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People Keep Asking Me What Androgyny Means

Tech
Talk

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Five MIT Experimenters Included On Teams Preparing Mars Mission

If all goes according to plan and two unmanned Viking landers settle on the Martian surface in the summer of 1976, five MIT scientists will anxiously await the information they radio back to earth.

The scientists—members of national teams that have worked years to design four of the crafts' experiments—will help analyze data to be collected about physical and chemical properties of Mars, its seismic activity and whether there is life there.

The two Mars craft will be launched late in 1975, and are scheduled to land about 45 days apart.

Each craft consists of two parts. One part will land on the planet's surface. The other, which will remain in orbit around Mars, will contain most of the radio equipment for contact with earth.

Each craft has an expected lifetime of at least 90 days, so there should be a period of 45 days when the two will be operating together.

Seismic Team

Having two research stations is important for seismic studies—in order to determine the precise location of any Mars quakes that may occur while the two are operating.

"We expect to see some seismic activity on Mars," said M. Nafi Toksoz, professor of earth and planetary sciences at MIT. "We hope to be able to determine how Mars evolved, and its present state of evolution, from information recorded by the seismometers and transmitted back to earth."

Dr. Toksoz and Dr. Frank Press, Robert R. Shrock Professor of

Geophysics and head of MIT's Department of Earth and Planetary Sciences, are both members of the Viking seismic study team.

"The big question is exactly how active Mars is," Professor Toksoz said. "If there is a lot of activity, for example, that would mean the planet is relatively warm inside, it might have volcanic activity, and it could indicate that the planet has a core. Because Mars has very little magnetic field surrounding it, finding a lot of seismic activity could change our thinking about how magnetic fields are generated in planetary bodies."

Each three and one-half pound seismic package will maintain a continuous record of the activity of the planet. However, only the activity that is significantly greater than the average background will be radioed back to the earth receiving stations.

Dr. Klaus Biemann of MIT's Department of Chemistry, is head of a nine-member molecular analysis team. "We will be looking for organic compounds on Mars," Professor Biemann said. "We want to know what the compounds are and how much of each is present."

Original Molecules

"If we do find organic compounds and identify them, we hope to be able to determine how they were produced. In particular, could the compounds eventually evolve into living organisms? Or, were they produced by living organisms and now merely fossil remains?"

An arm of the Viking lander will pick up soil samples from the Martian surface for molecular analysis. Each sample will be heated twice—first to 200 degrees

Centigrade and then to about 500 degrees Centigrade. Small molecules will be driven out of the soil at the lower temperature. At 500 degrees, larger organic molecules will be broken down to small compounds. These products will be analyzed by a miniature combination gas chromatograph-mass spectrometer and the raw data transmitted to a computer on earth.

Analysis of the transmitted data should reveal what molecules were detected. Further analysis should reveal the original molecules from which the fragments were derived.

Scooped Into Lander

Another team will search specifically for signs of life on Mars. Dr. Alexander Rich, professor of biophysics in the MIT Department of Biology, is a member of this team.

"The first concern of the biology team," Professor Rich said, "is to determine if chemical evolution on Mars has evolved to the point where chemical systems are complex enough to be called living. If such systems are found, then it will be just as important to determine their biochemical and structural characteristics. We only know about one kind of life—that on earth. If there is life on Mars, we could learn a great deal about what kinds of other systems are capable of supporting life."

The biology team has no idea what they may discover on Mars. Therefore, their life detection equipment is designed to detect forms of life that may be completely different from that on earth. The basic assumption they are making, however, is that if there are living organisms, some forms will be small enough to be scooped into the landers with samples of soil.

Radio Studies

Each soil sample will be divided into four test portions. In two chambers, the samples will be exposed to radioactively labeled carbon gases and substances that might be used as food. Analysis of the sample will then reveal whether or not the labeled carbon had been incorporated into living systems.

The soil sample in a third chamber will be moistened with water. The space above the sample will then be monitored continuously for six gases. If the composition of the gas mixture keeps changing, that would indicate metabolism is taking place.

Another series of experiments will utilize the sophisticated radio tracking systems carried by both Viking landers and orbiters. Dr. Irwin I. Shapiro, MIT Professor of Geophysics and Physics and a member of the Viking Radio Science Team, will participate in these studies.

The radio signals will be exquisitely sensitive to the motions of the spacecraft and the earth and to the intervening medium.

As a result, analysis of the signals will yield important information on a broad scientific front: density and temperature profiles of Mars' atmosphere and ionosphere, the gravity field and geometric shape of Mars, the masses of its tiny moons and of the asteroid belt, and the variations in the charged-particle content of the interplanetary medium and the solar corona.

The results will, for example, improve our knowledge of the deep interior of Mars and of the meteorology of Mars and the sun.

By alternately observing space-

Academic Calendar

1973

September 10	Registration day, First Term
September 11	Classes begin
October 8	Columbus Day (holiday)
October 22-23	Vacation, Veterans Day
November 22-23	Thanksgiving vacation
December 12	Last classes in subjects with a final exam
December 14	Last classes in subjects with no final exam
December 17-20	Final exam period
December 21-January 6	Christmas vacation

1974

January 7-30	Independent activities period
January 31-February 1	Vacation
February 4	Registration day, Second Term
February 5	Classes Begin
February 18-19	Vacation, Washington's Birthday
March 23-31	Spring vacation
April 15-16	Vacation, Patriots' Day
May 15	Last classes in subjects with a final exam
May 17	Last classes in subjects with no final exam
May 20-23	Final exam period
May 27	Memorial Day (holiday)
May 31	Commencement exercises
June 10	Summer Session begins

Asst. Director Joins Associates

Jordan D. Carter, formerly assistant to the director of research at Tyco Laboratories, Inc., Waltham, has been appointed assistant director of the MIT Associates Program.

Mr. Carter, who received his SM from the Sloan School of Manage-

ment at the University of Rochester, was graduated from that institution in 1970 Magna Cum Laude. He is a member of Phi Beta Kappa.

He makes his home with his wife Barbara at 72 Nicholas Rd., Framingham.

The Program was begun 12 years ago to foster an exchange of information and interaction between industry, commerce and the Institute faculty and research community.

The primary purpose of the program is to provide member firms—there are now 30—direct and convenient access to the Institute's educational and research programs, while at the same time providing the Institute with important unrestricted financial assistance and professional relationships.

Epstein Chosen

Professor David M. Epstein, conductor of the MIT Symphony Orchestra, has been chosen as one of the recipients of a 1973-74 Award from the American Society of Composers, Authors and Publishers (ASCAP), presented to encourage composers of serious music.



Jordan D. Carter

ment in June 1972, will report to Jerome J. Schaufeld, director of the MIT Associates Program since 1970.

Mr. Carter, who has a bachelor's degree in chemistry from the Uni-

versity of Rochester, the team also expects to improve by one hundred-fold the determination of the solar system's orientation with respect to the most distant objects known in the universe.

Finally, as the Viking ships pass behind the sun late in 1976, the radio signals, through the direct effect of solar gravity on their travel time, will provide the most stringent test yet applied to Einstein's theory of general relativity.

If all goes as expected, Dr. Shapiro estimates at least two years will be required to digest the billions of bits of data to be harvested from the mission.

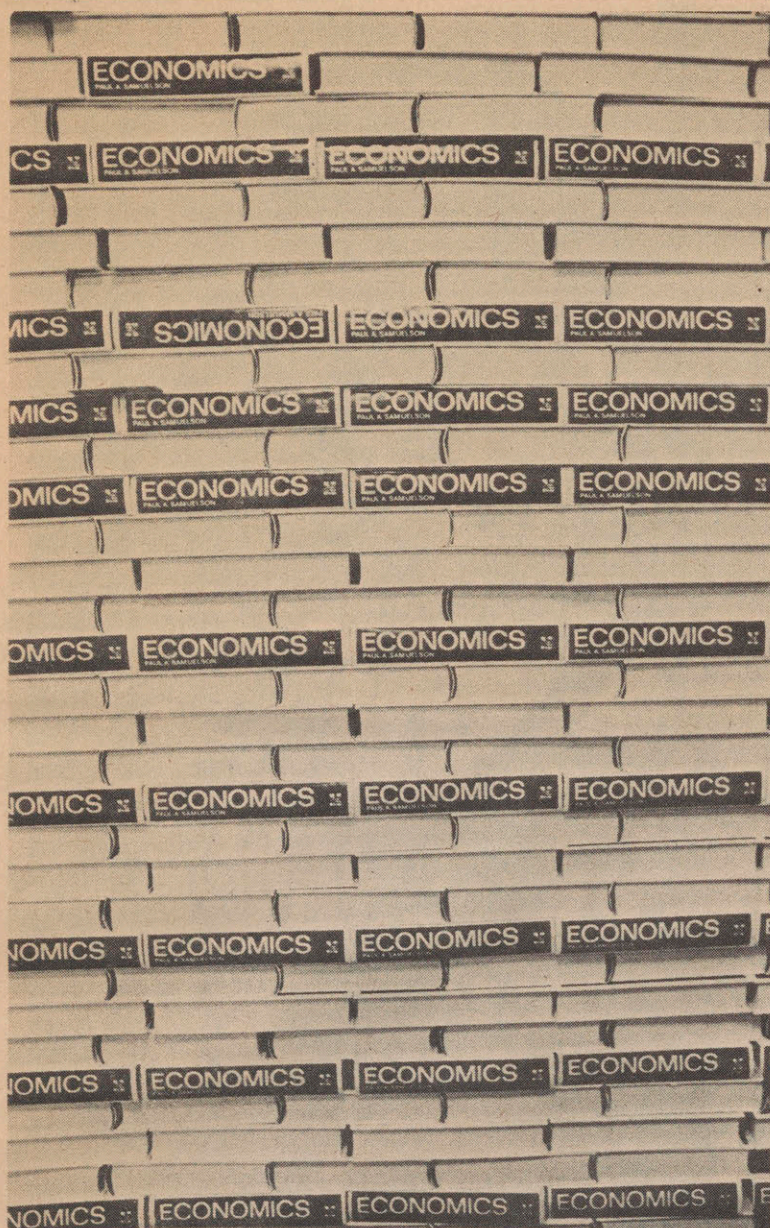
Real Sand Castles

An elaborate feudal manor with fields and outbuildings won first place in the professional category of the Ipswich Sand Castle Competition recently for three MIT people.

They are Laura Malin, Boston, a secretary in the MIT Libraries, William Holland, Mattapan, a June graduate in architecture, and David Covert, Brookline, a former student. The strictly-for-fun contest drew 47 teams in four categories at Crane's Beach.

Margo's Back

Photographer Margo Foote who has been on leave of absence since June returned to her post as Assistant Director (Photojournalist) in the MIT News Office this week and her photographs will begin appearing in *Tech Talk* soon. During her absence, her temporary replacement has been Susan Pogany whose photographs have appeared in the newspaper regularly.



ECONOMIC BRICKS—Like masonry, copies of the just-published ninth edition of Professor Paul A. Samuelson's classic text, "Economics," are laid up in a paper wall in the Tech Coop bookstore. In the book, the Nobel Prize-winning MIT economist advances the concept of NEW, standing for Net Economic Welfare, as a supplementary measure of the performance of an economic system—as opposed to GNP (Gross National Product), the index of economic production.

GSC Party Monday

The Graduate Student Council (GSC) will hold a welcoming party for incoming graduate students Monday, Sept. 10, 4:30-6:30pm in the Sala de Puerto Rico.



LIKE many freshmen, Blake Hurt of Charlottesville, Va., arrived bearing athletic equipment. He uses his lacrosse stick as a hanger for some winter clothing, including an Air Force overcoat that belonged to his father.



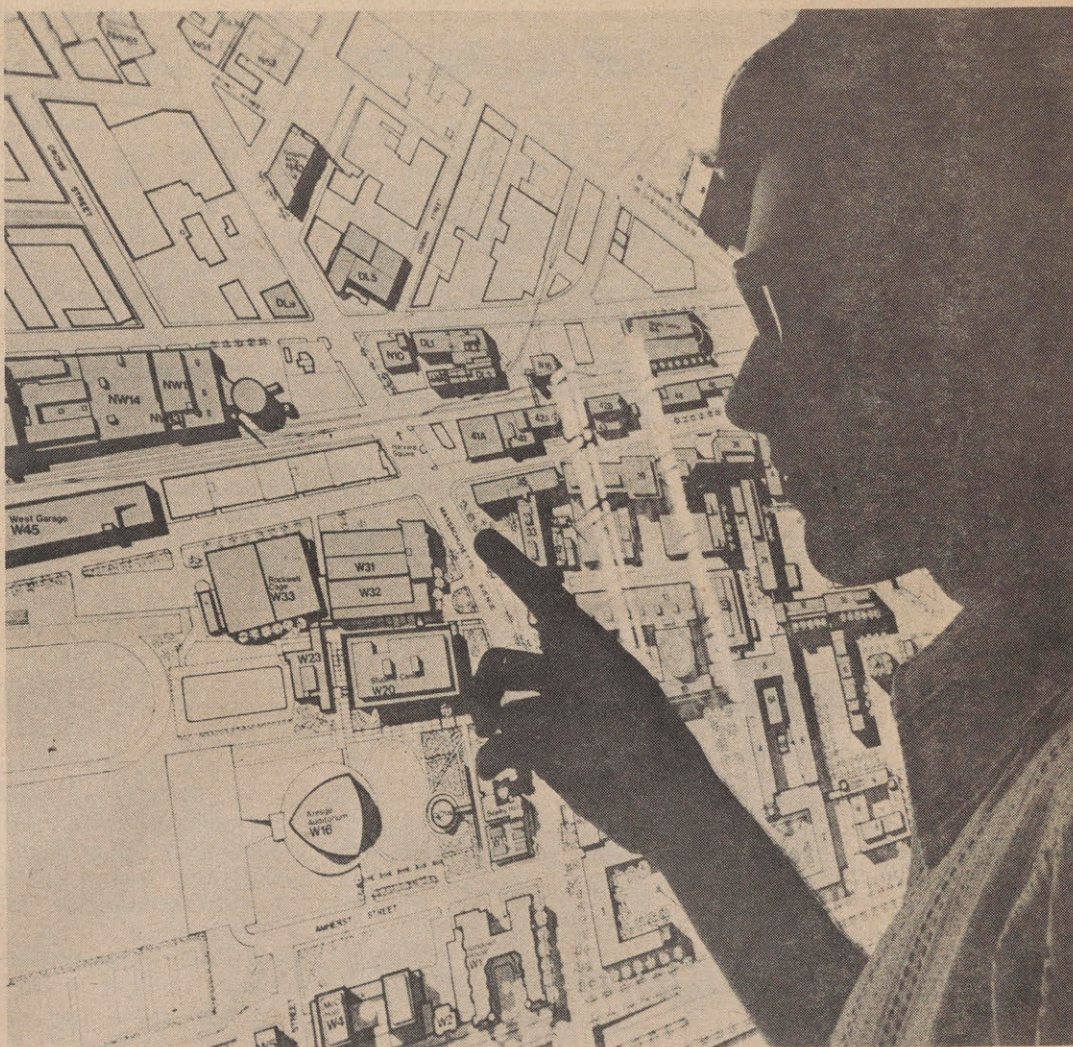
FRESHMEN women get acquainted at Great Court picnic that formally opened Residence/Orientation week. They are, from the left, Edna S. Summers of Michigan City, Ind., Susan M. Nelson of Duluth, Minn., and Janice L. Izenberg of Potomac, Md. The Class of 1977 includes 124 women—a record percentage. They will be among approximately 500 undergraduate women enrolled at MIT this year, double the number enrolled five years ago.

It All Begins Here

The freshmen came, saw and created something new—the Class of 1977—at MIT last week. The photographs show some of them as they arrived for the Residence/Orientation program, which is continuing this week.

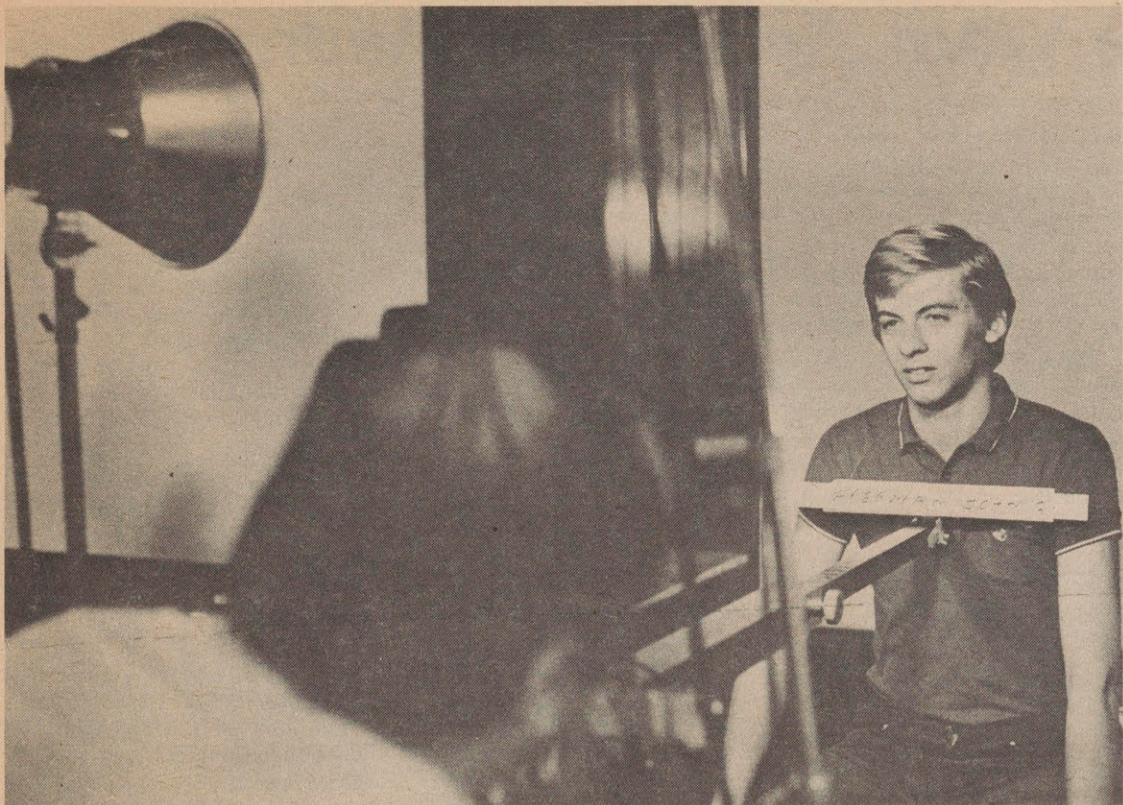


AN EARLY ARRIVAL, Ronald J. Watro of Rochester, N.Y., waits in the corridor outside the West Lounge in the Student Center. The lounge was the Residence/Orientation center for the approximately 900 freshmen who arrived on campus last week. Ron brought his trombone with him—he expects to audition for the concert band—and said his initial plans included looking for a job.



CHECKING OUT the illuminated campus map in the Building 7 lobby is Gary M. Scher, who drove to Cambridge with his father from his home in Denver, Colo. Finding their way around campus is an unofficial, but traditional, part of Residence/Orientation week for freshmen and transfer students. The R/O week program continues this week and formally concludes Sunday with a President's Reception for parents. The Labor Day

weekend program included fraternity rushing, open house in dormitories and fraternity pledging. This week the freshmen are getting acquainted with faculty members, learning about subject options and special programs, taking tours, learning about the Institute's athletic facilities and programs and getting a fill-in on student activities.



ONE OF THE rituals of freshman orientation is the identification photo. Having his picture taken in the R/O center is John G. Akerman of Stockholm,

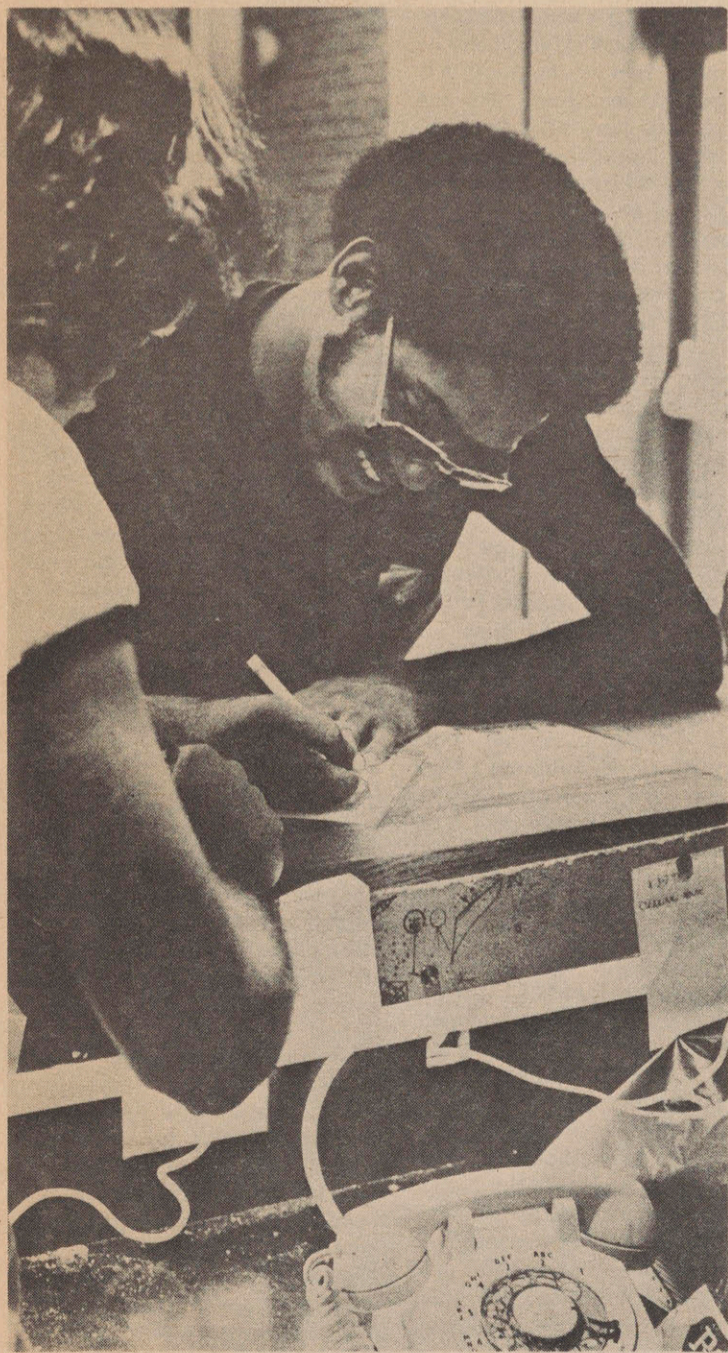
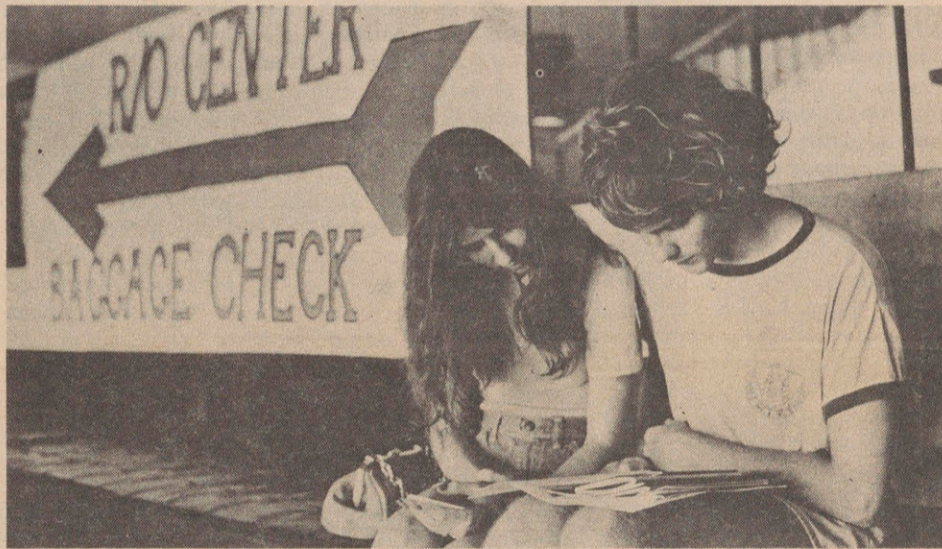
Sweden, one of the freshmen representing 30 foreign countries. A Canadian delegation of eight students was the largest from a single country.



PRESIDENT JEROME B. WIESNER chats with Dorrie Zimmerman of Buffalo, N.Y., at freshman picnic. In a talk to the new students, Dr. Wiesner told them to use their years at MIT to "get a broad range of experiences and allow all of your talents and the many sides of your personality to develop."

—Photos by Susan Pogany and Sheldon Lowenthal

JUDITH THOMPSON of Spartanburg, S.C., had some special help getting settled into MIT. With her was her husband of three months, David Thompson, a second term freshman. They met in high school in Spartanburg and were married there June 2. The MIT couple will live at Westgate.



AMONG THE SMITHS arriving with the freshmen was Ian Smith of Trinidad, who is shown checking in at his temporary quarters at MacGregor House. He said he found the Cambridge weather hot, was looking forward especially to the fall foliage and had brought along a bottle of hot spices to give his food the taste he likes.



LOGAN AIRPORT in Boston was the arrival point for many MIT freshmen. Here four of them are met at the airport by student greeters Anthony P. Cortizas of Winchester, Mass., left, and Edwin A. Richard of Seattle, Wash., fourth from left, who arranged for transportation to the Institute. With them, from the left, are Robert E. Meyer and James W. Pollock, both of Oak Ridge, Tenn.;

William A. Gilchrist of St. Albans, N.Y., and Jeffrey P. Singer of Plainview, N.Y. New York sent more freshmen to MIT than any other state—187—and Massachusetts was second with 113. The members of the class came from 46 states—West Virginia, South Dakota, New Mexico and Utah were unrepresented.

"People Keep Asking Me What Androgyny Means"

(The following article is based on one that appeared recently in *The Christian Science Monitor*. It was adapted from a speech Dr. Mary Rowe gave at Association of MIT Alumnae Centennial Convocation.)

"Should men be able to cry sometimes, if they want to? Would not more men join the nurturant professions—and care for children and colleagues—if they felt they could?"

"And why is it so hard for women to be innovative, financially independent? Why can't they have wider career options with better chances for success?"

"In other words, I think we need a new vision of men and women at home and at work, an androgynous vision."

Dr. Mary P. Rowe, economist and special assistant to the president and chancellor of the Massachusetts Institute of Technology (MIT), was discussing her own particular point of view, as an economist, in the reorganization of the work lives of men and women.

"Androgynous people express spiritually both 'masculine' and 'feminine' qualities to the extent that they choose," Dr. Rowe explained. "They can be gentle and strong, wise and tender, dynamic and passive at times. Androgyny means that what people do in areas now sex-stereotyped shall not be determined by sex-typing but by personal choice and ability."

"Many people believe that our women are supposed to be passive, adaptive, patient, responsive, receptive, unaggressive, and dependent, and that our men are supposed to be aggressive, competitive, hard-working, and powerful—masters of women, leaders of men. Many believe this has worked pretty well. And others often ask me, 'Even if we haven't gotten along very well with our stereotypes, what makes you think we'll change?'"

What will change the status quo?

Some pretty strong forces are moving us toward androgyny. Two hundred years ago, on the farms, men and women both worked more or less without salary, side by side in a joint enterprise for survival. Their work days were usually from dawn to dark. They had four or five children, perhaps, and both parents reared and trained these children.

Then men began to leave the home work place. They earned money; some gained status, power. They found more male colleagues. Women took responsibility for most homes and children.

Little by little, in modern factories and offices, the paid employment of men became separate from home (except for business entertaining). Men got used to being personally taken care of—without directly taking care of others. They delegated new care-taking duties to a new female occupation—the office wife.

On the other hand, women got used to being supported. And as mechanized kitchens and packaged products appeared, along with more and more apartments, for the first time in history some women found their only job to be caring for one or two small children.

The right to salaries, to status, to power remained predominantly with men. "Work," meaning paid work, became a male right. Caring and nurturing and loving became a female right. Objective processes, rational thought became man's pride. Subjective, intuitional processes became women's province.

Unpaid work was left to women. And our society came so to value money that a full-time homemaker with five children and all her husband's business entertaining will say she "doesn't work."

Do you see changes in the future?

Yes, irresistibly. I've described only a stereotype, but that stereotype is giving way. For instance:

The textile industries and World Wars I and II drew women into paid work. Then in the 1960's, strong demands for workers in occupations that are now stereotyped for women pushed them further into paid work.

The old idea that "biology is destiny" is no longer true. The birth rate is down to fewer than two children per family, and pressures are strong to limit family size.

Day care is more acceptable. Smaller homes and more services outside the home are bringing changes, too.

Rising family expenses, together with increasing numbers of single, widowed, and divorced women are keeping the employment of women expanding.

Aren't people satisfied with the status quo?

I think they are not. We hear many questions being asked by hard-working men and women. "Why," women ask, "are we basically restricted to 10 or 12 'women's' occupations, out of the hundreds that exist? Why are we paid 60 percent of men's wages, and why is this wage gap still widening?"

By the same token, men have some questions: "Why should we fight the rat race? What did I spend my life for anyway, if my children don't know me or care for my values?"

Many women would like opportunities to be assertive, perseverant, ambitious, self-confident, creative, independent, to work with other adults, to receive equal pay for equal work. Many men would like chances to be tender, nurturant, warm-hearted, sensitive, expressive. Men want equal satisfaction for hours lived.

How shall we provide these new options for men and women so they can be androgynous?

We must break stereotypes in men's and women's thinking. And stereotypes start early. I know a PhD study of men watching their babies in a hospital nursery. The interviewer says, "What do you think of your baby?" The replies are either "Look how vigorous, how angry, how athletic, how active!" or "Look how dainty, how cuddly, how cute!" and we can guess which sex gets which comments, even though the father obviously doesn't have any objective knowledge of his child.

We need to break stereotypes in children's books, in newspapers, in the office, on TV—especially on TV, which our children watch so many hours a day.

The androgynous life requires new options for work, new ways, for instance, for shared jobs in the home and out of the home. At a nearby college the first couple to share an academic appointment was really eyed askance. Now, a year or two later, there are many shared appointments. And because work and home are nearby at that college, the couples find it easier to share home and work.

Suppose we re-structure work options between husbands and wives. Many families wouldn't change at all; they like their divisions of labor. And of course, in millions of families both parents already work inside and outside the home. In fact, one third of all

mothers of preschool children already are in paid employment and at least one fifth of all child-care arrangements of such mothers are the fathers. But if we had equal pay and no stereotyping, I'm convinced many fathers would choose to be house-husbands—not necessarily life-long, but happily for a year here, a summer there. And many mothers would choose more paid employment. Probably many young parents would choose, if they could, to



Mary Potter Rowe

work both inside and outside the home—say three-quarters time in paid and unpaid employment for both father and mother.

The androgynous life requires support of extended family structures that really will work. Families often used to have live-in grandparents or servants. Not today. Now we need good child-care centers in apartment buildings, at work, in high schools, near foster-grandparents programs. Federal programs to pay retired persons in child-care are important reintegrations of age groups.

Will the coming of androgyny take time?

Of course it will. Because of social structures and stereotyped thinking. Some people ask, "What of biological differences? Aren't men better adapted to the rugged competitions of paid work, and women to homemaking?" This is a fair question. But here are my own responses to it:

First, the structure of work has changed. For instance, a university president is not required to be a hunter, shooting buffalo. His or her real function is to listen, to take care of people, to nurture and to build. Certainly most of our executives today could happily be androgynous in that they must play the so-called feminine roles much of the time: They must get along with everyone, they must soothe, care for, harmonize.

Second—and this is important—our knowledge of sex differences derives mainly from reports of observations that exclude the middle, which exclude the overlap where the sexes are similar. Dozens of studies of sex differences depend on item analyses that dropped the 80 or 90 percent overlap between the sexes to report the 10 or 20 percent male/female differences.

Androgyny doesn't require 50-50 distributions in every profession. It suggests that the 80 or 90 percent of men and women who share similar aptitudes be in similar jobs with similar job ladders.

There's another important social question that has to do with children and family life. I recently reviewed dozens of studies on the effects of maternal paid employment. With Dr. Mary Howell of Harvard, I believe there is little

evidence that maternal employment by itself will help or hurt children and family life. Instead, we learn mothers who work in paid and unpaid employment, in accordance with their wishes to do so, have happier children and families. That is, it seems better for children and families if parents work where they are happiest—a cliché, perhaps, but also a profound philosophy underlying the theory of androgyny.

If androgyny is such a reasonable idea, why are we slow in embracing it?

I think it's partly because of deep feelings we all have. You know Pogo's statement, "I have searched and searched for the person who is in my way, and I have found her—and she is me!"

Some of our deepest conflicts come from half-buried feelings, the result, perhaps, of our teaching competition instead of cooperation, of the battle-of-the-sexes philosophy that maleness and femaleness are mutually exclusive conditions. For too long, we've believed that men should suppress their tender, nurturant selves, women their rational, instrumental selves.

But as we contemplate androgyny, begin to reorganize toward it, all of us will often be deeply ambivalent, cautious, thoughtful. Power, status, money, security seem to be at stake. But I believe we can reduce our anxieties as we understand ourselves better.

For instance, many research studies show that we build inner conflict into women about success. My own generation of women was taught to fear success in paid employment, taught that it would bring ruin into one's personal life. For example, for a wife to be more breadwinner than her husband—a situation women avoid like the plague; and that attitude automatically limits the extent to which they will innovate or seek well-paying jobs.

Therefore a whole generation of modern feminists have taken the issues to be far more "all or nothing" than they need to be. Many of these women have felt that they had to give up men, marriage, and children to gain equality. But is not this accepting an old wrong polarization of issues—career or family, instead of working toward androgyny? (By the way, though, I certainly wouldn't criticize any individual for choices she felt she had to make. For although I believe androgyny is possible, getting there isn't easy.)

How does a woman learn to choose androgyny rather than polarization and militancy? How can we learn a commonality of family interests rather than a divergence?

We've learned some fascinating facts that can help us. For instance, the old cliché that "behind every successful man is a supporting woman" has, we find, a corollary: For most women, having a true career choice depends on supportive males. Fathers have enormous influence on the careers of their daughters, we find. Male peers, husbands, and mentors are crucial to the career options of the women about them. In this society, an integrated and successful life (combining paid work and unpaid work) is most likely a woman's inheritance from a man. Without male approval and encouragement, most women in our society relapse into the "all or nothing" choice or make unsuccessful attempts at career and family.

Have you had supportive men in your life?

Yes. A brother, a physician, several mentors, and friends—but let me also say I have a most remarkable mother.

Why are men in general reluctant to let women "in?"

Many reasons can be given: Fear of "momism"; the theory that it's unwomanly for a woman to be "show-off." The complaint, "who'll be left at home to look after me?" is still another. Some men fear that if women can create life and also be creative on the job, "what's left for me?" Will I be obsolete? Many men, trained from childhood to repress emotion, find it hard to believe that they are really needed interpersonally.

But there's considerable evidence that these feelings are not characteristic of secure and interdependent men. Many men easily outgrow these early discomforts as success, marriage, and children bring them an identity and security.

Men and women both need chances to grow in all these matters. Many women, for instance, need to outgrow their dependence and to take responsibility for themselves. But many have lacked the opportunity to find themselves and to evaluate themselves in the outside world. As unpaid housewives, they do not know what they are "worth" in our monetized world. As housewives consider entry into the paid labor force, they may feel their "opportunity cost" is zero, and they may undervalue themselves and their skills. The combination of isolation from the monetized economy and discomfort about success leads many women to low self-esteem and also to resentment

Can we dissolve these polarizations?

Polarizations between the sexes and inside us—between our nurturant selves and our instrumental selves—are not right or necessary in the world to come. We are moving toward each other and toward our other halves. I believe both men and women have much to gain from androgyny.

Men learn that their options to sing, to decorate, to garden, to play, to cry, open up huge areas of self once blocked off. Their relations with women become much deeper, much less scary. And their women complain less, as they, too, see what financial responsibility and paid employment are like.

Men on the whole, gain options to love. Women stand to gain equal pay for equal work, and enormously wider opportunities for independence and status and creativity. Women, on the whole, gain options for their work. Wider opportunities to love and to work mean more variety, more interest, more companionship, more joy in the 24 hours of the day. Androgyny means wider choice of both love and work for both men and women.

But could this all be just foolish idealism?

Let me paraphrase a statement by Catherine Stimpson: An androgynist insists that grief may be lessened or transformed through cooperation and will. We've all seen the tragic vision of culture crushing personality; of power, too often assigned to one sex, running wild into war and corruption; of widespread loneliness and massive human waste. Yet the androgynist assents, silently or out loud, to the possibility that some tragedies will become obsolete.