cultural backgrounds will respond differently to the question, "What is the thing to do if you find a purse with ten dollars in it?" One child might say, "Try to find the owner"; another might respond, "Keep it." Such items lack objectivity in scoring as they fail to take into consideration cultural differences. A Black perspective is penalized and therefore the reliability of such tests is low for measuring the intelligence of Black children.

Standardization: A test must be representative of the group for whom it was intended. Two of the major ability tests, the Stanford-Binet and the Wechsler Scale for Children, excluded Blacks, Mexican-Americans, and Puerto Ricans from the representative sample. If the purpose of standardizing a test is to make it useful for certain reference groups, then the WISC and Stanford-Binet are invalid for use with Blacks, Mexican-Americans, and Puerto Ricans.

With regard to Black and white differences in intelligence, two main schools of thought have emerged: the deficit model and the cultural difference model.

The deficit model assumes that Black people are deficient when compared to whites in some measurable trait called intelligence, and that this deficiency is due to genetic or cultural factors, or both. To support this notion, such terms as "heritability of I.Q.," "cultural deprivation," and "the disadvantaged" have been employed. Proponents of this school of thought assume that the intellectual and educational "deficit" suffered by the so-called culturally deprived is clearly revealed by such psychological tests as the Stanford-Binet, the Wechsler, Scholastic Aptitude Test, Stanford Achievement, Iowa Basic Skills, Graduate Record Examination, Miller Analogies, and others.

These tests are devised to measure one's capacity to learn or, more specifically, what one has learned. The test items are supposedly selected on the basis that individuals of the same age have had the same opportunity to become familiar with the content of the items. Two five-year-olds, one Black and one white, from different cultural backgrounds, will answer quite differently such a question as "What is the thing to do if another child hits you?" The deficit model assumes a set of acceptable, standard responses. If the Black child gives a response that is not validated as acceptable by the norm, e.g., "Hit 'em back," he is declared deficient in his "ability to comprehend and size up certain social situations."

One's intelligence, according to this school of thought, is based on the solution of brief problems of various kinds and on the quality of one's response to a wide range
of questions. The final, standardization score, which is called the Intelligence Quotient, or I.Q., is usually computed so that it is given a scale score for which the average of the reference population is about 100. Proponents of the deficit model claim that in the general population Blacks are about fifteen I.Q. points, or one standard deviation, below whites.

It is important here to make a clear distinction between I.Q. and intelligence. They are not the same, although many researchers use the two interchangeably. I.Q. is a symbol which refers to a set of scores earned on a test, nothing more. An I.Q. per se cannot be inherited. Most of the research on intellectual differences between Blacks and whites is based on differences in test scores, or I.Q. Since the tests are biased in favor of middle class whites, all previous research comparing the intellectual abilities of Blacks and whites should be rejected completely. If Black children score lower on ability tests than white children, the difference does not mean that Black children are actually inferior in intelligence; all it means is that the Black children performed differently on the tests from whites. Test inferiority is not to be equated with actual inferiority. For too many years American educators and psychologists have embraced the mythology that low scores on ability tests are sufficient indicators of a weakness or deficit in the individual's mental ability.

The deficit model therefore engages in faulty reasoning: if a child scores low on a test, he is classified as lacking the ability of those who scored at a higher level. The model assumes that the low scorers and high scorers had similar or equal opportunities to learn the knowledge required by the tests.

Ellis states in *The Psychology of the Individual*: "Full-blooded Negroes are rarely met with in our graduate schools. Those classed as Negroes are usually mulattoes. Even disregarding this fact, it is undeniable that the work of the Negroes is much inferior to that of the whites. They have not demonstrated the capacity to do the grade of scientific work done by the whites."

It is assumed in the above paragraph that the reason Blacks are not in graduate schools is because of their inferiority. The model does not consider the discriminatory practices used in preventing Blacks from being admitted.

Briefly stated, the cultural difference model asserts that the differences noted by psychologists in intelligence testing in family and social organizations and in the studies of the Black community are not the result of pathology, faulty learning, or genetic inferiority. These differences are manifestations of a viable and structured culture of the Black American. The difference model also acknowledges that Blacks and whites come from different cultural backgrounds which emphasize different learning experiences necessary for survival. To say that the Black American is different from the white American is not to say that he is inferior, deficient, or deprived. One can be unique and different without being inferior. The model therefore recognizes the difference between equality and sameness.

Two pieces of fruit, e.g., an apple and an orange, may be equal in weight, in quality of goodness and marketability, but they are not the same. An apple cannot become an orange, and vice versa. Each must express its respective characteristics of "appleness" and "orangeness," yet they are both fruit. Whereas the deficit model espouses a "Get like me" response, the difference model endeavors to increase the number of options as to what constitutes acceptable and nonacceptable responses. Instead of being confined by an egalitarian doctrine that confuses equality with sameness, the cultural difference model recognizes that this society is pluralistic in nature where cultural differences abound.

Because of the vast cultural differences in Black and white society, significant language differences are present. Differences in language and dialect may produce differences in cognitive learning styles, but a difference is not a deficiency. Linguists do not limit themselves to defining dialect as the way words are pronounced. The dialect is a fully developed linguistic system.

Instead of calling Black language wrong, improper, or deficient in nature, one must realize that the Black child is speaking a well-developed language commonly referred to as nonstandard English.

Intelligence is frequently based quite heavily on language factors. It is a common observation that Black and white children do not speak alike. The differences in linguistic system favor white children since standard English is the *lingua franca* of the tests and public schools.

Take, for example, the Scholastic Aptitude Test (SAT) which contains a verbal and numerical factor. Those students who do not show high verbal or numerical ability score low on the SAT and are typically excluded from entering college. If this is true, then Blacks have been routinely excluded because of the different dialect and language system. It does not mean that Black people do not have the intellectual ability to compete in college. For example, Blacks typically are not inferior in verbal ability. The average Black adolescent will know how to "play the dozens," and play them well. He will know from memory "The Signifying Monkey," "Shine," "Mr. Boon," and many other indicators of verbal ability, but these do not get measured in the typical classroom. In fact, many Black children can state bits of poetry and prose in iambic pentameters. A case in point is revealed in the following revision of a Mother Goose rhyme made by a bright, Black eight-year-old:
A special Commission on Tests appointed by the College Entrance Examination Board indicated that the Board examinations taken by about two million high school students a year failed to recognize and assess a wide variety of talents, skills, and mental attributes. Over the years many students, particularly Black ones, have been grossly penalized. Basically, the Commission on Tests found that the SAT, which measures fluency in English and ability to deal with mathematical and spatial concepts, to be discriminatory against certain minority groups. Although high verbal and numerical abilities are generally those required in traditional academic liberal arts and scientific education, the Commission found these indicators to be too narrow for application to all who might benefit from college.

The Commission recommended that the tests gradually be replaced by a flexible assortment of other tests, measuring not only verbal and mathematical ability, but many other dimensions of excellence. These dimensions included musical and artistic talents, sensitivity, and commitments to social responsibility, political and social leadership, athletic, political, and mechanical skills, styles of analysis and synthesis, ability to express oneself through artistic, oral, nonverbal, or graphic means, ability to organize and manage information, ability to adapt to new situations, characteristics of temperament, etc.

In a recent memorandum directed to school counselors, the Washington University Director of Admissions had these points to make:

"We believe that this university has a great deal to offer to a wide variety of students—the scholar and the singer, the debater and the dancer, the athlete, the artist and the actor, the editor and the engineer. Accordingly, we urge you to recommend capable, interesting students, even if there is some slight "lopsidedness" in their records. Where there is need for compensating strength for lower SAT scores, for instance, we will trust you to point this out to us. It is impossible to overemphasize how highly we regard your evaluation as we search for an ever-widening array of talents and abilities."

From this discussion, it is clear that traditional ability tests play a major role in current educational procedures and consequently in determining what doors in life will be opened to a Black child. Tests are used to determine admission, grouping, selection, assignment to special classes, and educational tracts. If the tests are unfair (biased), then it is clear that they place (misplace), label (mislabel) a certain portion of the population in general and the Black population in particular. Throughout the country, a disproportionately large number of Black children are being misplaced in special education classes. Many states legally define the educable mentally retarded as those children obtaining an I.Q. below 80.

In St. Louis, during the academic year 1968-69, Blacks comprised approximately 63.6 percentage of the school population, whereas whites comprised 36.4. Of 4,020 children in Special Education, 2,975 (76 percent) were Black; only 1,045 (24 percent) were white. Thus, there were three times as many Black children in classes for the mentally retarded than their white counterparts. Again, children are placed in these classes primarily on the basis of scores earned on biased intelligence tests.

At its annual meeting in 1969, the Association of Black Psychologists called for a moratorium on the administration of I.Q. tests to Black children. The association charged that tests:

1) Label Black children as uneducable
2) Place Black children in special classes
3) Potentiate inferior education
4) Assign Black children to lower educational tracts than whites
5) Deny Black children higher education opportunities
6) Destroy position growth and development of Black children.

It is clear that the continued administration of traditional ability tests to Black children without correcting for the cultural bias is a violation of the child's constitutional rights under the provisions of the Fourteenth Amendment for equal protection under the law. The Skelly Wright decision in the case of Hobson vs. Hansen in Washington, D. C., set an early precedent. In that decision, the Court ordered that the tract system be abolished since unfair ability tests were used in sorting the children into tracts. Another case, Diana et al vs. the California State Board of Education, led to a decision in favor of a Mexican-American child and her parents. In Boston the case of Pearl Stewart vs. Agnes Phillips and the Massachusetts Board of Education charges that children are being placed in special classes irrationally and unfairly. Other court cases will follow in the near future.

While Arthur Jensen and others declare that Black people are inferior to white people in intelligence, the Courts are reaching decisions which negate their allegations. Thus, it becomes merely an academic exercise to continue this straw-man debate. Black professionals must be about the business of developing appropriate measuring instruments and educational models for Black children.
A Walk Through Time

Field trip was the exact nomenclature for this educational outing. It was a trip to field and forest, hill and valley, pit and quarry. Dr. Harold Levin, associate professor of paleontology, took his class of alumni and friends of the University out into the Missouri countryside in search of rocks and minerals and fossils. They scrambled down hillsides and over rock outcroppings with the delight of children on an Easter egg hunt. And the finds were as exclaimed over, examined, shared, and bartered for as summer treasures at the school year’s first show and tell time.

The event was one Tuesday morning session of a class on the curious and the ordinary in geology, which was one of a number of non-credit courses offered this year by the University Alumni Federation and the School of Continuing Education. The field trip, entitled by Levin “A Walk Through Time,” marked the mid-way point in the eight-session course.

“During the Paleozoic Age the earth was covered by warm seas,” explained Professor Harold Levin, center. “Limestone was deposited and the waters receded. That means you should be able to find brachiopod fossils and twig-like fossils of bryozoans.”

“Wow, have you seen anything like this before,” cried one enthusiastic student. Levin’s comment as the trip progressed was, “Most every teacher has a special place in his heart for an enthusiastic and inquisitive class.”
"Everything you pick up has something in it," exclaimed Mrs. Thomas H. Eliot, center. She nicknamed crinoid fossils "Cheerios," much to everyone's delight.

"I'll trade you some of my tribolites for some of your sponges," offered one class member to another. "Have a brachiopod," said another.
INTERCOLLEGIATE basketball at Washington University has been terminated. The decision was made in March after long and most careful consideration by the trustees, the administration, and the University-wide, student-faculty Committee on Athletics. The Committee voted unanimously to drop the sport.

The decision was made ultimately for budgetary reasons. The University budget for next year had to call for appropriations less than the amount in the current year, despite inflation. This means, inevitably, cutbacks in every department. As part of the University-wide belt-tightening, the athletic budget had to be reduced by $48,000.

In making the official announcement, Vice Chancellor Lattie F. Coor said: "We regret the need to make the decision, but the stringency of the University budget for next year requires it. We intend to continue offering a strong and varied athletics program at Washington University. With this decision, we are now in a position to provide adequate support for all of the remaining sports."

After the announcement was made, a petition, calling for reconsideration and signed by several hundred members of the campus community, was presented to the Board of Trustees. After long discussion, the Board confirmed the decision to terminate intercollegiate basketball. Three major reasons for the decision were given by Chancellor Elliot: first, unlike in other major sports, men who want to play basketball will continue to have the opportunity on a campus with 78 intramural teams competing in eleven leagues; second, careful consideration resulted in a decision to drop one program entirely, rather than to make across-the-board cuts, with a general lowering of the quality of all programs, and finally of least importance, attendance at intercollegiate basketball games in recent years has been extremely low, with usually no more than fifty spectators in the stands at a typical game.

What it all comes down to is that Washington University, like most other universities today, is facing severe financial problems which require allocating resources as wisely as possible. In the sports program, as in all other areas of the University, the only reasonable approach is to eliminate some programs entirely so that the remaining programs can retain their strength and the opportunity to grow stronger.

It was a difficult and unhappy decision to have to make, but a necessary one.

THREE OF THE FOUR faculty writers whose work was carried in the last issue of this magazine have received added distinction since the issue was published. (The fourth, Donald Finkel, has had more than his share of honors, not the least of which was his selection by the National Science Foundation as Poet-in-Residence on an expedition to Antarctica.)

In recent weeks, in fact, Washington University faculty writers seemed almost to dominate the literary news in The New York Times. In one issue alone, the Times carried stories on national honors won by the University's first two Fannie Hurst Professors of Creative Literature. Howard Nemerov, the first Fannie Hurst professor and now a regular member of the English faculty, was covered in the Times for his winning of the 1971 fellowship of the Academy of American Poets. Kenneth Burke, the present Fannie Hurst professor, was awarded the Ingram Merrill Foundation Award in literature for 1970.

In the February 21 Sunday book review section of the Times, Stanley Elkin, professor of English, received top billing in a review of his new novel The Dick Gibson Show, a portion of which was carried in the winter issue of this magazine. Novelist Joseph McElroy, reviewing Elkin's book, wrote: "It is a funny, melancholy, frightening, scabrous, absolutely American compendium that may turn out to be our classic about radio."

The same issue also carried a review of a new book Fiction and Figures of Life by William H. Gass, professor of philosophy and noted novelist and critic. In the opinion of reviewer Richard Kiely, Professor Gass has written "some of the freshest and most finely disciplined fictional prose to have appeared in America since World War II."

While we're on the subject of faculty writers winning honors and taking over The New York Times, in the same period that newspaper also carried the news that Mona Van Duyn had won the 1971 National Book Award in poetry for her work To See, To Take and was selected as the co-winner of the prestigious Bollingen Award in Poetry. In private life, Mona Van Duyn, who taught for many years at Washington University, is Mrs. Jarvis Thurston. Her husband, professor of English, is also a distinguished writer.

THE FRONT and back covers of this issue symbolize the building for the future that is going on at Washington University—building that is essential, despite tight operating budgets, if the University is to continue to hold its place among the top private universities of the country.

On the front cover, construction proceeds on the Seeley G. Mudd Law Building on the main campus. The back cover shows construction underway at the medical campus on the East Pavilion of Barnes Hospital, which will link Barnes Hospital and the University's St. Louis Maternity Hospital. The medical center photograph, incidentally, was taken by Miss Pat Vine, a talented Fine Arts senior, majoring in photography.—F.O.B.
Dr. Paul E. Lacy, left, one of the world's leading experts on cell structure, and Dr. Lauren V. Ackerman, internationally renowned authority on cancer, will head a basic research program at Washington University’s School of Medicine on the immunologic properties of cancer. The program will be supported by a $2,000,000 grant awarded by seven tobacco firms and a tobacco growers association. It is the largest grant ever made by the tobacco industry to a single institution.

Clarification of the immunologic processes involved in cancer could have important implications in the early diagnosis, treatment, and prevention of certain cancers, and in further studies of the basic nature of malignancy.

The Washington University research program, to be supported solely by the tobacco industry grant, is aimed at finding and analyzing specific “foreign” substances called antigens within the human cancer cell which are not present in normal cells. Usually the body responds to antigens by producing antibodies to destroy the antigens and the cells producing them, in what is known as the immune response.

A more distant possibility that could arise from clarification of these immunologic processes is that specific antigens could be used to stimulate further antibody production in a patient in an attempt to destroy cancer cells. Because malignancies of the colon and lung cause the most cancer fatalities in the United States today, initial work in the Washington University research will be directed toward these two types of malignancy.