On the Cover:
The plaza area outside McMillan Hospital provides a pleasant place to play chess, eat lunch, or just to talk.

Waiting in line is just part of orientation for a freshman medical student. The new school year began the last week of August.
Reassuring potential parents

By Glenda King Rosenthal

Karen and David Simpson, the parents of a child with Down's Syndrome, discover that once again Karen is pregnant. They're more than anxious; they're fearful. What are their chances of delivering another retarded child? Is there some way of finding out what the odds are of this happening again?

Jay and Sharon Gold, a young couple who have decided they would like to have a child, find they are both carriers of Tay-Sachs, a degenerative nerve disease which primarily affects people of Eastern European Jewish descent. They are extremely hesitant to attempt a pregnancy because there is a 25 per cent chance of their offspring being affected by this.

If obstetricians are familiar with the many new diagnostic techniques available to such couples, they more than likely will refer them to a genetic counselor.

James P. Crane, assistant clinical professor of obstetrics and gynecology, is a perinatologist interested in high risk pregnancies and genetic counseling.

"What I primarily am doing in the area of genetics," Crane says, "is providing genetic counseling for couples who have had babies born with birth defects and chromosomal abnormalities. I advise them as to the risk of recurrence and techniques available for prenatal diagnosis."

Crane says patients are generally seen as a couple, rather than just the wife alone. "The first step in the counseling session is to take a very thorough family history since this is one of the least expensive and most effective means of preventing genetic disease," he says. "For example, by studying the family history we may ascertain that the potential parents, referred for genetic amniocentesis because of maternal age, are also carriers for Tay-Sachs disease."

"It would be tragic to tell the parents that the amniotic fluid chromosome analysis is normal, only to overlook the fact that the child is affected with Tay-Sachs. There also may be genetic disease in the family which is not pertinent in terms of our prenatal diagnostic capabilities, but which may still be important in terms of counseling the couple about their own future reproductive options or their children's options."

Once the family history is completed, Crane says they discuss the risk of an abnormality occurring. Most couples tend to overestimate the risk and are quite relieved to know that the odds are in their favor.

"For example," Crane says, "a couple may come for counseling because they are concerned about the risk of a chromosome abnormality on the basis of maternal age. The absolute risk of a chromosomally abnormal conception at age 40 is only about two per cent. Turning this around, we can say there is a 98 per cent chance the child will not be affected. While the risk is still small, it is greater than that seen in younger mothers. For example, the risk at age 25 is only one in 2,000."

In addition, Crane says one must also consider what is at stake if the couple does have a child who is affected with a genetic disorder. Trisomy 21, or Down's Syndrome, is a good example of a chromosome abnormality which is associated with a significant burden for both the affected child and the family.

"Approximately 40 per cent of these children are born with congenital heart disease or other birth defects," Crane says. "Some of these defects are amenable to surgical correction and others are not. Approximately half of the children with congenital heart disease die during infancy."

"Perhaps the most striking and distressing feature of Down's Syndrome is the universal mental retardation. The average I.Q. of a child with Down's Syndrome is approximately 40. This means that the child who is affected will never be able to function on his own and this can represent tremendous
emotional stress on the parents and other family members. Even if the family is willing to accept this responsibility, they must keep in mind the fact that many children with Down's Syndrome will have a normal life span and therefore will outlive the parents. This means that eventually someone else, usually an institution or sibling, must care for the individual.

It is not surprising that a large percentage of the patients Crane sees are older mothers, age 37 or greater. Women older than 37 represent about six per cent of the pregnant population, and yet they give birth to nearly 50 per cent of the babies born with Down's Syndrome.

The reason for this age related risk is not completely understood. "It's thought to possibly be related to the fact that in the female the egg cells begin their division process while still in utero," Crane says. "The process is then arrested and not resumed until ovulation, which may not occur until many years later. For some reason, this increased time delay between the initiation of the division process and the final maturation of the egg causes something to go awry."

Crane says occasionally he sees a woman of borderline age requesting counseling and amniocentesis. "It is not unusual to see a woman of 35 with a first pregnancy who is just plain nervous," he says. "The risk of a chromosome abnormality at age 35 is only about 1 in 500.

"While we generally do not encourage mothers to have genetic amniocentesis until age 37, we are willing to perform the test if there is still a significant degree of anxiety about the outcome of the pregnancy once all the facts have been explained."

Another major indication for prenatal diagnosis is for couples who have previously given birth to a chromosomally abnormal child. Crane says the risk of recurrence in this situation depends entirely upon what type of abnormality the previous child has.

Parents who are carriers of biochemical disorders, such as Tay-Sachs disease, are also candidates for prenatal diagnosis. Currently about 80 different biochemical disorders can be diagnosed through amniocentesis.

According to Crane, another common indication for prenatal diagnosis is a family history of an isolated neural tube defect, such as anencephaly, spina bifida or myelomeningocele. "Approximately 8,000 infants are born each year in the United States with these..."
disorders and they account for more perinatal deaths than any other type of congenital malformation," he says.

"Many of these infants are stillborn and 40 per cent of the liveborn infants die by age one. Of the survivors, 95 per cent have at least some degree of mental retardation and/or motor disability." 

Crane says couples who have had one child with genetic disorders have approximately a five per cent, or one in 20, risk of recurrence in any subsequent pregnancy. However, it is now possible to diagnose more than 90 per cent of these birth defects by measuring a substance known as alpha-fetoprotein in the amniotic fluid during the second trimester of pregnancy.

According to Crane, prenatal diagnostic testing is occasionally done for sex determination, but not just out of the parent’s curiosity. Many genetic diseases are sex related, such as muscular dystrophy and hemophilia, which affect only males.

“I recently had a case,” Crane says, “in which the mother was a carrier for hemophilia, a sex-linked disease which affects only males. We did an amniocentesis to determine the fetal sex, and unfortunately it turned out to be a male. In that situation, we can’t make a specific diagnosis; we can only tell the parents that the fetus has a 50 per cent chance of being affected.” 

Crane says genetic amniocentesis is not indicated when the risk of an abnormality occurring is minimal. He says many people call up and say they want a test which will assure them that their baby will be normal.

“It is important to emphasize to these patients,” he says, “that we cannot tell them with 100 per cent certainty that their child will be normal because there are many types of birth defects which we do not have the technical capabilities to diagnose at the present time. For example, congenital heart disease is undetectable even with amniocentesis or an ultrasound.”

Crane also discourages couples who want to have prenatal testing done to determine the sex of the fetus. “We get calls about this at least once a month,” he says. “There’s no problem involved; the couple simply has all boys or all girls and they want to know the sex of the fetus in order to decide whether or not to keep the pregnancy. There are many moral and ethical implications in this type of situation, and I do not favor amniocentesis for this purpose.”

Crane says he tells these patients that there is some inherent risk in performing the amniocentesis and its use is therefore limited to medical indications in which the fetus is at risk of some disease.

The first genetic amniocentesis done for chromosome analysis was performed in 1968. However, it hasn’t been until the last few years that it has been performed on a regular basis.

Crane says amniocentesis can be done at any stage of pregnancy but the ideal time is around fifteen weeks gestation. “At this time,” he says, “there is an adequate volume of amniotic fluid and the test can be safely performed. If the amniocentesis is being performed for chromosome analysis, we have to allow about three weeks to grow enough cells in order to obtain a result. So, if we do the procedure at fifteen weeks gestation, we can usually have the results back by eighteen weeks. If the chromosome analysis reveals an abnormality, the parents still have enough time to decide whether or not to continue the pregnancy.”

Up until recently Crane says there has been quite a lot of concern about the risk of the procedure itself in terms of causing spontaneous abortion or trauma to the fetus. Recently a study was conducted which looked at the actual risk of amniocentesis.

“There does not appear to be an increased risk of spontaneous abortion following amniocentesis,” Crane says. “The collaborative study analyzed a large sampling of approximately 1,000 pregnant women who had amniocentesis performed in the mid-trimester and matched them with 992 control women of similar age, health and socioeconomic status. The incidence of spontaneous abortion in both groups was around three and a half per cent, which suggests to us that amniocentesis does not increase the chance of miscarriage.”

Crane says another concern most patients have is whether the needle used in the amniocentesis procedure can in some way damage the fetus.

“Ultrasound is very helpful to us in this area,” he says. “We use an ultrasound technique called “real-time” in which we can actually watch the movements of the fetus and localize an area of fluid. With amniocentesis and ultrasound performed simultaneously, we can greatly minimize the risk of the procedure.” According to Crane, there are thousands of genetic amniocentesis
procedures performed in the United States every year and there have been no reports of major fetal trauma. "There have been half a dozen reports of babies born with small dimples on their skin," he says. "By that I mean small indentations which the parents were not even aware of but which were visible on careful follow-up examination. These indentations probably do represent needle puncture marks, but no serious damage has occurred so far."

"There's one report in the European literature of a baby who did develop a gangrenous arm related to needle puncture, but in that instance ultrasound was not used in conjunction with amniocentesis. A large gauge needle also was used. In our institution we use a very small needle which we feel contributes even more to the procedure's safety."

Crane says amniocentesis is done on an out-patient basis. "The mother really doesn't have to rest after the procedure and there are no significant side effects. We have patients who come here from all over the state and then return home the same day. If the woman has a job, she can return to work the same day."

Amniocentesis and prenatal diagnosis is expensive to do. For example, the cost of amniotic chromosome analysis is $250.

"The reason the cost is so high," Crane says, "is because the test is technically difficult and requires very skilled personnel. The cells drawn from the amniotic fluid must be planted in culture, fed on a regular basis for several weeks and then harvested. Finally the chromosome must be banded (stained) and analyzed under the microscope.

"Several insurance companies are fairly good about covering the cost of amniocentesis. Many companies are beginning to realize they would rather spend a few hundred dollars at this point in a woman's pregnancy and prevent the birth of a mentally retarded child."

"For example, the average cost of raising a child with Down's Syndrome is around $5,000 per year. About half of these children are born with some sort of physical defect in addition to the mental retardation, and therefore may require multiple hospitalizations for medical or surgical treatment. So, it is really to the advantage of the insurance carrier to spend a little more money in the area of prenatal diagnosis as opposed to the long-term cost of caring for a defective child."

Crane says those couples faced with the possibility of having a genetically defective child do have other potential reproductive options. One such option, particularly if it is the male partner who is affected, is artificial insemination.

"However," he says, "we see amazingly few people who will accept this as an alternative. I have seen couples reject this option who have a 50 per cent chance of having a child with Huntington's chorea or polycystic kidney disease, neither of which can be diagnosed through amniocentesis at the present time. Their risk could be reduced to nearly zero if the parents would accept artificial insemination.

"Of course there are couples who are not initially receptive, but then go home, think about it and change their mind. We try to emphasize to these patients that the father is still really the father in almost every sense. He can help his wife through nine months of pregnancy, support her throughout labor and delivery, and of course assume responsibility for raising the child. Even so, this is a rarely used alternative; possibly in the future it will become more acceptable."

At the present time, 80 diseases can be diagnosed in utero. Even though there are still many diseases which cannot be diagnosed through ultrasound and amniocentesis, the list is growing constantly.

"For example," Crane says, "a couple of months ago we made a prenatal diagnosis of holoprosencephaly, a disorder in the structural development of the brain. This had never been diagnosed before, so it was very exciting to be part of a new diagnosis."

In addition to his work in the field of genetic counseling, Crane also helps women who are at a higher than normal risk throughout their pregnancy. He says a broad definition of a high-risk pregnancy is any pregnancy in which the health or life of the mother and/or fetus is jeopardized.

"This covers a broad spectrum of disorders, including such things as toxemia, sickle cell anemia, diabetes, chronic hypertension, Rh sensitization, premature labor and third trimester bleeding problems such as placenta praevia," he says.

All women who fall into a high-risk category are followed carefully from the beginning of their pregnancy through delivery and follow-up. The diabetic mother is a common example of a high risk pregnancy, Crane says.

"Mothers with diabetes have an increased risk of losing their baby either prior to birth or shortly after. In many cases, the reason for death prior to birth is related to premature aging of the placenta and placental failure. Following birth the newborn of a diabetic mother may develop a variety of problems, including hypoglycemia, hypocalcemia, seizures and hyaline membrane disease."

Crane says the risk to the fetus is directly related to the severity of the mother's diabetes. If the mother is an insulin requiring diabetic, her risk of losing the baby is about one out of ten. In the more severe forms of diabetes in which there's advanced renal disease, the risk can be as high as 50 per cent.

"We usually discourage pregnancy in the severely diabetic woman," Crane says, "because the mother's long-term survival is fairly limited in those instances.

"The greatest risk to the fetus occurs in the third trimester. Therefore, about eight to ten weeks prior to the due date, we begin to monitor the fetus in utero to make sure the placenta is functioning properly and the pregnancy is progressing normally."

Crane says ultrasound is one of the tools which can be utilized to follow growth of the baby. Serial ultrasonic measurements of fetal head size are performed throughout the second and third trimesters. "Babies who are getting into trouble in terms of placental function and the placenta's capabilities to provide oxygen and nourishment, will frequently have slowing or arrest of head growth," he says.
In the ultrasound laboratory, Mazie Kopta checks the fetal position of a woman about to undergo amniocentesis.

"Another test of placental function is the oxytocin challenge test (OCT). This involves hooking the mother up to a fetal monitor and stimulating mild uterine contractions, not enough to cause labor, but enough to stress the placenta. We then look at the placenta's ability to transfer oxygen to the baby. If the placenta is functioning well, we will see a normal fetal heart rate throughout the contraction pattern. If the placenta is beginning to deteriorate, we will see a slowing of the heart rate after the contraction, a pattern known as "late deceleration."

"Once we see that, we know that baby is in trouble and would probably be better off delivered," Crane says. "Our next step is to do an amniocentesis and evaluate maturity of the baby. If the baby's lungs are mature, we would opt for delivery at that point. If they are not, we might attempt to induce fetal lung maturity via a short course of maternal steroid administration. This mode of treatment will reduce the incidence of respiratory distress syndrome (RDS) by two-thirds when given prior to 32 weeks gestation."

In addition to fetal well-being, the diabetic mother's health must also be carefully monitored throughout pregnancy. Each diabetic mother is seen every one to two weeks by a perinatologist. Crane says the insulin requirements generally increase during pregnancy because of several hormonal changes that occur. Consequently, it becomes generally more difficult to control the diabetes during this time, and the patients may frequently have to take split doses of insulin.

Crane says one of the most stressful times for the infant of the diabetic mother is the labor process. Electronic fetal heart rate monitoring is therefore employed during the mother's labor to ensure adequate placental transfer of oxygen to the fetus.

"Until recently," Crane says, "one in every ten diabetic pregnancies ended in stillbirth or neonatal death during the first few days of extrauterine life. In 1972 we instituted a basic protocol for managing diabetic pregnancies based upon strict control of blood sugar levels and meticulous third trimester
fetal surveillance utilizing tests such as ultrasound and the OCT. Since that time we have followed approximately 130 diabetic women and have not lost a baby. So, it works."

Rh disease is another problem followed by perinatologists. According to Crane, this problem can occur in couples where the mother has an Rh negative blood type and the father has Rh positive. Such a union can result in an Rh positive fetus. If any Rh positive fetal blood leaks into the mother's circulation, it will be recognized as foreign and the mother will produce antibodies which can cross the placenta and destroy the baby's blood cells.

"Once the mother has become sensitized, we generally follow the serial amniocentesis," Crane says. "We follow the hemolytic process in the fetus and see how severely affected it is. Most babies with Rh disease survive if delivered early, so it is simply a matter of monitoring in utero what is happening to the fetus. As soon as the baby's lungs are mature, we can opt for early delivery and correct the baby's anemia with exchange blood transfusions."

If the baby is severely affected early in the pregnancy it may die prior to birth because of severe anemia and congestive heart failure. In this situation it is possible to do an intrauterine transfusion. "We don't perform intrauterine transfusions in this institution because Dr. Eugene Hamilton of St. Louis University School of Medicine has had a wealth of experience in this area. It is a terribly difficult procedure to do, and in inexperienced hands, the mortality rate for the baby just from doing the procedure can reach 30 per cent or more. Dr. Hamilton has a beautiful record; he only loses about two per cent of his babies."

Crane explains that blood is not actually injected into the baby's bloodstream in this procedure. "A paracentesis is done which involves a long spinal needle that actually perforates the fetus' abdomen. The red cells are deposited in the peritoneal cavity and will then be absorbed into the fetal blood stream," he says.

"Since the early 70s through the use of ultrasound, the oxytocin challenge test and other parameters of placental function, we have really been able to keep a handle on the fetus in utero. It is now possible to know what is going on; we were simply guessing in the past.

"Before all of these tools were available," Crane says, "we had no objective or scientific way to know when a baby was in trouble and should be delivered or when we should just allow things to progress normally.

"Perinatology has really blossomed in the past few years and finally has been recognized as a subspecialty. With new discoveries constantly being made, it is an exciting field to be in."

Crane says one of the most enjoyable aspects of his field is the satisfaction he derives from counseling couples at risk of having children with a genetic disorder.

"Most couples are extremely grateful," he says. "It's a great feeling to be able to call up a terribly concerned couple and tell them their tests were all normal. And this does happen the majority of the time; in 95 per cent of the cases everything works out well. But through the counseling and prenatal testing we offer, the parents' fears are allayed and it's a much more comfortable and happy pregnancy."
Prostatic cancer is the second greatest cause of cancer deaths in American males, second only to lung cancer. If a man lives to be ninety, he has an 80 per cent chance of suffering from prostatic cancer.

Diseases of the prostate affect, and sometimes kill, a large percentage of the male population.

Prostatic infection is the most common cause of urinary tract infections in the adult male. Benign prostatic enlargement is almost inevitable if a man lives long enough. It is the third most common reason for hospital admissions in men, more common than diabetes, stroke or even cancer.

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From an economic standpoint, diseases of the prostate have a tremendous impact simply because of the number of men who are hospitalized for it every year.

At the present time, Fair and his team of researchers are concerned primarily with the causes and prevention of three particularly common conditions of the prostate: prostatic infection, benign prostatic hypertrophy, and cancer of the prostate.

"We have known for some time that an important part of the prostate's function is providing some nutrients for the sperm in the male ejaculate," Fair says. "However, we now know the prostate protects the male against urinary tract infections. The lack of a prostate may be a major reason why women are more susceptible to urinary tract infections than men.

"In addition to aiding sexual activity and providing nourishment for sperm cells, the prostate produces an antibacterial factor that may prevent this type of infection in males."

"In addition to aiding sexual activity and providing nourishment for sperm cells, the prostate produces an anti-bacterial factor that may prevent urinary infections in males."

And yet, funding for research in prostatic diseases has been limited. William Fair, M.D., professor and head of the Division of Urology, feels this is due in part to a rather prudish attitude on the part of the general population.

"Until very recently," he says, "we were in an era in which it really wasn't considered proper to talk about the prostate. One just didn't mention the prostate because it had a bad connotation. One could respectfully raise money for diabetes or heart research, but the prostate was considered a 'male problem' and couldn't be brought out into the open. In looking at cancer deaths, we hear so much about stomach cancer and leukemia, and yet cancer of the prostate affects and kills far more people than either of those."

Fair and his Washington University team are largely responsible for the discovery of this antibacterial factor and were the first group to isolate and identify the nature of this substance.

"We discovered that if we add bacteria to the urine of the normal male, the bacteria will grow very readily," Fair says. "But if we massage that man's prostate and then have him urinate and add bacteria to the urine containing prostatic fluid, the bacteria will be killed. This observation was originally made in dogs. We were looking for antibiotics that would penetrate the prostate and eradicate prostatic infection, which is very difficult to do.

"We observed that when we just removed prostatic fluid from the dog and added bacteria to it, the bacteria were
killed. We then explored this a bit more and made the observation that in the normal human male the prostatic fluid has a tremendous antibacterial activity."

Subsequent to this observation, Fair says it has now been demonstrated that the prostate’s antibacterial activity is due to the concentration of zinc in the prostatic secretion.

“It is fascinating to realize,” he says, “that the prostate has more zinc in it than any organ in the body, with levels 400-500 times higher than that found in the blood. The level of zinc in the prostatic secretion of men with infection is almost nonexistent. However, when we measure the zinc level in the normal male, we find it is much higher. We also observed that zinc has a potent antibacterial activity and we now know that the antibacterial activity of the prostate is due to zinc.”

“We started looking at the blood levels and found no difference in the blood levels of zinc in normal males as compared to those with prostatitis.

Fair says the researchers then give zinc to men with infections of the prostate. “We could not raise the zinc concentration in prostatic fluid up to normal levels,” he says. “We could raise the level in the blood but not in the prostatic fluid.”

Fair says it appears that zinc gets into the prostate by a mechanism that is yet unknown. “Apparently it circulates in the bloodstream and is probably bound to a protein. There is obviously something that takes it from the bloodstream and gets it into the prostate.”

“We’re now focusing our activities on identifying that substance because there’s no difference in the serum level of zinc in the two groups of men. We give them zinc and the level doesn’t go up, so there may be some local block preventing penetration.”

According to Fair, prostatitis could be caused by a decrease in the carrier protein. His group has been tremendously interested in this because for the first time they have been able to demonstrate that an infectious process is due to a local deficiency of some natural substance.

“This has been implicated for some time,” he says. “We say we get colds when our ‘resistance’ is down but we’re not quite sure what that means. But we are now able to say that possibly men get infectious prostatitis when their prostatic fluid zinc levels are down.”

Prostatic infection is the chief cause of male urinary tract infection. Fair says if the bacteria found in the prostatic ducts escape, they can get into the bladder and cause infection there and possibly the kidneys as well. “These men can develop serious kidney problems,” he says. “They are usually very symptomatic; they run high fevers and have severe back pain. We can treat them with antibiotics which will clear the urine in the bladder and relieve their symptoms, but in a period of time the infection will reappear. Typically these men will have one infection after another; we can control the symptoms but not the ultimate cause.”

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As we understand the problem, the bacteria are inside of the prostatic ducts. The antibiotics circulate outside in the bloodstream and many of the available antibiotics will not penetrate this barrier.”

In the area of prostatic infection, Fair has two major goals. “First we will examine the cells that make up the walls of the prostatic ducts to try and determine why antibiotics cannot cross the cells,” he says. “Secondly, we will continue our studies of the forces that control the level of the antibacterial activity produced by the prostate in order to discover its chemical composition and to find out why it disappears in certain men.

“As we understand the problem, the bacteria are inside of the prostatic ducts. The antibiotics circulate outside in the bloodstream and many of the available antibiotics will not penetrate this barrier.”

Consequently, Fair says there is still no good drug to treat prostatitis in men, which is another area he is investigating. “There are so many questions still unanswered in this area,” he says. “What factors influence the diffusion of drugs in the prostate? What type of drugs would be ideal to treat it?”

Infectious prostatitis itself does not affect a large segment of the male population. According to Fair, there is a larger group of men who have symptoms of prostatic disease but who do not develop a urinary tract infection.

“For want of a better term,” he says, “we call this abacterial prostatitis or ‘prostatitis.’ This is much more common than bacterial prostatitis, and we don’t really understand why these men develop only the symptoms. This non-bacterial prostatitis is a real nuisance but it’s not likely to lead to any serious problems. Some men with this do well when treated with antibiotics, some

“The age related factor makes cancer of the prostate even more fascinating. If we autopsy men in their 90’s who die from another disease, we discover a great many of them will have small areas of cancer in their prostate.”

(Continued on page 25)
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Cover:
Inscription on a stone inset
in the lobby of The Irene
Walter Johnson Institute
of Rehabilitation.
Introduction

Once again, this report indicates that the Medical Center institutions are thriving. In the past year, they
• had a combined operating budget of over $201 million
• employed over 9800 persons who received over $100 million in salaries
• spent for capital improvements over $15 million and committed over $100 million over the next several years for new projects
• covered more than 57 acres of ground
• had over 3 million square feet of space in use
• included over 6700 offstreet parking places.

Even a limited report of the activities of our six member institutions presents a formidable problem in selection. Only a few sample activities can be noted that capture the Medical Center’s enterprise and promise. We can describe major progress in our redevelopment project, diversity and strength in our research efforts, growth in both inpatient and outpatient health services, and burgeoning continuing education programs.

Table I
WUMC Expenditures
(in millions of dollars)
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For total Operating Costs (Including Research)

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</table>

But, first, it is appropriate to recognize the major contributions of the community leaders who make up the Board of Directors of the Medical Center, its component institutions, and the Redevelopment Corporation. Without their generous help and encouragement, our achievements would have been impossible.

Note: Table I includes Barnard Free Skin and Cancer Hospital.
The City of St. Louis has completed a master traffic plan for the Central West End, including our area. Based on projected growth during the next two decades, the plan, among other things, has been designed to expedite the movement of traffic to and from the Medical Center. Taylor Avenue will be widened and straightened and will become a second front door to the Medical Center.

The shift of the Busch lot to the Taylor Avenue side of the block has improved its accessibility and made it much more convenient to its users.

Barnes Hospital has begun construction of the West Pavilion. Between the East Pavilion and the Queeny Tower, it will rise 17 stories and house patient rooms, new operating facilities, new admitting areas, and two floors for the Mallinckrodt Institute of Radiology. Four additional floors will be added to the East Pavilion at the same time. The new structures will contain two floors of doctors' offices for members of the Barnes Medical Staff.

At Jewish Hospital, a major renovation of the Kingshighway Pavilion has been completed. Included are an expansion of its Renal Dialysis facility, construction of new house-

staff quarters, expanded microbiology and biochemistry laboratories, a 16-bed post-anesthesia recovery room, and offices for the Anesthesiology and Surgery services.

The installation of a second cyclotron in the sub-basement of Barnard Hospital is nearing completion. Washington University Medical Center will be the first in the world to have two cyclotrons in operation.
Children's Hospital has continued with its plans to construct a new patient tower over a portion of Kingshighway. On October 4, 1976, the St. Louis Board of Aldermen passed an ordinance conveying a portion of Kingshighway to Children's Hospital. A permanent easement was provided to the City insuring use of the roadway portion for traffic. Despite opposition from the new city administration, planning has proceeded, and it is hoped that construction can begin soon.

During this past year, the eighth floors of Maternity and McMillan Hospitals have been totally renovated into offices, laboratories, and clinical facilities for the Department of Otolaryngology of the School of Medicine. Also at the Medical School, major renovations were completed in the Cancer Research Building, with approximately 13,000 square feet of space renovated on the third and sixth floors for laboratories, offices, and computer facilities for the Departments of Pharmacology and of Physiology and Biophysics.

Central Institute for the Deaf is ready to improve the area around its Research and Clinic Building south of Highway 40. Its plan calls for a 72-car parking lot with the major entrance on Taylor Avenue, an improved circulation plan for better accessibility, and a landscaped area along Taylor Avenue. These changes complement the other street changes south of Highway 40 and represent an effort by Central Institute to present a more attractive view to its neighbors as well as an improved southern border for the Medical Center.

Several months ago, the Secretary of Health, Education and Welfare signed regulations to enforce Section 504 of the Rehabilitation Act of 1973, a "bill of rights" for the disabled. Since that time, Medical Center institutions have been working cooperatively and individually to insure that the Medical Center complies with the spirit of the law.

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Beds</th>
<th>Discharges</th>
<th>Days of Care</th>
<th>Clinic and Emergency Visits</th>
<th>Amount of Free Patient Care Provided</th>
</tr>
</thead>
<tbody>
<tr>
<td>1972</td>
<td>1,862</td>
<td>61,730</td>
<td>623,817</td>
<td>231,029</td>
<td>6,339,298</td>
</tr>
<tr>
<td>1973</td>
<td>1,850</td>
<td>62,392</td>
<td>640,750</td>
<td>258,259</td>
<td>5,443,955</td>
</tr>
<tr>
<td>1974</td>
<td>2,006</td>
<td>64,603</td>
<td>654,860</td>
<td>270,576</td>
<td>5,723,054</td>
</tr>
<tr>
<td>1975</td>
<td>1,947</td>
<td>66,933</td>
<td>643,389</td>
<td>277,918</td>
<td>7,963,832</td>
</tr>
<tr>
<td>1976</td>
<td>1,963</td>
<td>65,047</td>
<td>647,252</td>
<td>282,766</td>
<td>5,568,028</td>
</tr>
<tr>
<td>TOTALS</td>
<td>320,705</td>
<td>3,210,068</td>
<td>1,320,548</td>
<td></td>
<td>31,038,167</td>
</tr>
</tbody>
</table>
The redevelopment project for the 36-block area around the Medical Center has been operational for nearly three years. A measure of the remarkable progress to date is the exciting change that has taken place in the 4400 block of Laclede Avenue (Laclede Place). There, using Community Development Agency funds, handsome new gates have been installed, along with a sodded, landscaped median and new street lights. Many homes in the block have been totally restored and are selling in the $65,000 range to persons interested in contemporary urban living.

The cooperation from the City of St. Louis, the inventiveness of private developers, enterprising individuals seeking a different lifestyle, and the skill of the Redevelopment Corporation staff have combined to create an atmosphere that has been the goal of the redevelopment. The new spirit has been contagious and has spread to the 4300 block of Laclede Avenue and to West Pine Boulevard. Remaining owners are maintaining properties with pride and joining in community organizations and neighborhood groups.

Other notable improvements in the redevelopment area:
• The Stix School, one of St. Louis’s magnet schools, has been greatly strengthened, with a new principal and a more effective faculty.

• Police Department statistics show a 15 percent decline in crime between 1974 and 1976
• The closing of Laclede Avenue and streets south of Highway 40 is contributing to a more rational traffic flow and better neighborhood identity.

An update on major projects completed or new ones underway is as follows:
• The Blue Cross Regional Headquarters, containing 300,000 square feet of office space with over 1,000 employees, has been in operation for nine months. The infusion of these individuals into the community has contributed to the development of several new, well operated restaurants in the commercial area.

• Construction is well underway on Monsanto’s $12 million research laboratory at Clayton and Newstead Avenues
• Paraquad, Inc., a not-for-profit sponsor, has obtained a commitment from the Department of Housing and Urban Development for renovation of the Boulevard Apartments (just east of Euclid Avenue on Forest Park Boulevard) to 85 apartment units for the physically handicapped. This unusual project may become a prototype for other like projects throughout the country.
Table III
Care Provided by Washington University Medical Center—1976

<table>
<thead>
<tr>
<th>Hospitals</th>
<th>Beds</th>
<th>Discharges</th>
<th>Days of Care</th>
<th>Average Length of Stay</th>
<th>Clinic and Emergency Room Visits</th>
<th>Amount of Free Medical Services Provided #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barnes Group (1, 2)</td>
<td>1,204</td>
<td>39,743‡</td>
<td>380,181</td>
<td>9.6</td>
<td>154,571</td>
<td>2,909,900</td>
</tr>
<tr>
<td>The Jewish Hospital of St. Louis (3)</td>
<td>577</td>
<td>18,115‡</td>
<td>184,201</td>
<td>10.2</td>
<td>53,248</td>
<td>1,723,070</td>
</tr>
<tr>
<td>St. Louis Children's Hospital (4)</td>
<td>182</td>
<td>7,029</td>
<td>55,670</td>
<td>7.9</td>
<td>69,662</td>
<td>495,058</td>
</tr>
<tr>
<td>Central Institute for the Deaf (5)</td>
<td></td>
<td>160*</td>
<td>27,200 **</td>
<td></td>
<td>5,285</td>
<td>440,000</td>
</tr>
<tr>
<td>TOTALS</td>
<td>1,963</td>
<td>65,047</td>
<td>647,252</td>
<td></td>
<td>282,766</td>
<td>5,568,028</td>
</tr>
</tbody>
</table>

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

- Finishing touches are being applied to the Park Place Apartments, a 242-unit apartment complex for the elderly at Forest Park Boulevard and Newstead Avenue. The site for this project was assembled by the Redevelopment Corporation staff.
- In the Commercial area, planning is well advanced for total renovation of an apartment building into 12,000 square feet of retail space and 16 apartments. It represents a potential investment of $800,000. Also, a market study by a leading grocery chain has been completed with positive results and negotiations are continuing to develop a 20,000 square-foot supermarket.
- A neighborhood redevelopment corporation (Mid-Town Neighborhood Housing Corporation) has been formed south of Highway 40, largely through the efforts of the Redevelopment Corporation staff, to assist and guide the neighborhood leaders in restoring the neighborhood.
Educational Programs

The Medical Center's teaching activities continue at a high level. As noted in Table IV, many hundreds of students are enrolled in programs ranging from postdoctoral fellowships to certificate programs in radiation therapy. Of growing importance are the new continuing education programs. Twenty-seven continuing medical education courses were offered last year in the School of Medicine. Covering a range of topics from "Computed Tomography of the Entire Body for the Practicing Radiologist," to "Current Topics in Diabetes for the Practicing Physician," these programs draw on part-time as well as full time faculty of the School of Medicine.

Each week, several hundred rounds and conferences take place in the Medical Center, with nearly 50 of them certified for Category I credit toward continuing education requirements of the American Medical Association and various specialty bodies.
Similarly, Barnes Hospital is planning to expand its Nursing Service Division of Education into a hospital-wide department. This new department will conduct workshops, seminars, and in-service training in human relations and the management of diseases, to teach patients and their families how to handle their illnesses more effectively. A somewhat parallel Department of Human Resources has been established at Children's Hospital to coordinate staff continuing education efforts.

Table IV
Teaching Responsibility of the Washington University Medical Center—1976

<table>
<thead>
<tr>
<th>Course Type</th>
<th>W.U.</th>
<th>Barnes</th>
<th>Jewish</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Students</td>
<td>545</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate Students in Biomedical Sciences</td>
<td>145</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interns</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residents</td>
<td>433</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postdoctoral Fellows and Trainees</td>
<td>168</td>
<td></td>
<td></td>
<td>701</td>
</tr>
<tr>
<td>Students in Allied Health Professions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Care Administration</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dietetic Internship</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical Technology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nurse Anesthesiology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupational Therapy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pediatric Nurse Practitioners</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Therapy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Audiology, Education of Deaf</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X-Ray Technology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nuclear Medicine</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radiation Therapy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>844</td>
<td>2,235</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Two-year Program
**This total does not include 265 students in the School of Dental Medicine and 892 students at the St. Louis College of Pharmacy who are in training in close proximity to Medical Center institutions. Also not included are a host of students—nurses, social workers, therapists, health care administrators and others who use Medical Center institutions for clinical training.
Research

From "Functional Studies of Synapses in Tissue Culture," in the Department of Anatomy and Neurobiology, through "Transmission of Suicidal Behavior," in the Department of Psychiatry, the Medical Center's research programs touch all organ systems and most major diseases. There are 461 research and training grants currently active, with a funding level of $29.9 million, up $3.8 million over last year. A few examples will further illustrate the range and importance of our research efforts.

The newest department in the School of Medicine is the Department of Genetics. Housed on the seventh and eighth floors of the McDonnell Medical Sciences Building, under the direction of Dr. Donald C. Shreffler, this department is conducting research that has achieved international recognition. Dr. Shreffler has developed a special mouse colony for his own work as well as for other immunological research laboratories throughout the world. The mouse colony is
In the Department of Pharmacology, Dr. Philip Needleman and his associates have shown that Prostaglandin $I_2$ is synthesized in blood vessels. This substance is involved in the relaxation of blood vessels and is also an anti-blood-clotting agent. Simultaneously, Dr. Philip Majerus's group in the Department of Medicine's Division of Hematology has been exploring the mechanism by which aspirin blocks a particular clotting mechanism in the blood. (An extensive national clinical trial is now underway to assess the effect of aspirin on preventing heart attacks.) Since aspirin also blocks the blood vessel production of Prostaglandin $I_2$, Dr. Majerus is studying the net effect of aspirin on the two systems.

Medical Center research ranges from basic investigations in biology through studies of treatment to the role of sociologic and epidemiologic factors in disease.

### Table V
Greater St. Louis Outpatient Visits to Selected Hospital Clinics—1976

<table>
<thead>
<tr>
<th>Washington University Medical Center (1)</th>
<th>Physician-Patient Visits Number</th>
<th>Percent</th>
<th>New Patient Visits Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>City Hospitals (2)</td>
<td>201,246</td>
<td>35</td>
<td>43,593</td>
<td>64</td>
</tr>
<tr>
<td>St. Louis University (3)</td>
<td>174,954</td>
<td>30</td>
<td>8,368</td>
<td>12</td>
</tr>
<tr>
<td>St. Louis University Hospital</td>
<td>92,132</td>
<td>16</td>
<td>8,526</td>
<td>13</td>
</tr>
<tr>
<td>St. Louis County Hospital</td>
<td>54,844</td>
<td>9</td>
<td>5,134</td>
<td>8</td>
</tr>
<tr>
<td>Other (4)</td>
<td>58,032</td>
<td>10</td>
<td>2,401</td>
<td>3</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>581,208</strong></td>
<td><strong>100%</strong></td>
<td><strong>68,022</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>David P. Wohl, Jr. Memorial—Washington University Clinics (5)</th>
<th>Physician-Patient Visits Number</th>
<th>Percent</th>
<th>New Patient Visits Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>St. Louis Children's Hospital</td>
<td>121,066</td>
<td>60</td>
<td>29,636</td>
<td>68</td>
</tr>
<tr>
<td>The Jewish Hospital of St. Louis</td>
<td>56,263</td>
<td>28</td>
<td>12,474</td>
<td>29</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>201,246</strong></td>
<td><strong>100%</strong></td>
<td><strong>43,593</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Source: Hospital Association of Metropolitan St. Louis, Patient Statistics, 1976

(1) Washington University Medical Center
(2) Homer G. Phillips Hospital, Max C. Starkloff Hospital
(3) St. Louis University Hospital, Cardinal Glennon Hospital
(4) Deaconess Hospital, Lutheran Hospital, Missouri Baptist Hospital, St. John's Mercy Hospital, St. Mary's Hospital
(5) Barnes Hospital
The vitality of the Medical Health Care Center is seen clearly in the statistics summarizing the care given by its member institutions. Medical Center hospitals have shown a high rate of utilization for each of the past five years. (Table II) Last year, with a complement of 1,963 beds, 65,047 patients were discharged after receiving 647,252 days of care. This represents an average occupancy rate for the three hospitals of 86 percent. In addition, 35 percent of all outpatient clinic visits in the St. Louis area were made to Medical Center institutions.

A frequent complaint about large health-care facilities is that their care is too impersonal. The nursing services at Barnes and Jewish Hospitals are working on this problem. With a new program, known as Primary or Total Care, more direct patient care is administered by registered nurses, who develop better insight into the medical and psychological needs of patients as well as greater job satisfaction.

We recognize our responsibility to provide personal, sensitive care for our patients as well as the most modern technological facilities and scientific knowledge. We know that empathic personal care is vital and that it requires continuous effort to overcome the many obstacles that often interfere with it. We hope and believe we are getting better at it.

Our hospitals are well managed, so we are concerned by proposals that the Federal government restrict yearly cost increases to 9 percent. This plan may penalize efficient hospitals and reward wasteful ones. We hope that the important role of the Medical Center as a regional tertiary health-care facility will receive due consideration and that our hospitals will be permitted to fulfill their commitment to excellent care.
<table>
<thead>
<tr>
<th>Institution</th>
<th>Discharges</th>
<th>Number from Outside Metro. Area (1)</th>
<th>Percent from Outside Metro. Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barnes Hospital (2)</td>
<td>39,743</td>
<td>12,154</td>
<td>31</td>
</tr>
<tr>
<td>The Jewish Hospital of St. Louis</td>
<td>18,115</td>
<td>1,137</td>
<td>6</td>
</tr>
<tr>
<td>St. Louis Children’s Hospital</td>
<td>7,029</td>
<td>1,664</td>
<td>24</td>
</tr>
<tr>
<td>TOTALS</td>
<td>64,887</td>
<td>14,955</td>
<td>23</td>
</tr>
<tr>
<td>Central Institute for the Deaf</td>
<td>160(3)</td>
<td>386</td>
<td></td>
</tr>
</tbody>
</table>

(1) Outside St. Louis Standard Metropolitan Statistical Area.
(2) Includes Barnard Free Skin and Cancer Hospital.
(3) Students attending School Division, C.I.D.
Conclusion

Our accomplishments continue to be gratifying. We are facing and coping with problems whose range and complexity were certainly not anticipated when the Medical Center was incorporated in 1962. It is appropriate, however, to end this report with a note of caution. Major new problems have surfaced that must be squarely faced. We need to use our remaining land wisely, particularly with regard to the sea of automobiles about to overwhelm us, and we need a comprehensive long-range plan in energy management. At the same time, we are confronting unprecedented regulation at every level of government. These are major challenges, and to meet them successfully will require our utmost effort and our fullest ability to cooperate with each other.

Table VII
Number of Employees and Salary Expenditures—Fiscal 1976

<table>
<thead>
<tr>
<th>Institution</th>
<th>Number of Employees</th>
<th>Expenditures in Millions For Salaries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barnes Hospital (1)</td>
<td>4,083</td>
<td>36.4</td>
</tr>
<tr>
<td>The Jewish Hospital of St. Louis</td>
<td>2,322</td>
<td>21.4</td>
</tr>
<tr>
<td>St. Louis Children's Hospital</td>
<td>643</td>
<td>6.3</td>
</tr>
<tr>
<td>Central Institute for the Deaf</td>
<td>128</td>
<td>1.2</td>
</tr>
<tr>
<td>Washington University School of Medicine (2)</td>
<td>2,649</td>
<td>34.3</td>
</tr>
<tr>
<td>TOTALS</td>
<td>9,825</td>
<td>99.6</td>
</tr>
</tbody>
</table>

(1) Includes Barnard Free Skin and Cancer Hospital
(2) Includes both full-time and part-time employees (includes fellows); does not include 684 part-time faculty.
which affects quite a large number of men. According to him, 20 per cent of all males suffer some enlargement of the prostate by the age of 50. By the age of 80, more than half of all men are affected and many will require surgery.

"There is an increased incidence of benign enlargement with age, but no one has been able to figure out why this is," Fair says. "Its primary symptom is increased frequency of urination because the enlarged prostate presses on the neck of the bladder. Essentially the bladder can’t empty very well, so it fills up much sooner than it would ordinarily.

"Since the prostate encircles the urethra through which urine must pass, any enlargement makes life difficult for the patient. In cases of severe enlargement, emptying the bladder becomes impossible. In its more severe forms, pressure in the bladder can build up, back up into the kidneys, and cause serious damage."

Fair says prostatic enlargement is a difficult disease to understand. "In some men it will get better if we simply do nothing," he says. "But in most it gets progressively worse. If a man has progressive symptoms, we can more often than not predict that he will someday need surgery."

The prostate gland is extremely sensitive to sex hormones. Fair says under the influence of the male hormone, testosterone, the prostate will grow. Given the female hormone estrogen, the prostate will shrink.

"We know this is true," Fair says, "but it’s also rather simplistic because it still doesn’t tell us the whole thing. It’s very interesting that the dog, cat and man are the only animals affected by benign prostatic enlargement. But we have found we can’t enlarge a young dog’s prostate simply by giving him testosterone.

"So it’s obviously age related, and there appears to be more involved in enlargement than simply sex hormones. Possibly another hormone, such as prolactin, is involved."

When he first began studies in this area, Fair says he used antiandrogen drugs to inhibit growth of the prostate.

"They act by blocking the receptor sites for testosterone," he says. "However we no longer feel strongly positive..."
about the use of antiandrogens. Unfortunately, we had a lot of the same side effects we had when using the female hormone—breast enlargement, and a fair percentage of impotence.

"We now have to look at other compounds which will hopefully have the same effect as the female hormone but with none of the side effects, which are really unacceptable." The most common surgical procedure for treatment of benign enlargement is a transurethral resection. "We have an instrument which removes pieces of prostatic tissue. We hollow out the obstruction and leave the prostatic capsule and some of the prostate there. The prostate can grow back, but this surgery does not have impotence associated with it," Fair says.

"At the present time we can say that if a man has benign prostatic hyper trophy, his condition would probably improve if we removed his testicles to stop the testosterone production. Of course, this is not an acceptable treatment.

"The age related factor makes cancer of the prostate even more fascinating. If we autopsy men in their 90s who die from another disease, we discover a great many of them will have small areas of cancer in their prostate."

Fair says that to those interested in prostatic cancer this is an intriguing finding. It means that many men have cancer of the prostate that has localized and doesn't spread.

"Even though prostatic cancer is the second leading cause of cancer death among males, the incidence of prostatic cancer is much higher than the actual deaths related to prostatic cancer. This, of course, raises many questions. Many men obviously have prostatic cancer for years and it never metastasized, and with others it spreads immediately. Why don't some prostatic cancers spread? What are the immunologic factors which prevent it from spreading?"

According to Fair, there are four stages of prostatic cancer. Unfortunately, only five to ten per cent of all cases are discovered before the cancer has spread beyond the prostate. In the early stages, treatment through radiotherapy or surgery produces a high rate of cure.

"Stage one cancer of the prostate is only detectable when the urologist does an operation for benign enlargement," Fair says. "He finds cancer in about five per cent of these cases, but it is only detectable through surgery, not by simple rectal examination. In stage two prostatic cancer, a single lump is detectable on examination but is still confined to the prostate. By stage three, the lump is larger and has already spread outside the prostate gland. Forty per cent of the patients we see have progressed to stage four in which the disease has metastasized and spread to other organs and bones. At this time, a cure is impossible."

Early detection of prostatic cancer is obviously imperative. Fair says all cases are discovered before the cancer has spread beyond the prostate. In the early stages, treatment through radiotherapy or surgery produces a high rate of cure.

"Our future plans for the treatment of enlargement will include trying to understand more about the basic biochemistry and physiology of the prostate. Hopefully, we will be able to come up with an ideal compound to treat prostatic enlargement, a compound without the unfortunate side effects we now have."

The Washington University group's major interest and research thrust is in the area of prostatic cancer, the most severe disorder which can affect the prostate. It strikes a very high proportion of older males and, according to Fair, curative treatment is often impossible because of the difficulty in early diagnosis.

"While cancer of the prostate can occur in men under age forty," Fair says, "the risk increases mathematically with age until eighty per cent of all men in their 90s can expect to suffer from prostate cancer."

"The real problem lies in the fact that only a minority of men undergo the regular rectal examination which offers the best hope of early detection. "So, we're looking at the problem of early detection in a number of ways. We desperately need some form of screening test to detect prostatic cancer. We are spending a lot of time analyzing the urine for various biochemical markers in order to be able to determine which men should come in for further examination.

"Right now it's a fishing expedition; we're looking for anything that signifies men with prostatic cancer. When we find something definite, then we can localize it and focus on it. The prostate empties its secretions directly into the urine, so it's not as far fetched as it sounds. It's not like trying to find a brain tumor through biochemical changes in the urine."

"Even assuming we could get every man to go to his doctor every six months for a rectal, it takes a lot of experience to be able to feel a lump in the prostate, and only a biopsy will prove whether or not the lump is significant. For logistics reasons, this will never work out. Therefore, the answer lies in a simple screening test for prostatic cancer, similar to that used in diabetic screening."

In addition to his work of attempting to establish a simple prostatic cancer screening test, Fair also is trying to devise a more accurate way of determining the spread of prostatic cancer.

"At the present time," he says, "we cannot determine if the cancer has spread simply by feeling the prostate gland. So, we are working with the people in nuclear medicine to try and develop a prostate scan. We will hopefully be able to inject a radioactive compound which will concentrate in areas of spread of the tumor. This and the early screening tests are our major thrusts in the area of early prostatic cancer detection." Currently Fair is working under an NIH grant to study infections of the

"Even though prostatic cancer is the second leading cause of cancer death among males, the incidence of prostatic cancer is much higher than the actual deaths related to prostatic cancer."
At the present time we cannot determine if the cancer has spread simply by feeling the prostate gland. So we are working with the people in nuclear medicine to try and develop a prostate scan. We will hopefully be able to inject a radioactive compound which will concentrate in areas of spread of the tumor.

prostate. In addition to that, some private donations have been given for prostatic cancer research. "We obviously need to build this up," Fair says. "I would like to see an institute established here that would be devoted solely to the study of prostatic diseases. With the superb facilities we have here and the excellent faculty, such as those in nuclear medicine and radiation therapy, I think it's possible to get this going. We just need enough funding in order to have people working full time on diseases of the prostate."

Fair says that with enough funding given to these programs, someday there will almost certainly be a medical treatment for benign prostatic hypertrophy. "Possibly it will be simple oral treatment," he says, "but someday treatment for it will be a reality."

"A three pronged attack on all three fronts—infection, enlargement and cancer of the prostate—would bring results in the understanding and treatment of prostatic diseases in the shortest possible time."

Fair feels very little has been learned about the physiology of the prostate over the past fifty years. "There is so much we don't know about the prostate; so much has not yet been done," he says.

"It really is a fascinating area; the questions and discrepancies are stimulating. That's why I'm in the field," Fair says. "Research in prostatic diseases cannot be considered 'glamorous,' but the gland causes a degree of suffering far out of proportion to its size and the research needs are very real and very urgent."
Today there are more minority students accepted for medical school than ever before. The changes in minority enrollment at WUMS have been significant over the past ten years. Julian Mosley, M.D. '72, was instrumental in achieving many of those changes. Looking back over those years, many questions can be asked. In what way have the changes affected the School? What are the feelings of the minority students? And, most importantly, has the School done enough?

In 1968 there were three black medical students at Washington University School of Medicine. Julian Mosley, assistant clinical instructor in surgery, was one of them. Mosley, who graduated in 1972, was the second black graduate of the School of Medicine. At that time, fifteen black students were attending WUMS, four times that number presently attend the School. Before going into private practice, Mosley was chief surgical resident at The Jewish Hospital of St. Louis.

"When I started medical school in 1968," Mosley says, "there were two American black students and one African student. We were very concerned for each other's welfare because there was such a small number of us. I think I had a better situation than the other students because my home was in St. Louis."

In those years there was no minority student organization simply because there were so few minority students.

During the summer between his freshman and sophomore year of medical school, Mosley spent his time organizing and laying the groundwork for the recruitment of more black students.

"We did quite a lot of recruiting during 1969-70," Mosley says, "and in 1970 we thought there were enough minority people in the Medical Center to require a minority dean. We organized to find a minority dean just as we did to recruit blacks."

Robert Lee was interviewed, and accepted the position and is presently Dean for Minority Affairs at the Medical School.

In addition to recruiting a minority dean, Mosley also contacted schools that had never before been contacted by WUMS and talked to groups of black students. "Other medical institutions were also contacting black students during this time," Mosley says. "This was at a time when black awareness and the common concerns and interests of minority students were really coming to the forefront.

"However, there were many predominantly black colleges and universities whose students never even dreamed of making application to Washington University. It was just not known for its racial un bias. Just bringing that information to these institutions was a help. And as the number of minority student applications began to grow, better students started to apply."

Mosley also helped to organize a minority student national medical organization, the Negro counterpoint to the student AMA.

"If I was going to survive in those days," he says, "I either had to speak out or get washed away. A lot of people had to be very vocal."

As a medical student, Mosley worked hard for change. "I viewed this time as an opportunity to make changes," he says, "even if at times I was only there as a token. I decided to sit on as many committees as I could. I was on the admissions, curriculum and tutorial committees."

Mosley says the tutorial program was organized specifically for the minority students initially, but soon began to encompass all students in need of assistance.

"At that time we were getting good black students with good intellects who had not had the proper background and training. The tutorial program was established to bridge the gap, even though some people were saying it proved the black applicants were inferior."

Mosley says that for quite some time he felt a quasi-quot e system existed which kept the number of black students to approximately ten per cent of the entering class.

"This wasn't a particularly bad system in the early days when we didn't have enough black students to fill up
ten per cent of the class," he says. "That percentage gave us something to aim for. However, now that there are enough well-qualified black students to fill that ten per cent three times over, the system would be a hindrance. To my knowledge, there are now no quotas in the admissions process."

Mosley does feel that Washington University School of Medicine has made great strides in actively recruiting, educating and graduating minority students. "But there is an obvious need," he says, "for more blacks in every aspect of the medical profession. I think the School has done a good job in fulfilling the role of training black medical students. But if the School is going to be sincere in its efforts to do something for the black people in the community and blacks in the medical profession, it could put forth more of an effort in attracting black housestaff, physicians and faculty to our Medical Center.

"I don't think there has been a dramatic change in anyone's attitude toward actively seeking black house staff," he says. "No one in the training programs is going out of his way to recruit black applicants. "More black applicants were accepted into medical schools because some medical schools made a special effort; that has not yet occurred in the house staff programs. The teaching hospitals of Washington University School of Medicine should do more in this area if they want to make it clear that they are in the business of trying to alter the situation of blacks in medicine and the community."

Mosley feels minority graduates of medical schools like ours should expect to get residency training opportunities in this Medical Center as well as other prestigious training programs around the country.

"Graduates of the Medical School, whether black or white, are entitled to top-notch residency and house staff positions."

Once the minority student is admitted and enrolled in the Medical School, Mosley feels the School does a fair job of meeting the student's needs. "I've never had any student tell me he thought he was being treated unfairly by more than one or two individuals," he says. "As in anything, we have to deal with individual personalities, and I think there have been individual cases in which the student thought a particular instructor may
have been biased. I don't think any minority student feels the School has put any special burden on him; because, in general, the School as a whole tries to treat everybody fairly.

"And when it comes right down to it," Mosley says, "medical students are much more concerned with their performance than they are with complaining about day to day problems."

"When I was in medical school in the late 60's, whites, if they considered themselves liberal, would bend over backwards to show no bias and prove they weren't prejudiced," Mosley says. "Now the pendulum has swung dead center or slightly the other way. Black people may have to start proving themselves again, but I really can't foresee a time when quota systems would once again be instituted."

Mosley says he chose to attend Washington University School of Medicine for two major reasons. First of all, he is a St. Louis resident and wanted to stay in the locality.

"Statistics show that medical graduates tend to practice in the area in which they go to school and train," he says. "I wanted to practice here because one of my major reasons for going into the medical profession is that I thought I could be of great service to the community in which I was raised."

Mosley also chose to attend WUMS because of its excellent reputation as an academic and clinical institution. "I felt that I should start off with the best possible academic training," he says, "and I've always felt Washington University could offer that. Being a good clinician is a rather intangible thing which has a lot to do with your experience and attitudes. But if you haven't had the basic training and the important academic groundwork, you won't do as well as you might."

Mosley feels Washington University School of Medicine has established itself as a medical school that trains teachers for the medical profession. "More than many other medical schools," he says, "Washington University teaches teachers. It is looking for impeccably qualified students, but it has also set as one of its major goals the training of physicians who will provide care for the community."
He feels Washington University’s academic credentials are superior, especially for the medical student who wants to enter into the field of research. According to him, the School prepares the students extraordinarily well in the basic sciences. “Students are well prepared to do good research,” Mosley says. “I think the problem comes when medical educators become so involved in teaching scientific undertakings that they forget the social, psychological and humanitarian aspects of educating a physician. In my opinion, a good premedical education would combine a healthy dose of science with some humanities. I think it’s bad to have one-sided individuals, no matter how informed they are about a specific area.”

Even though there are many excellent clinical instructors at the School, Mosley feels the students do a lot of their own teaching. “Students, remembering what they were just a few short years before, can keep themselves in touch with the community so they can become better physicians,” he says. “It’s important to remember how you would feel in the patient’s position. The medical students and physicians who keep those things in mind, end up being better doctors than the person who approaches everything in a cold, scientific manner.”

The humanistic aspects of medicine and the desire to help his community are two things that greatly influenced Mosley’s career choice. “I’m really pleased that I chose medicine as my career,” he says. “I’ve found it extremely satisfying, in spite of the tremendous amounts of work and hard academic grind. Even with all of the pressures, I’ve never been concerned about whether or not I was in the right field.”

Before he entered medical school, Mosley worked as a research chemist in private industry and found he was not happy. “I kept wondering if this was what I wanted to do for the rest of my life,” he says. “I’m now sure that medicine is the right field. A surgical practice like I am now in is what I want to do, but I would like to retain my teaching position on the Washington University faculty. Teaching is important to me because I feel most people who have gone through extensive training find it rewarding to impart some of their knowledge to others,” Mosley says.

After he finished his medical training, Mosley feels the black physician is faced with a unique decision. Considering the need for more minority physicians in private practice, can minority physicians afford to have their expertise channeled into the seclusion of a teaching hospital? “That’s the question black physicians are always faced with,” Mosley says. “Is it better to be a treater of many, or a teacher of many? Obviously there’s a need for both.”

“As the number of black physicians increases, there’s going to be a need for more academic people to represent Julian Mosley, M.D., prepares for surgery with Frank Richards, M.D., with whom he is in practice.
them. At the same time, there's a grave need in the black community to have black physicians to provide quality care for large numbers of people. We're a long way from achieving a good patient-physician ratio. I think there should be excellent black physicians in private practice, as well as excellent black physicians training people in an academic environment.

However, Mosley does not feel every black physician should feel obligated to return to the black ghetto. As the number of black physicians increases, he feels there will be more opportunity for each individual to find his niche.

"I do feel every black physician is aware that he owes some debt to the black community," he says. "Before black awareness became such a vital issue for black people, blacks who became lawyers and doctors and other professionals often thought that their station in life changed them from black to white in some sense. Now we realize that no matter how educated and advanced we become, we're still a black person grouped with our brothers and sisters. The barrier of learning to take care of our own has to be crossed."

At the present time, there are very few black clinical faculty members. This is one area Mosley would like to see changed. He also would like to see a change in the house staff and post-doctoral training programs.

"Currently no one is pressing for these programs to become as racially unbiased as the medical school program," he says.

People should compete on their own merit, but if schools are sincere about trying to recruit more blacks, they might have to choose the black applicant over the white of equal qualifications. It's a real shame that an institution of this size has no full-time black professors, and it's a shame they don't have a more active, involved part-time staff. It's a shame black patients who come to this institution don't see any black physicians."

Mosley feels his position as a black physician is still a unique one, but he does not feel he's had to struggle more than his white counterpart to attain that position.

"I think there have been instances along the line when I've had to be more patient with other people because of my color," he says. "I have had to be more tolerant of abuses, but I don't think I've had to try harder. The effort I have put forth is something I would have done under any circumstances. I haven't had to extend myself extraordinarily, but I do feel I've had to absorb more."

Mosley has been in an integrated situation throughout most of his educational years, and he feels he's learned to block out prejudice to a certain extent.

"I've learned that certain types of people aren't worth arguing with anyway," he says. "However, it does hurt when good friends who are intelligent make inadvertent remarks which demonstrate that deep down they have an undercoating of ingrained prejudice which will never go away. It surfaces when their guard is down. This has been the most difficult thing to learn to cope with."
Calendar of Continuing Medical Education

SEPTEMBER-NOVEMBER
"Drug Therapy and Non-Invasive Diagnostic Methods"

SEPTEMBER
24 "Acute Hand Injuries: Recent Advances in Techniques of Management"
30 "Review and Update of Some Common Clinical Problems in Renal Disease"

OCTOBER
1-2 "North Central Dialysis Meetings"
6-7 "Clinical Allergy for the Practicing Physician"
20-21 "Recent Advances in the Diagnosis and Therapy of Metabolic Bone Disease"
27-28 "Restoration of Function Following Hand Injuries"

NOVEMBER
11-13 "Anesthesia and the Geriatric Patient"
17-18 "Rehabilitation in the Management of Patients With Common Medical Problems"

DECEMBER
2 "An Update in Diabetes"

JANUARY-FEBRUARY
Alumni Clinical Conference

FEBRUARY
16-17 "Current Topics in Pulmonary Disease"

MARCH-MAY
"Internal Medicine Board Examination Review"

MARCH
2-3 "Rheumatology for the Practicing Physician"
16-17 "Current Topics in Infectious Diseases"

APRIL
6-7 "Venous and Arterial Thrombosis: Current Status of Diagnosis, Prevention and Therapy"
27-28 "Annual Symposium on OB-GYN"

MAY
3-5 Alumni Reunion
18 "Third Annual Symposium on Surgical Problems in Children"
19-20 "Neuromuscular Diseases"

For additional information:
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Washington University Medical Alumni Receptions
October 18—College of Surgeons' Meeting—Dallas Hilton Hotel—Dallas
November 28—The Radiological Society of North America's Meeting—McCormick Inn—Chicago
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