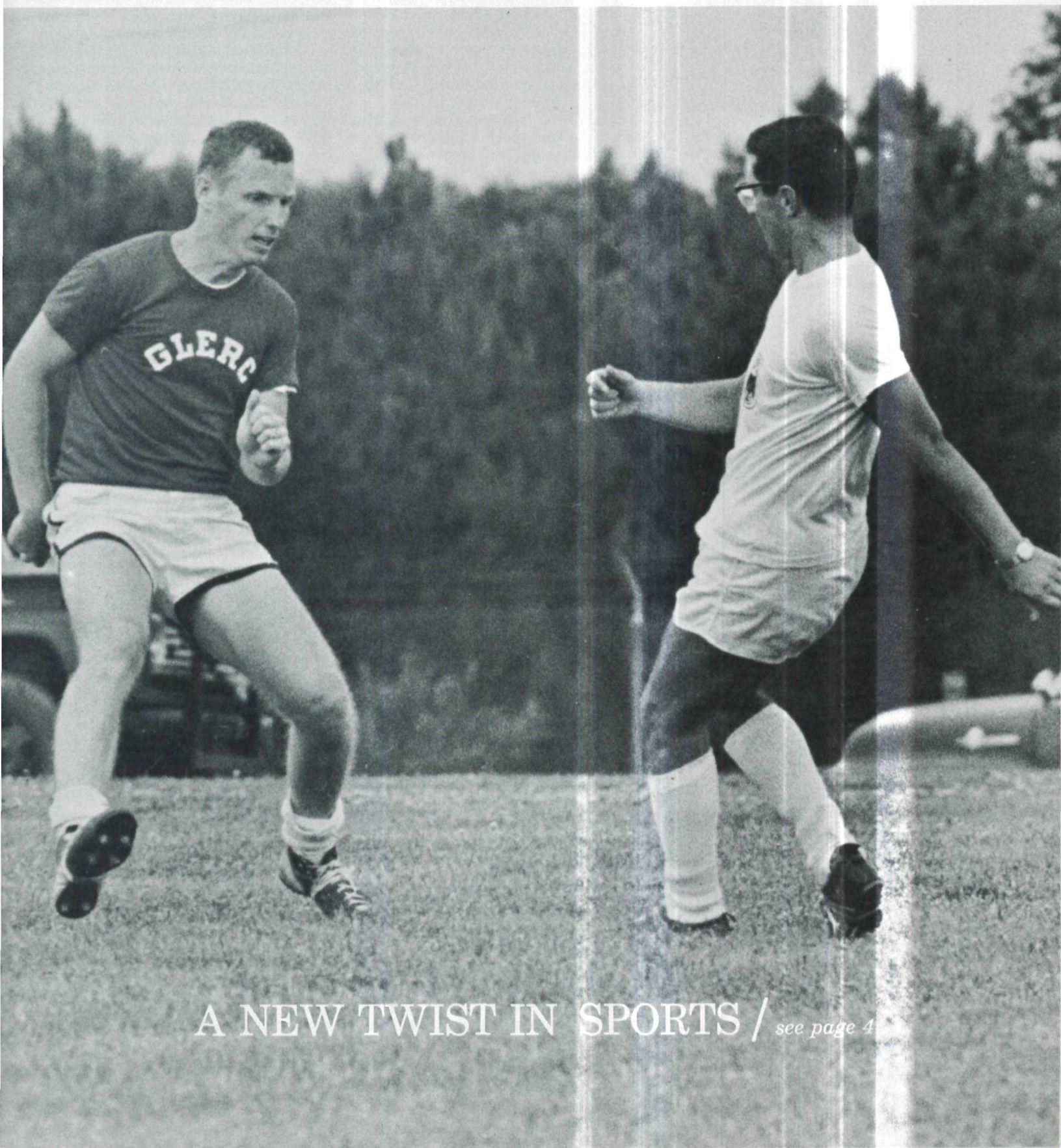


Engineering and space sciences / 10    Columbine, the hungry buffalo / 17

THE  
JULY  
1963

# GEORGIA TECH

ALUMNUS



A NEW TWIST IN SPORTS / *see page 4*





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# Ramblin'-

## the editor's notes

▲ COMMENCEMENT might mean *beginning* to brother Webster, but to those of us left around a campus year after year in June, it symbolizes *ending*—a poignant, recurring tragedy peculiar to academic life.

Each year at this time as the boys who have hung around this office for four or five years (in the case of photographers this has been stretched to six or seven years) drift away, we begin to feel weary and deserted like the old soldier who must content himself with thoughts of defending his vegetable garden as he watches the young going off to war.

And each year, we get the same feeling about the group—this was the best lot of them all; there'll never be another group like this one. But, there always is, a fact that might explain in part the perseverance of the human spirit.

\* \* \*

▲ WE HAVE TO GO BACK to that last statement again this year with even more belief in its validity than ever before. We can't remember a better year for student publications than the one just completed.

*The Technique*, shaky and confused a year ago, suddenly came to life under the first non-fraternity, co-op student to edit it in its 52-year history. Mike Rogers is his name. And he edited the paper with the unlikely combination of subtleness, conservative political views, and daring editorial approaches. He didn't hesitate to raise his lance in combat when he felt that he must get into a fight. But he selected no windmills with which to do battle. He was a rare and dignified editor who made a mark for the others to reach towards.

*The Blue Print*, a bust of enormous proportions a year ago, became the best annual in the past 10 years as Ed Joy, the editor, showed his organizational capabilities by producing this book with practically the same staff that had flopped 12 months ago.

*The Engineer*, which brought mumbles of threatened extinction from the publication board in 1962, returned to being a good technical magazine under Thos Muller who had been an associate editor on *The Rambler* the year before.

*The Rambler* changed little during the year as the same man, Charlie Edmondson, a highest-honor graduate in Indus-

trial Engineering, completed his second year of editing the magazine.

As faculty advisor for the *Rambler*, we can assume that it will be a long time before we get another editor as strong as Charlie. Usually the good ones are hanging on the academic ropes rather than pulling down 3.6 averages. But then, you never can tell.

\* \* \*

▲ ONE OF the reasons for the exceptional year in Tech publications was a group of especially talented photographers headed by a junior EE student from Harrison, New York, named Bill Sumits, Jr. You have seen Bill's work a great deal in the *Alumnus* this year, and we hope you will be seeing it even more during the coming eight issues (that is if he solves his academic problems). His photograph of the lone man in the stadium after the LSU game which ran in our November issue was recently selected as one of the 25 best photographs to appear in an American alumni or university magazine during 1962-63.

Bill is the son of the chief of the LIFE magazine photographic laboratory and the director of the photo pool at all of the man-in-space launchings from Canaveral. Shy and unassuming, Bill doesn't trade on his father's reputation and has developed more in one year than any photographer we have ever known with the possible exception of Bill Diehl.

He is the second student photographer in two years to bring the *Alumnus* this coveted honor. And he is the only photographer we have known who also won the Army ROTC award as the best rifle shot at Georgia Tech.

\* \* \*

▲ COMMENCEMENT brings its share of laughs to the campus each year. And the funniest event of the entire week always seems to be the "wives' diploma" ceremonies. It has been held each year since 1949 at 1:00 P.M., a couple of hours after the formal Saturday commencement exercises.

Presiding over the unique ceremonies is George C. Griffin, originator of the idea of giving a special diploma to the wives of Tech students. This year we attended these ceremonies just for a change of pace. Here is a play-by-play account of the event:



At 12:50 P.M., George Griffin walked into the EE Auditorium carrying his academic ropes which were wrapped around two old golf clubs (this one we never even tried to figure out). At this time, the large auditorium was almost full.

At 12:55, George wandered out from behind the curtain with his academic garb draped over his shoulders and deposited his cap and a book on the podium and then returned backstage.

At 12:58, he strolled back out, looked out at the crowd, fumbled with some notes, looked at the book, and then announced, "I better go back and get my specs." The crowd began to laugh. At 1:00, he reappeared after the curtain moved considerably as he searched for the way out from backstage. He blew into the microphone, told three straight jokes about microphone failure at Georgia Tech, gave everyone permission to leave as soon as they received their diplomas, and announced that the doggone diplomas hadn't arrived yet. At 1:01, senior class president, Terry Geber, arrived with the diplomas and Griffin began the ceremonies.

His commencement address consisted of a series of jokes about wives, sorry Tech boys, old football players, and a reading from McGuffies Reader (Fifth Grade edition) during which he stumbled over 50% of the words and totally confused everybody in the house including himself. His reading and joke-telling were both punctuated with that laugh of his, an impossible one to describe. The audience joined in the fun and laughed along with him. If we live to be 100, we shall never forget the sight of George standing in front of that crowd with his hands on his hips and his gown open, telling one joke after another. It saved the week for us and for everyone else in the audience.

\* \* \*

▲ GEORGE then began passing out the diplomas, calling out names quicker than the girls could get to the front of the auditorium. As he pulled each diploma from the stack, he threw the separating tissues to the front of the floor where they were immediately sucked into the air-intake section of the air conditioning system. We'll bet that janitor had a job Monday morning.

Among those getting the Husband Engineering degree was Jane Wallace, who George asked up on the stage where he told the audience he was buying this diploma for his girl, Jane, because her husband had been too cheap to buy it when he graduated some 14 years ago.

Next year will be George's last one for this ceremony. We shall never see his like again.

**B. W.**

**G**reetings to students and  
alumni everywhere. We share  
your interest in the advancement  
of our alma mater, Georgia Tech.



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# THE JULY 1963 GEORGIA TECH ALUMNUS

Volume 41

Number 8

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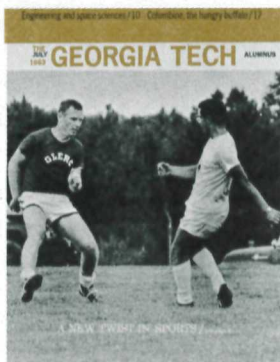
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## THE COVER



A group of students have added a new twist to sports at Georgia Tech with the formation of a soccer club. The club had a season's record of 7 wins, 1 loss and 1 tie in matches played all over the South. These students pay their own travel expenses, buy their own uniforms, and do it all just for the sake of sport.

*Photograph by Bill Diehl, Jr.*

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# THE FACE OF GEORGIA TECH XIII.

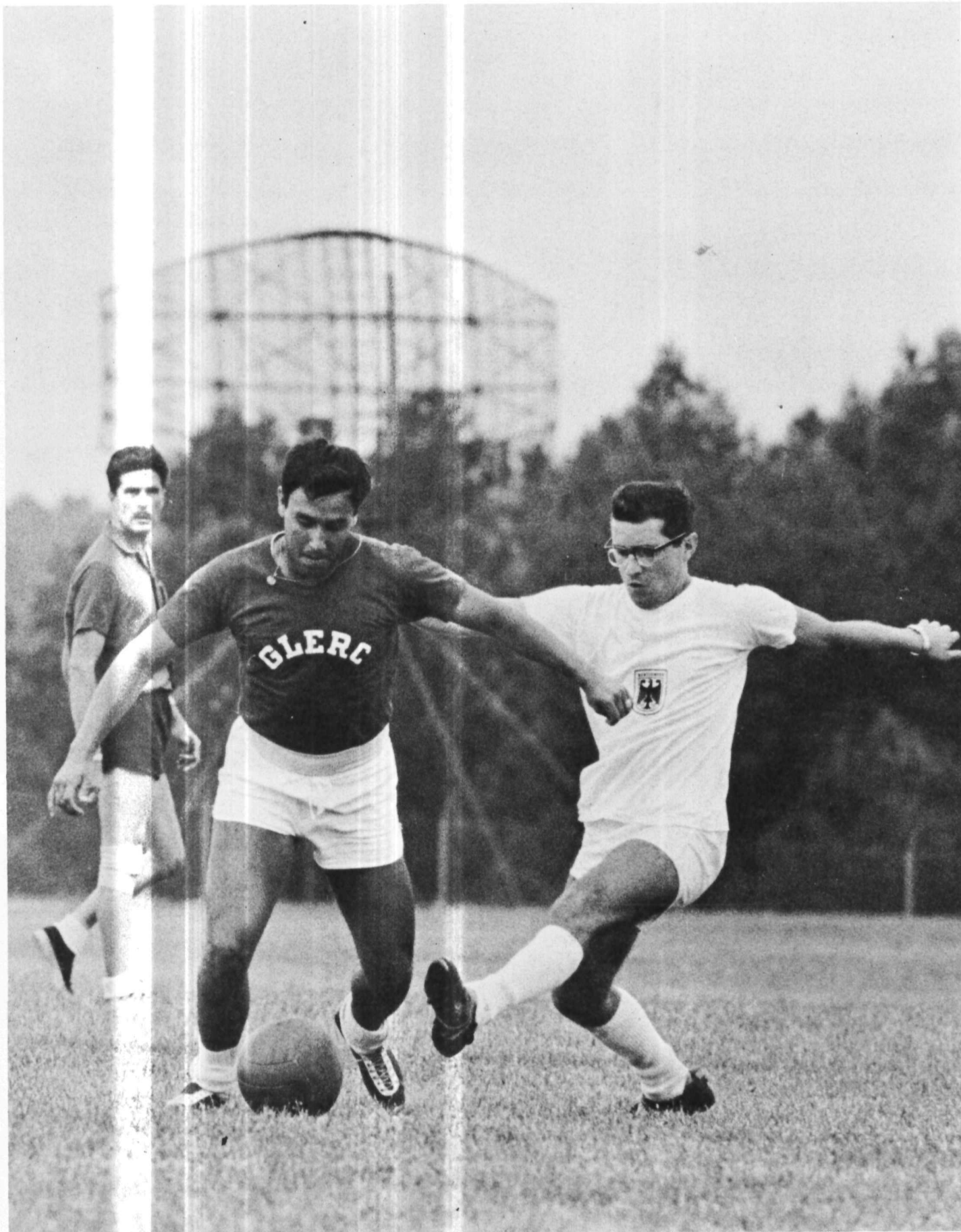
**I**N AN ERA of subsidized sport and spectator pressure, it is a welcome relief to come upon a group such as the Georgia Tech Soccer Club. Here are 26 students from 12 different countries playing an international sport very well, and paying their own way just to participate in a game. Coached by Dr. Paul Mayer, Tech Civil Engineering professor from Germany, this year's soccer club boasted a 7-1-1 record and twice trounced the University of Florida club which had prior to the first Tech defeat won 40 straight matches.

The star of the soccer club is Jorge Enderica, shown on the right approaching the ball during a match against the German Air Force team, the only squad to beat Tech all season.

With radar antennae and the Lockheed Marietta plant in the background, the Tech club partially avenged the previous 2-3 defeat in Huntsville, by tying the Germans, 3-3, on the day these pictures were made.

Enderica, who had a successful tryout as an extra-point kicker with the Tech football team in the spring of 1962 before the SEC declared him ineligible because he held a partial swimming scholarship, is well-known in his home country of Ecuador for his soccer prowess. His teammates are Tech students from Columbia, Costa Rica, Paraguay, Venezuela, Argentina, Honduras, Peru, Germany, England, and the United States. They buy their own uniforms (the black ones they are wearing during this game were borrowed from Lockheed because the German team showed up in white) and pay their own transportation on out-of-town trips. The soccer club is a recognized student activity but not a recognized athletic team. With the excitement of the game and the weak records of many other Tech minor sports, perhaps the Athletic Association might consider backing this group someday. That is if the boys want any backing. The way they played this year perhaps they are better off just playing for fun and shell-ing out for the privilege.

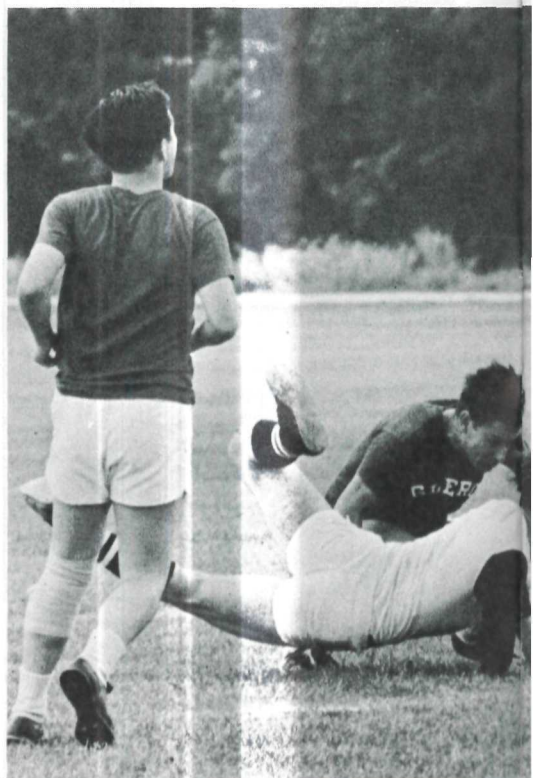
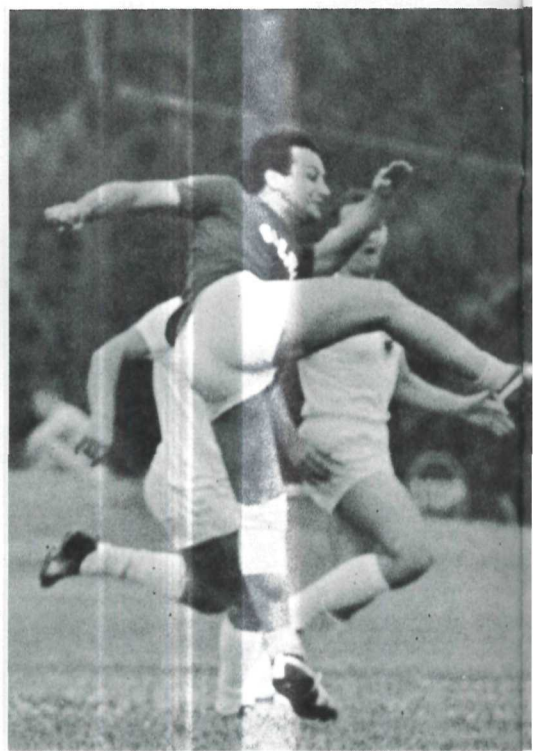






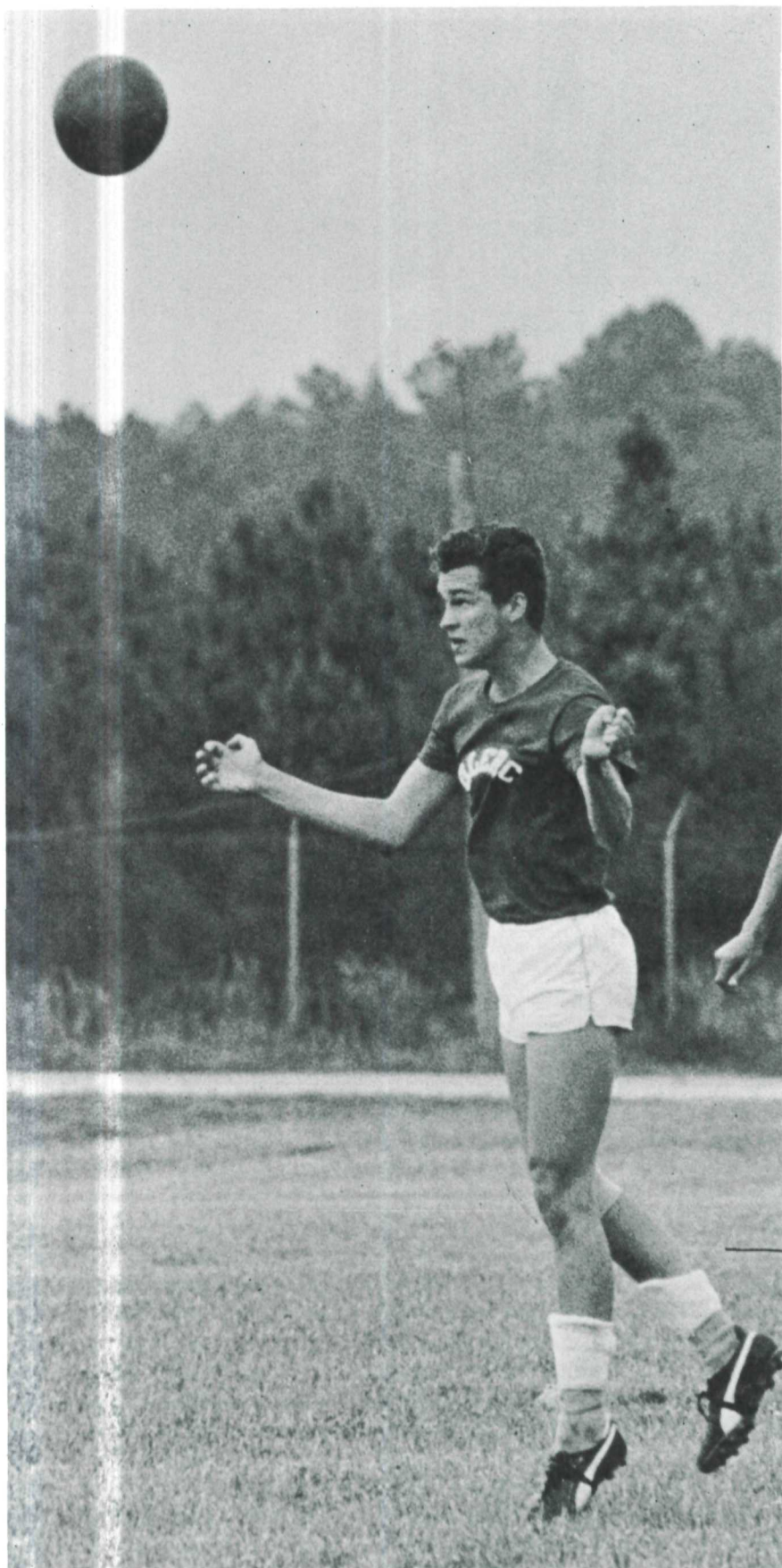


*A SPORT FULL  
OF GRACE  
AND SPILLS*

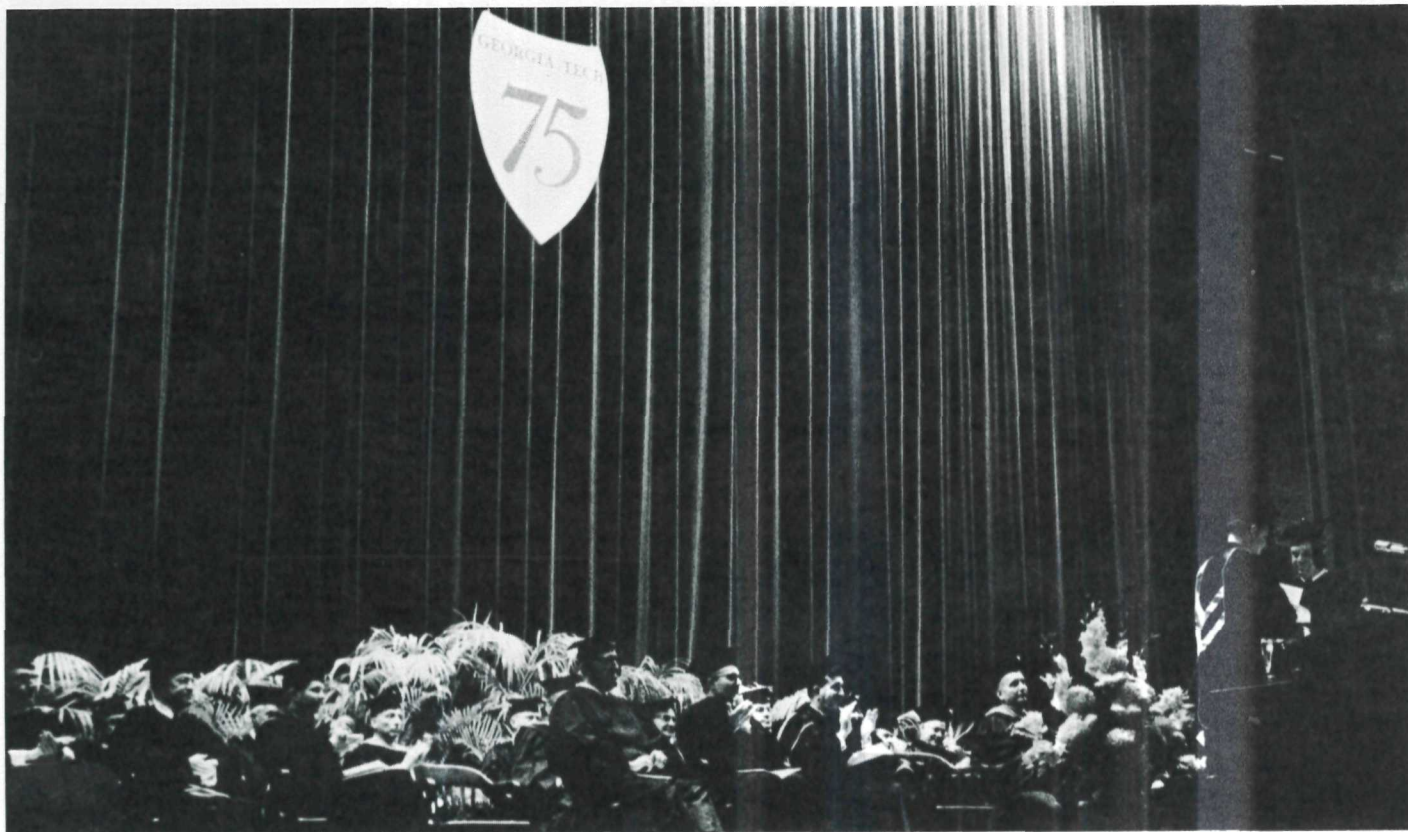




Photographed for the *Alumnus*  
by Bill Diehl, Jr.







*Grey Hodges*

George Woodruff, '17, receives the 1963 Alumni Distinguished Service Award from President Harrison during the 75th Anniversary Commencement held on June 8.

## The 75th Anniversary Commencement produces the largest crop of doctorates in Tech's history

GEORGIA TECH granted 1,116 degrees at the 75th Anniversary Commencement Exercises held on June 8 at the Fox Theatre. Among the candidates was a record number of 31 doctorates, over 50% more than in any previous year. Master's degrees also set a record when 184 received the Institute's second highest degree.

Among the graduates were four women, two of which finished with highest honors. Top man in the class was William H. Miller, a 3.9 chemistry major from Jackson, Mississippi. He was followed by Arnold F. Stalder, Ch.E., and Anne Sheila Minkin, Math, both with 3.8 averages.

In the Commencement speech, President Kennedy's top scientific and technological advisor, Dr. Jerome Wiesner, urged an upgrading of education in America. The director of the President's Office of Science and Technology, told the Tech graduates and guests that "the field of education has

been probably one of the most backward fields in our modern society."

In a talk entitled "Making the Most of Our Opportunities," he recommended teaching aids, ranging from models to recordings and learning machines, be employed to enhance a student's ability to learn. Wiesner said that until a few years ago, the same scientists and engineers in our universities and schools of technology who so ably organized teams to uncover scientific knowledge and exploit it, "failed unbelievably to recognize that these same methods could be applied to teaching — that the art of teaching could become an applied science."

He declared that all these possibilities for improving education have existed for a long time.

"What was lacking," he continued, "was recognition of the magnitude of the effort required to do the job adequately."



ly. It is precisely this component which has been added by recent curriculum reform programs. They have brought men and money to the task. The administration education bills place heavy emphasis on curriculum development activities."

Wiesner told the graduates that technology is the most powerful force at work in the world today.

"Our present economic well-being and position as strongest nation on earth stems in substantial measure from the fact that in the past we have been more successful than any other nation in employing this force.

"You graduates of Georgia Tech, having chosen the fields of engineering or science as your life's work, will play a role in maintaining and directing that force in years ahead."

He then outlined the growth of government support in research and development, saying that he knew of no other field of endeavor where the interplay between the federal government and the private sector, especially with the universities, has been as effective and responsible.

"American science and technology," he declared, "are without equal today due primarily to research and development efforts motivated by national security needs. These efforts have contributed in a major way to many of our civilian industries."

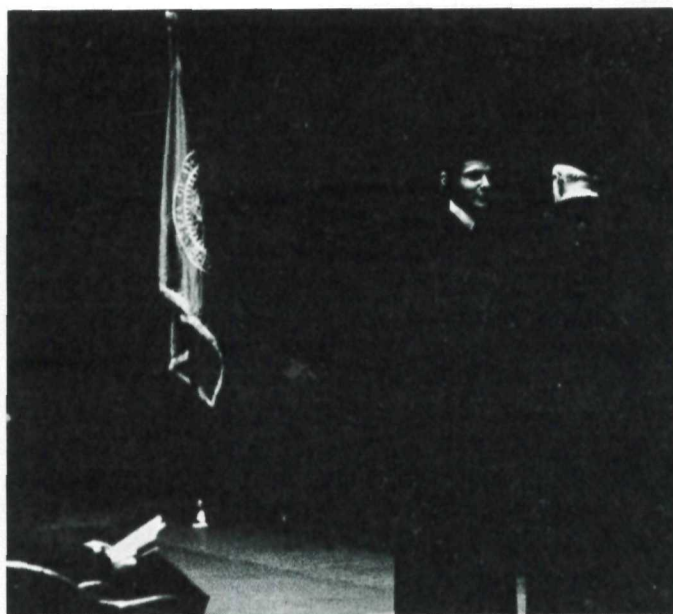
Wiesner examined some of the current problems in science and technology for the future in a series of questions and answers, and mentioned a number of challenges now confronting scientists.

Why do research and development? "Society has learned that investments of resources and intellectual effort in education and research are among the most rewarding that can be made. They are rewarding spiritually as well as materially because studies of the physical universe and of living things provide an ever-increasing appreciation for the scheme of the universe and man's actual place in it."

How much can we afford? His answer here involved two counter questions. "How could we estimate the economic return that would result from exploring the atom? How do you cost account the value of penicillin or the Salk Vaccine?"

Are there enough talented people to support the ever-growing efforts in science and technology? "A recent study by the President's Science Advisory Committee of scientific and technical manpower problems concluded that there was still a vast untapped reservoir of people who have the ability for this work, but we must attract such people to scientific and technological careers."

In listing some of the challenges of modern civilization, Dr. Wiesner asked his audience to consider the broad area of natural resources: "In this category, are such diverse problems as maintaining adequate water supplies for our growing population; protecting the atmosphere from pollution; maintaining the productivity of our agricultural lands; and ensuring adequate supplies of raw materials to meet the ever-growing needs of our industries."



The traditional "passing of the wallet" from Alumni President Ira Hardin to Senior President Terry Gerber and a class becomes active.

Turning to another area, he said we have recently become aware of the fact that we are exposing ourselves to vast variety of chemicals in small but continuous doses, from automobile exhausts, from household chemicals, from pesticides, from radioactivity.

"On the short term," he said, "none of these appear to be harmful to humans at the current exposure levels. On the long term, we don't know, and to find out will require a great deal of research. If they are harmful, finding substitutes will pose an additional problem for technologists."

Wiesner said that American science and technological prowess should be put to use in aiding developing nations.

"Our greatest problem," he concluded, "is to learn to live together. This problem has both internal as well as external manifestations for most nations."

During the Commencement ceremonies, George W. Woodruff, '17, received the 1963 Alumni Distinguished Service Award from President Harrison. Woodruff, longtime leader in education in Georgia, was cited for "his long and dedicated record of devotion to the cause of higher education in Georgia exemplified by his service as a trustee of the Georgia Tech Foundation, Incorporated, Agnes Scott College, and Emory University . . . and in gratitude for the honor that he has brought to the Georgia Institute of Technology through his business and civic leadership."

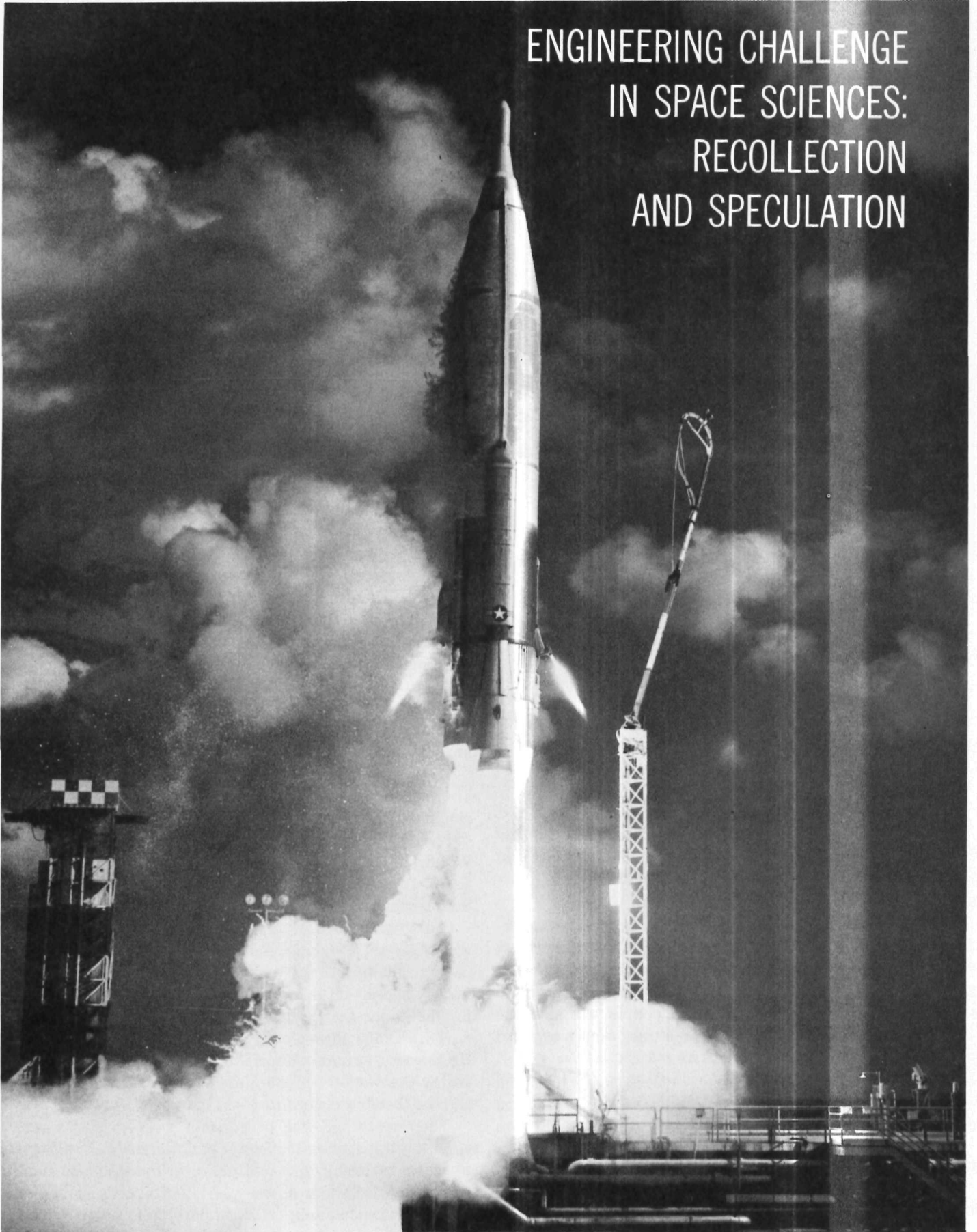
Outgoing Alumni Association President Ira Hardin presented the wallet symbolic of the Class of 1963 membership in the Association to Class President Terry Gerber.

The invocation and benediction were given by noted Atlanta businessman-minister, Dr. William M. Suttles, vice president of Rich's, Inc. and pastor of the Haralson Baptist Church.

After the ceremonies, the Alumni Association hosted a luncheon for the graduates and their families.



ENGINEERING CHALLENGE  
IN SPACE SCIENCES:  
RECOLLECTION  
AND SPECULATION





## Speaking at Tech during a 75th Anniversary program, Jesse L. Mitchell of the Office of Space Sciences of NASA offers some background on our space program as well as takes a look at what the future holds in this area

**I**N 1888, when Georgia Tech was established, the elements of modern science and engineering were at most barely discernible.

The features of Mars widely interpreted as canals, based on the observations of Schiaparelli beginning in 1877, were the cause of speculation regarding the possibility of life on that planet. The particulate nature of an electric discharge in an evacuated tube, the particles later to be called electrons, was yet to be demonstrated by J. J. Thompson (not until nine years later).

At the time Tech came into being, the concept of the automobile as a means of transportation was just evolving in the minds and by the hands of the early pioneers—Daimler, Benz, Duryea, Olds and Ford to name a few. Hertz had demonstrated the production and reception of radio waves in Germany about one year before. Edison had made his first successful electric lamp nine years before. It would be 15 years in the future before the Wright Brothers' first flight at Kitty Hawk.

In 1888 there were still large areas of our globe unexplored—the Congo River in Africa had been traced by Stanley just nine years before. It would be nearly 15 years before Peary discovered the North Pole and nearly 25 years before Amundsen discovered the South Pole.

Only 75 years after the founding of Georgia Tech, science and engineering have made such great advances that "Future Challenges Associated With Space Exploration" can be considered as a serious topic of discussion. It is all the more amazing in that space exploration involves such a variety of activity today that we can reasonably consider only a small part of that activity, and that part in the broadest general terms. In the five years since the first artificial satellites were placed in orbit by the USSR and the United States, the US alone has a program of space exploration that involves hundreds of thousands of persons in government, both civilian and military; in universities; and in private industry. This program has placed over 100 satellites and probes in orbit around the earth and the sun.

The National Aeronautics and Space Administration (NASA), established in 1958 to conduct the civilian program for the exploration and scientific investigation of space, is engaged in space exploration requiring 3.7 billion dollars in 1963; and has requested funding of 5.7 billion to support its programs in 1964. The largest portion of these amounts will be spent on the research and development for manned flight to the moon—Project Apollo. However, the President has said that our goal is pre-eminence in space. Such pre-eminence requires the accumulation of

scientific and technical knowledge over a wide spectrum of possible areas of space research. Therefore, a significant portion of the NASA Program is devoted to areas of space research other than manned flight. One such area of research is designated Space Sciences. The principal objective of this program is the extension of knowledge. A secondary objective is to obtain environmental data on the earth's upper atmosphere and space for other users, particularly for the manned space program. It is the Space Sciences (in this restricted sense) portion of the United States Space Program which I will discuss briefly today.

I will first sketch the present NASA Space Sciences Program for you in terms of its major flight projects. In order to obtain proper perspective of the possible challenges in this Program during the next 25 years, I will then review some of the highlights of Space Sciences and related areas of space research during the past 25 years. Finally, having convinced you that it is probably impossible to anticipate the future with any accuracy, I will nevertheless attempt to focus on some of the possibilities.

### Today

The tremendous scope of the Space Sciences is evident if one considers that the areas of research in this program extend from the earth itself, throughout interplanetary space to the bodies of our solar system, and on into the outermost regions of the universe. The present program, its objectives, and an indication of the scientific and engineering challenges involved can be illustrated by considering briefly some of the major flight projects.

At this point in time, the Space Sciences Program is in the era of unmanned sounding rockets, satellites and deep space probes. The flight projects have three basic elements: (1) a spacecraft with its scientific instruments; (2) a rocket that launches the spacecraft into its orbit from the earth; and (3) a network of ground-based equipment to record and process the data transmitted from the spacecraft. I will mention without further discussion that a world-wide network of tracking and data acquisition stations is operated by NASA to support all space research and exploration including Space Sciences. Although some of the most significant engineering challenges are involved with the launch vehicles, I will only indicate the types of launch vehicles being used in this program. I will briefly discuss a number of the spacecraft because they better illustrate the nature of the scientific problems we are attacking.

Space Sciences makes use of the capability of the rocket vehicle as a load carrier in order to perform those measure-



ments uniquely available from a satellite or space probe, to look at the earth and its atmosphere from the high ground of space, to look at the sun and other bodies in the solar system, and at the stars and other bodies beyond the solar system from above the obscuring effects of the earth's atmosphere to measure directly the environment of space.

NASA has a series of launch vehicles which provide a wide range of payload capability for Space Sciences projects. Small sounding rockets; such as, the Nike-Cajun, Javelin, Journeyman, and Aerobee are used to place a few tons to a few hundred pounds of scientific payloads, one hundred to several hundred miles up and down through the lower atmosphere. Larger vehicles, the Scout and Delta, are used to place several hundred pounds of spacecraft into a variety of earth or interplanetary orbits, while the Thor-Agena and Atlas-Agena are used for heavier (one thousand pound payloads) orbit missions and for some of the lunar and planetary missions. Under development by the Office of Space Sciences is the Centaur launch vehicle with a high energy propellant liquid hydrogen and oxygen upper stage which will be used primarily for the lunar and planetary missions to carry about twice the payload of the Atlas-Agena.

The spacecraft carried by these rockets vary in complexity and external appearance. There are simple spin stabilized spacecraft with narrow band-width data capability which can carry only a few instruments designed to study a particular phenomenon. There are also more complex spacecraft with complete three axis attitude control and complex wide-band data systems which can carry a large number of instruments designed to study a variety of phenomena simultaneously. The particular type of spacecraft that is used depends on the scientific question which is being asked.

The small simple spin stabilized spacecraft, generally called Explorer satellites weighing at most a few hundred pounds, are usually designed to study a specific scientific phenomenon. For example, Explorers XIV and XV, launched in October 1962, were designed to study the natural and man-made radiation belts surrounding the earth. Alouette, a Canadian-built Explorer type satellite launched by an American-built Thor-Agena vehicle in September 1962, was designed to study the ionosphere using the ground-based technique of radio sounding. Radio waves transmitted from the satellite and reflected from the ionosphere are used to measure the electron content of a portion of the ionosphere. Another Explorer satellite, to be launched later this year, sometimes called IMP for Interplanetary Monitoring Platform, is designed to monitor the particle fluxes associated with solar flares. This satellite will contribute greatly to the timely prediction of such flares in support of manned space flight missions as well as to the general extension of our knowledge of the near earth and interplanetary environment.

There is a very strong correlation of various specific geophysical phenomena with each other and particularly with solar phenomena. The study of these sun-earth relationships (as they are sometimes called) in detail, requires the development of more complex spacecraft. The Orbiting Geophysical Observatory (OGO) now being developed (first launching in about one year) is designed to obtain simultaneous measurements of 20 or more geophysical and solar phenomena. The 1,000 pound spacecraft will be placed into a variety of orbits by Thor-Agena and Atlas-Agena launch vehicles. The OGO will provide a stabilized platform on which to mount the necessary experiment sensors and related equipment in order to study the sun-earth relationships in detail. The satellite will have—a stabilization and control system for pointing the experiment sensors so that they can look at the earth, or at the sun, or along the direction of motion—a large capacity tape recorder storage system in order to provide for continuous data acquisition—a command system capable of selecting over two hundred combinations of experiment and spacecraft functions—multiple data links of wide bandwidth capacity to transmit the data to the ground receiving stations. The development of OGO as a reliable space observatory is an engineering challenge of major magnitude.

The sun is our nearest star and primary source of energy. It is also a major source of hazard to manned space flight because of the solar protons or cosmic rays which it generates. Therefore, in addition to the studies of the sun-earth relationships, the detailed study of the sun itself is an extremely important objective of the Space Sciences Program. Almost a year ago, March 7, 1962, the first Orbiting Solar Observatory (OSO) was placed into an orbit around the earth with instruments designed to point at the sun and to study in detail the X-ray, gamma ray, and ultraviolet radiations coming from the sun. This satellite was engineered to meet a challenge set by the scientific objective to understand more about the sun. That the challenge has been successfully met is indicated by the fact that over 1,200 hours of high quality data have been obtained (about 1,000 times the amount of X-ray and ultraviolet data previously available). Although portions of the satellite such as the tape recorder have ceased to function, the satellite continues to operate in a degraded but satisfactory manner in both a scientific and engineering sense. It continues to acquire useful scientific data from instrumentation which is still being accurately pointed at the sun after nearly a full year in orbit.

Some of the most intriguing questions about the nature and origin of the universe may be answered in part by observations of stars and other stellar bodies in the ultraviolet, infrared, and radio wavelengths that cannot penetrate the earth's atmosphere. The Orbiting Astronomical Observatory (OAO), is a large precisely stabilized satellite being designed and developed for such observations. The design is the result of close cooperation and participation of engineers and scientists. The observatory will consist of a standardized structure, power supply, data storage, com-



mand system, stabilization and control system, and data transmission system. This basic standardized spacecraft weighing over one ton will be able to accommodate a large variety of optical and electronic instrumentation (telescopes) weighing up to one-half ton (total observatory weight nearly two tons). Astronomical telescopes with diameters up to 36 inches are to be carried by the first three observatories. These telescopes and related equipment are being developed under the direction of leading astronomers at the Smithsonian Astrophysical Observatory (SAO), the University of Wisconsin, the Goddard Space Flight Center, and Princeton University. The satellite has guidance and stability requirements exceeding those of any other proposed spacecraft, absolute accuracy of pointing to one minute of arc and ultimate guiding accuracy of 0.1 second of arc during observation of an individual star. The scientific challenge to understand more about the universe is accompanied by the engineering challenge to design, develop, place in orbit, and operate by remote control a miniature Mt. Wilson Observatory.

The scientific exploration of the moon by unmanned space probes has been one of the objectives of the Space Sciences Program since its inception; and the decision to proceed with the manned lunar landing project has intensified NASA's efforts in this area of research. The unmanned exploration of the moon is proceeding in a series of logical steps. The first step is to be carried out by Ranger which is designed to make a hard landing on the moon and to provide television pictures of the lunar surface. This spacecraft is a complex combination of structure, power supply, stabilization and control, data handling and instrument subsystems. The second type of unmanned lunar spacecraft under development is called Surveyor. It will have the capability to soft land on the lunar surface. In addition to the subsystems similar in function to Ranger, this spacecraft will require development of the precise terminal guidance and control systems to effect a soft landing on the moon with precision instrumentation designed to study the lunar surface. Once it has demonstrated a landing on the moon it will serve as a remote observation post for surveying the lunar topography. It will also serve as an observation post for measuring the physical and chemical characteristics of the lunar surface and sub-surface, and the environmental conditions on the moon.

The last part of the Space Sciences Program that I will discuss is the Planetary Program. The fundamental challenge in this program is the same as it was when Schiaparelli first published his observations of Mars—"Is There Life on Other Planets in the Solar System or in Other Parts of the Universe?" The Mariner fly-by of Venus was our first step toward answering this question. This spacecraft and its mission illustrates the current challenge of science and engineering in planetary exploration. The Mariner had to function for 109 days before reaching the planet. During the 180 million mile flight it maintained precise attitude control. It executed a mid-course maneuver on command from the earth and transmitted scientific

data over a distance of 54,000,000 miles with only a three watt transmitter. The signal received on earth by the giant antennas of the deep space tracking network was only one billion billionth of a watt and yet the data came through. Results of this flight are only partially evaluated, but have already added significantly to our knowledge of the magnetic field and mass of the planet Venus. Spacecraft designated Mariners are currently being designed and developed to explore Venus and Mars at every opportunity—about once every 19 months for Venus and every 25 months for Mars.

Briefly then we have reviewed a portion of the US Space Program—that portion called Space Sciences which is aimed at obtaining fundamental knowledge and understanding of the universe. What are the future scientific and engineering challenges five years from now? 15? 25? Before attempting to answer let's go back 25 years and then look at the milestones and challenges that were ahead of space science at that time.

### The Past Twenty-five Years

1938—just a little over a year since Goddard flew a gyro controlled rocket to 7,500 feet altitude. In that year routine use of radiosonde balloons was initiated to provide data on the lower atmosphere. James Wyld made static test firings of a 50 pound thrust regeneratively cooled rocket engine. At the Cal Tech Rocket Research Project (later to become the Jet Propulsion Laboratory (JPL) the solid propellant JATO rocket was conceived. In Germany the rocket research station at Peenemunde; in Russia, rocket test centers at Kazan, Moscow, and Leningrad had been in operation for about a year. Radar was in development both here and in Europe. Electronics was dominated by the vacuum tube. Nuclear fission experiments were being conducted in a number of laboratories. There was a renewed interest in Mars when Orson Wells had a good share of the American radio audience believing that the earth was being invaded by "Martians." In 1932 space science, but for the balloon, was definitely still in the earth bound phase of its development. Some of the elements necessary to get it off the ground had been invented, but none were developed to a point where serious thought or effort was devoted to a Space Sciences Program such as I have described today. Many of the elements of today's program were not yet invented, let alone developed—transistors, solar batteries, etc.

By 1942 we were at war. The world's first nuclear chain reaction had just taken place as had the first successful launch of the V-2 rocket.

By 1945 in spite of the V-2 and partially because of a nuclear reaction the war ended. The WAC Corporal, the first US liquid propellant rocket developed with government funds was launched to 43.5 mile height. In the same year the Rocket Sonde Research Branch of the Naval Research Laboratory (NRL) was constituted to conduct scientific explorations of the upper atmosphere.

The next year, the United States' upper atmosphere research program was initiated with captured V-2 rockets. The Applied Physics Laboratory (APL) of the Johns



## SPACE SCIENCES—continued

Hopkins University undertook to develop a medium altitude rocket, the Aerobee, and NRL directed its efforts to the development of a high altitude sounding rocket later called Viking.

By 1947 the first photographs of earth from 100 miles were taken and Project RAND reported that earth satellites were technically feasible.

The transistor, destined to play a major part in space exploration, was invented in 1948.

In 1949 a Bumper WAC two-stage rocket attained a record altitude of 244 miles and provided information on the ion density in the F region of the ionosphere. In the same year a Martin Viking with upper air pressure and temperature experiments reached 51 miles. Tass reported a Russian upper atmosphere research rocket reached 68 miles. The Long Range Proving Ground at Cape Canaveral was also activated in 1949.

In 1950 a Viking rocket went to 106 miles after being launched from a ship, the USS Norton Sound, to obtain cosmic ray data and pressure temperature data.

A year later the International Council of Scientific Unions decided to hold the Third International Polar Year—later to become known as the International Geophysical Year (IGY).

1952 was the year the first complete liquid rocket engine, having a thrust in excess of 100,000 pounds, was fired for the first time.

In 1953 S. F. Singer proposed Project Mouse, Minimum Orbital Unmanned Satellite Experiment. Redstone Missile No. 1, the grandfather of the first US satellite launching vehicle, was fired from Cape Canaveral.

In 1954 the Orbiter Project was outlined. The Atlas Project, which today—nearly ten years later—provides us with our major space launch vehicle was accelerated. Bell Laboratories announced the invention of the silicon solar battery. The special committee for the IGY recommended the launching of earth satellites for scientific exploration during the IGY.

In 1955 President Eisenhower endorsed the USNC-IGY earth satellite proposal as part of the US participation in IGY and approved plans which established the Vanguard Project. The Russians also announced their intention to launch artificial satellites during IGY.

In 1956 a Symposium on the Scientific Uses of Earth Satellites was held at the University of Michigan with James A. Van Allen as Chairman. This Symposium outlined many of the basic experiments in space science that are being carried out today.

Upper air research was conducted with Aerobee rocket flights from Fort Churchill, Canada in 1956.

October 4, 1957, Sputnik I, the first man-made earth satellite for space science exploration was launched by the USSR. In November, Sputnik II was launched with cosmic ray ultraviolet and X-ray experiments plus the first biomedical orbiting experiment with the dog Laika.

On January 31, 1958, following a revision of the US Program to meet the political challenge of the USSR launchings, Explorer I (an outgrowth of the proposed Orbiter Project) was launched with instrumentation by Van Allen to study cosmic rays. It resulted in the discovery of the trapped radiation belt around the earth. In March 1958 the 3.25 pound Vanguard I was launched into orbit with the first solar battery powered transmitter which is still functioning after nearly five years in orbit. (This so-called "grapefruit" satellite told us the earth is pear shaped.) In 1958 the first Pioneer space probes went out into space 70,000 miles yielding important data on density of micrometers, on the earth's magnetic field, and on trapped radiation.

In January 1959 the first successful deep space probe, the Russian Lunik I, went into orbit around the sun; followed in March by our own Pioneer IV. Lunik III provided the world's first dim view of the other side of the moon and Explorer VII provided significant geophysical data on radiation and magnetic storms.

Pioneer V in 1960 made the first significant measurements in interplanetary space out to a distance of 22.5 million miles from the earth. Explorer VIII detected a layer of helium ions at an altitude of about 1,000 miles. The first data were recovered from an orbiting satellite in August 1960 (Discoverer XIII) and later in August the USSR announced recovery of a biological payload.

Echo, TIROS, TRANSIT, more Explorers, more Sputniks, Discoverers, COSMOS, OSO; a total of over a hundred unmanned spacecraft not only for space science but also for Meteorology, Communication, and Navigation. Finally, man-in-space with Gagarin, Titov, Shepherd and Glenn leading the way.

In 1938 what were the factors with which to predict the next 25 years growth of space science in the United States as a major area of engineering challenge? There were a number of knowns—the scientific questions about the upper atmosphere, the sun, the stars—the current program of ground based and balloon experiments and the technological state-of-the-art in electronics—the technological developments just beginning in rocketry and radar. There were a large number of unknowns. An accurate prediction at that time would have had to foresee the tremendous development (by several orders of magnitude) of known technology; for instance, an increase in rocket thrust from a few hundred pounds to a few hundred thousand pounds. It would have to foresee a number of important inventions—the transistor, the solar battery, etc. It would have had to foresee several political and social developments—World War II, IGY, the impact of Sputnik on world opinion and large scale participation by our Government.

In 1938 it would have taken a remarkable crystal ball indeed to foresee even a portion of the events of the next 25 years in the growth of space science.

In 1963 the same general category of knowledge is available with which to attempt to look ahead to the next 25 years in space sciences. First there are the important



questions relating to the area of interest to space science. The solar activity varies in a periodic fashion over a time scale of 11 and 22 years. How does the earth's environment respond to this solar activity? What is the nature of interplanetary space? What is the environment of Venus? Is there some form of life on these planets. Second there is the present government supported program in Space Sciences in the United States with unmanned satellites and space probes. Third is the challenge of the Soviet Union with its own large program in space exploration. Fourth are the technical developments being carried out in other areas of the space program, notably in developing the technology for manned flight, as well as developments in other areas of technology—nuclear energy, high energy rocket propulsion, lasers, solid state electronics, to name a few. Undoubtedly a fifth factor, a factor X the unknown, is perhaps the predominant factor today as it was in 1938. Therefore, I will only attempt to indicate in broad terms the possible direction of the space science challenge for the next 25 years—in the near future—in the intermediate future—and in the far future.

#### Near Future

The near future will continue to utilize and develop sounding rocket technology with launchings at the rate of about 100 per year from a wide number of launching sites around the world. Small Explorer type satellites, launched by Scout and Delta, will continue to be used to answer particular scientific questions about the ionosphere, the atmosphere, and magnetosphere. They will also provide continuous monitoring of solar and related geophysical phenomena, partially as a kind of space weather monitor in support of the manned lunar landing program. They will be used in new areas of research such as radio astronomy.

The unmanned geophysical, solar and astronomical observatories will be developed and launched at a rate so that at least one of each type will be available and working in orbit at all times. These observatories will provide the answers to a whole host of fundamental scientific and technological questions—and raise new questions. Because of the importance of an understanding of the sun to manned space flight, advanced versions of the solar observatories will be developed during this period. The spacecraft will carry larger and more complex experiments than the present OSO and point them with an accuracy of five seconds of arc as compared to the one minute of arc pointing accuracy for the present OSO. The scientific objectives of the near future will give particular emphasis to launchings during the periods of minimum and maximum solar activity. The primary engineering objective will be to develop and build and launch highly reliable spacecraft that have a useful lifetime in orbit measured in years rather than in months as are most of today's spacecraft.

During this period a number of scientific experiments will be conceived, engineered and carried out that require man-in-orbit, at first by the astronauts on the Mercury, Gemini, and Apollo spacecraft.

The unmanned lunar spacecraft, Ranger and Surveyor, will be developed and launched in large numbers in order to obtain the maximum scientific results in the years prior to the manned Apollo missions. The challenge of pressure to obtain the maximum scientific results in the years prior moon and the lunar surface in the shortest possible time schedule will be a most severe engineering challenge in this part of the space sciences program. One of the most significant engineering achievements required for this program, as presently conceived, will be the successful development of the liquid hydrogen propelled Centaur launch vehicle.

The unmanned exploration of Venus and Mars will go forward at every opportunity with the continued development of the Mariner Spacecraft and the Centaur launch vehicle. These flights will ultimately include capsules to land on the planets. The scientific challenge—to understand and explore our neighbors in the solar system; and to attempt to answer the basic question raised by Schiaparelli's Canals "Is There Some Form of Life on Mars?" The engineering challenge—to design, develop, build, and launch spacecraft that must operate perfectly in the environment of space for several months to over a year while carrying out a series of sophisticated scientific experiments.

In summary, space science engineering in the near future will involve the continued development and use, sometimes under severe pressure of time, of presently conceived launch vehicles, unmanned spacecraft, and instrumentation. Unmanned spacecraft will continue to be used for the great majority of the missions, but the use of manned spacecraft for significant scientific investigations will begin. Significant advances in the long time (year or more) reliable operation of spacecraft will be required in order to attain the objectives of the Orbiting Geophysical, Solar and Astronomical Observatories; or for the exploration of the moon and planets by Surveyor and Mariner.

#### Intermediate Future

The exact direction of the Space Sciences Program in this period will depend very strongly on the success of technological developments in the near future—and probably strongly on the unknown factor X. The successful development in the near future of higher thrust boosters, of rockets using high energy propellants, of nuclear electric propulsion, of smaller, lighter, more reliable electronics, of lighter and stronger materials, and of the technology of manned space flight will give us the capability to proceed actively along two new directions while continuing to make maximum use, with normal growth, of the more "conventional" satellites and observatories.

The investigation of the solar cycle and sun-earth relationships will require continued use and development of Explorers and the Orbiting Observatories. A number of new areas of space sciences, using earth orbiting satellites, may be developed during this period. For instance, the development of gyro technology during the near future may give us the capability to perform an intriguing experiment, suggested by Schiff of Stanford, to check certain predictions



## SPACE SCIENCES—continued

of relativity regarding the precession of a free gyro in earth orbit. The engineering challenges involved in the design and development of a satellite system to measure the predicted 7 seconds of arc precession per year is already being examined by at least two groups, one at Stanford, the other at Illinois.

The general technology of rockets, electronics, etc., will lead first to increased unmanned exploration of the solar system. It will be desirable for scientific reasons and it will be possible because of the advances in technology to get both closer to the sun and further away from the sun. Planetary probes will be sent toward Mercury and solar probes will penetrate the sun's atmosphere inside the orbit of Mercury (to perhaps a tenth of an astronomical unit). A part of the challenge to the engineer will be to design spacecraft that can withstand the increased radiation and heating from the sun and still transmit intelligible data back to earth. At the same time, planetary probes will be sent toward the asteroids and the outer planets, particularly Jupiter, and galactic probes may penetrate even further out into the solar system in order to begin to understand the nature of interstellar space. Here the spacecraft engineer will be faced with another thermal problem. The problem will be one of decreased solar radiation as the spacecraft moves away from the sun. In addition, he will have to develop systems that will operate reliably for years in this environment. He most probably will need to develop new sources of on-board power (possibly nuclear) to operate these systems.

The developments in manned flight capability (projects Gemini and Apollo) during the near future will provide the basis for the second major new direction for Space Sciences in the intermediate future. Dr. Homer E. Newell, Director of the NASA Office of Space Sciences discusses this phase of the program in detail in a paper presented before the AAAS at Philadelphia in December. Two quotes from this paper will indicate the nature of the challenge: "I wish to turn your attention now to what I believe is the truly new frontier of Space Sciences. I refer to man himself during science out in space." . . . "When man has learned to move about freely in space, especially when he is able to move around outside of the spacecraft or space station that serves as his home base in space, there will be many activities that he can pursue. One of these will be engineering and construction in space."

In summary, the intermediate future will probably see routine use and development of established techniques but will be dominated by two new trends: One, unmanned space probes to explore closer to the sun, Mercury and the sun's atmosphere within one tenth of an astronomical unit and to explore further out from the sun, the Asteroids, Jupiter and perhaps interplanetary space somewhat beyond Jupiter. Second, increased participation by scientists and engineers in space exploration alongside of the Astronaut.

The nature of the Space Sciences Program during the latter years of our 25 year look into the future will depend strongly on the discoveries and inventions of the near and intermediate future. Political and sociological factors will also strongly influence the magnitude and direction of the program. Van Allen was interested in understanding the nature and origin of cosmic rays when he discovered the radiation belts about the earth. This discovery changed dramatically the course of future space science exploration and has had a profound effect on other space programs, particularly manned flight. Similarly the "discovery" that another country, the USSR, could launch satellites and space probes changed our total space program from one involving simple light weight (less than one hundred pounds) unmanned spacecraft and tens of million dollar expenditures to one involving complex heavy (tons) manned spacecraft and billions of dollar expenditures.

It is perhaps trivial to mention such possible missions as a probe to sample Halley's Comet when it returns to the vicinity of the sun around the middle of the 1980's. Will it be possible to escape from the solar system with simple unmanned payloads? Will manned scientific exploration of space be the dominant element of the program?

I would conclude that the space sciences program during the far future will depend most strongly on the unknown factor X. The biggest challenge to science and engineering for this period is to realize that if our earlier missions have really been successful they will provide new discoveries, new theories, and new technology which will lead us along paths that are beyond our comprehension today.

### Summary

In summary we have looked at a small but significant fraction of space exploration—that part called space sciences whose purpose is to acquire new knowledge about this universe in which we are placed. A look at the present flight program in space sciences indicates the nature of the scientific and engineering challenge that we are meeting today. From the vantage point of 25 years ago, with the benefit of hindsight, it is apparent that this program is the combined sum of a wide variety of scientific, engineering, sociological and political factors.

The direction of space sciences in the near future will probably involve the continued development and use of presently conceived launch vehicles, and unmanned spacecraft. The intermediate future will probably be dominated by two new trends: (1) unmanned space probes to explore both closer to the sun and further away from the sun; (2) increased participation by scientists and engineers in manned space exploration with the Astronaut. The far future will depend most strongly on the unpredictable discoveries, inventions, and political and sociological factors of the near and intermediate future.

One of the biggest challenges to scientists and engineers involved in space sciences will be to keep alert for these unpredictable factors, to recognize them and to utilize them to extend our knowledge of the universe.



# COLUMBINE THE HUNGRY BUFFALO

by Charlie Black

with illustrative material by Joe McKibben





THIS IS A STORY about how things were the other day out at the Industrial Development Division of Georgia Tech, and it is a lot like eating a pie because it doesn't make much difference where you start in on it.

You might start with Columbine, the 2,500-pound buffalo who used to roam out at the wild flower preserve in Chickamauga Park, for example, and wind up with the Columbus, Ga., Jaycees.

Or you might start with the "Spin Slicer Railroad Right Of Way Mower" John Chambliss invented in his basement workshop in Chattanooga, Tenn., and wind up with the buffalo.

Or, for that matter, you might start anywhere in there you want to and finally buy a South African Papio Baboon by referring to another part of the story. (The price is \$150 according to a thorough study of such things by Industrial Division experts.)

Let's start with the Spin Slicer (etc.) Mower. The rules say you have to start somewhere.

John Chambliss is a Chattanooga attorney who has never really bothered sitting down during retirement. He set up his workshop and started inventing. Once he had an idea about using carbon dioxide gas cylinders for a fire alarm system. His initial success in this came one warm Sunday morning when one of the experimental cylinders he had absently stuck into his suit pocket went off and froze the Communion wine he was passing around in church.

Lesser men might have given up the project in the ensuing confusion, but Chambliss two years ago perfected his fire alarm and reports it now is a popular seller in England. (He was made an honorary member of the Royal Academy of Arts and Sciences and presented a silver medal by that body last year, in fact.)

Chambliss then got busy on a new kind of mowing machine he had been tinkering with, the Spin Slicer (etc.) Mower.

One of Chambliss' other interests is a farm he bought in the middle of the park at the Chickamauga battle site. He had planted it with wild flowers until it was a botanical exhibit and named it "Reflection Ride."

Just to add some authenticity, Chambliss had built a couple of log cabins and somehow got hold of Columbine, a buffalo, who wandered around contentedly munching the honeysuckle vines and violets and providing atmosphere.

The inventor's lot is a hard lot, of course, and the Spin Slicer (etc.) Mower kept cropping up with mechanical bugs. It had to operate at a higher rate of speed than tractor power takeoffs provided, etc.

Chambliss put some models together and sent one off to Gordon Futral at the University of Georgia Agricultural Experiment Station at Experiment, Georgia.

Futral tested it, saw possibilities in it, and decided that Chambliss needed to get in touch with the Industrial Development Division at Georgia Tech—where market research, mechanical research, and other things are so readily available. Call them up and ask about the price of a cotton-eared marmosette, for example. They can locate 40 of them

at \$30 each.

The first inkling Industrial Development Division had of Mr. Chambliss, Columbine and the Spin (etc.) Mower was in the form of what has proved to be a typical letter from him, addressed to Oliver Terriberry, a research specialist who works between the Community Development and Technical Assistance programs at IDD. It arrived Feb. 22, 1963.

The letter was intentionally illegible. Mr. Chambliss has since told Terriberry that he writes them that way on purpose "because people will take time to read them if they have to figure out the writing." Mr. Chambliss thought of another way of making sure his mail got read this time. He put a \$500 check in with it. A copy of the letter and of the check are now on Terriberry's office wall, and it is notable that the check is crisply scripted.

The letter reads:

"Dear Sir:

"John III is out doing some work on a mower demonstrator. You will hear from us in better form (and more legible).

"Enclosed is \$500, just on account.

"If what we are doing here does prove of interesting capacity I am going to beg you to come up for a three-hour demonstration.

"Yours,  
"J. H. Chambliss."

Or at least that is what careful study of the letter seems to indicate that it said. (John Chambliss III works with his grandfather on some projects.)

Terriberry recalls he had some anxious days around the office until the more legible letter Mr. Chambliss had promised arrived.

The Spin Slicer (etc.) Mower was patented. According to Futral, it worked, but needed adaption and improving, and it had some unique qualities which interested Terriberry, who stoutly declares he is the only graduate of an agricultural school on the Georgia Tech campus.

He called in J. R. Peterson, head of Market Research for IDD, and they talked to Futral, then arranged a conference with Chambliss.

"We started explaining what we would have to do and the cost of the research contract and he kept writing checks. He wrote one for \$10,000 and we talked him out of it and while we were explaining some more, he wrote one for \$25,000. We had a tough time getting him to take it back and even tougher to give him back the original \$500. We finally had a contract figured out for a year's research into design, market opportunities, and so forth, at about \$18,000," Terriberry said.

They had a farm tractor sent to Tech to mount the mower for tests and research at the Engineering Experiment Station under direction of Thomas A. Elliott, Head of the Mechanical Design Section. Terriberry mournfully noted that while supervising the unloading of the Spin Mower and tractor, the only feasible place was in front of the library



and a campus policeman sternly gave him a ticket during the process.

The policeman maintaining unloading tractors and mowers in front of a library was at least an aesthetic violation of traffic order.

Meanwhile, Columbine, the bison, was making too many inroads on the Indian pink supply out at the wild flower preserve. Mr. Chambliss decided it was either buffalo or wild flowers. He called to ask Terriberry if maybe Tech could use a buffalo, something of a gourmet but in top condition.

"I had a momentary desire to say yes and unload the buffalo in front of the library to see how it would turn out on a traffic ticket, but I just couldn't make myself do it! Still, it isn't everyday somebody offers you a live buffalo," Terriberry said.



But if there is any market for a live buffalo, the Industrial Development Division is the logical place to look for it. It just happened that Charles Sewell, head of the IDD Technical Assistance program, had received a letter from

the Columbus, Ga., Jaycees who had decided they were going to get a zoo set up out at Flat Rock Park.

Roy Cooper, assistant research engineer at IDD, had done remarkable work in this technical assistance request, Sewell said. Cooper had turned up prices and availability of about anything a potential zoo operator could ask for, from elephants to a pair of tupai tree shrews.

"When we heard about the buffalo, we just tossed it on the list. One buffalo, free, just haul him away," Sewell said.

Sewell decided he should alert the Columbus Jaycees to such a find in a more immediate manner after mailing his technical assistance report on how to build a zoo.

"I called up Ted Land, the committee chairman for the Jaycees on their project, and I asked him if he wanted a buffalo. There was a long pause and then he asked if I would repeat that. I did. There was another long pause and then he said 'I think I'd better call a committee meeting,'" Sewell said.

The committee decided they would adopt the buffalo and when they got a zoo ready, they would send up to get Columbine. Meanwhile Columbine was eating the hollyhocks and red bud.

Mr. Chambliss finally made a deal for a game preserve operator in Rising Fawn, Ga., (where else but Rising Fawn?) to come and haul Columbine over there until the Jaycees got their zoo together at Flat Rock, what with another flower season just about bisoned out of business.

"They went after the buffalo in a pickup truck. You have any idea of how little respect a ton or so of buffalo has for a pickup?" Terriberry said.

Chambliss offered \$200 for somebody who knew how to load a buffalo.

Terriberry called and told him that wasn't necessary and recommended using a tranquilizer rifle to sooth the animal.

"I'd helped work on the original design of this tranquilizer rifle, on the ballistics of it. I used an old ten gauge shotgun for the first one. I was curious to see how the new models would work on something like a buffalo," Terriberry said.

"The only thing was, that offer had been made public. Some old timer came up one day and said he'd put the thing in the truck for \$100. You know what they said he did? He just put a sack over his head and led him right onto it!" Terriberry continued.

Now that is how things stand right this minute. Mr. Chambliss is at work on another invention; Columbine is sullenly stomping around a pasture and eating plain grass at Rising Fawn while the Jaycees get their zoo ready at Flat Rock; Tom Elliott is testing and designing away on the Spin Slicer Railroad Right of Way Mower at the Engineering Experiment Station; J. R. Peterson is setting up a market research study when Elliott is done; Roy Cooper can tell you the going price on five female roseate spoonbills; Charlie Sewell has just sent some more technical information on how to build a zoo, and Oliver Terriberry rather happily reported he was able to talk the campus police out of the traffic ticket.

Stick around though. The contract has a year to go.





NEWBERRY



PHILLIPS



KELLY

## THREE YOUNG MEN ON A COLT

**M**ANAGEMENT SCIENCE ATLANTA, INC., technically only months old, is off and running as the South's largest management consulting firm.

Specializing in the application of scientific and engineering principles to commercial and industrial management problems, the young company lists among its capabilities such involved and demanding items as production and inventory control, data processing systems, work measurement, marketing research, material handling, critical path methods, retailing operations, distribution systems and maintenance systems. Not only can the staff perform these activities, they are teaching personnel in business and industry to handle some of them, too. They also publish bulletins and manuals on their specialties which are both informative and helpful to clients and prospective clients.

How is it that the fledgling firm which just made its appearance in the business world on Feb. 26 of this year can claim such a repertoire of accomplishments? The answer involves a lot of Georgia Tech-trained talent with a strong desire to help business and industry in the region. Management science, sometimes called operations research, has demonstrated outstanding practical success in the past 10 years and is especially needed in the growing Southeast.

The group of Georgia Tech graduates which formed Management Science Atlanta, Inc., (MSA), was formerly associated with the Atlanta Office of Operations Research, Inc., (ORI). With headquarters in Silver Spring, Md., ORI devotes roughly 85 per cent of its efforts to projects for the federal government. Since the Tech men had a greater interest in the industrial market, in the applications of operations research methods over a wide range of enterprises from textile manufacturing to the construction and retail industries, they approached ORI with a proposal to purchase the Atlanta office. The Tech men had the ability. The market for their brand of know-how was certainly there. Amicable agreements were reached whereby the

Tech men purchased assets formerly a part of the Atlanta Office of ORI, and Management Science Atlanta, Inc., was born. The new organization took over some of the contracts held by ORI and became consultants on others.

Dr. Thomas L. Newberry became president and treasurer of MSA with Cecil R. Phillips as vice president and Donald T. Kelly as vice president and secretary. All three hold advanced degrees from Tech's School of Industrial Engineering and have several years of industrial and consulting experience. Others participating in ownership are William M. Graves and Richard F. Ward, both Tech alumni formerly with ORI. Graves serves as director of MSA scientific programming and Ward is project leader on a large production-inventory control contract.

Other Tech contributions to the staff include Alton Peter Jensen, Mechanical Engineering bachelor who is director of special projects for MSA; Neil E. McWhorter, now working toward the bachelor's in Mechanical Engineering, programmer for MSA; Dr. Joseph J. Moder of Tech's School of Industrial Engineering who is a MSA consultant; Edward Grady Rodgers, Tech B. I. E., who is a MSA Industrial Engineer; Charles D. Snapp, Jr., Civil Engineering master's degree holder who serves as a MSA civil engineer; and James C. Edenfield, I. E. bachelor who serves as an industrial engineer for MSA.

Attesting to the growth of MSA in recent months and indicating the potential for success in the future, is the terrific expansion of the staff from five to 20. Because of the expanding work load, it is often necessary to call in Tech professors and graduate students on a part time basis.

MSA already has an impressive list of clients. Among these are Callaway Mills, Fieldcrest Mills, Associated General Contractors of America, the American Institute of Industrial Engineers, and a number of individual building contractors.

According to Tom Newberry, the firm has acquired eight



new critical path method (CPM) contracts since early March. MSA did the critical path network for the new MONY building on Peachtree at the Northeast Expressway in Atlanta and is a CPM subcontractor for the gigantic new coliseum at the University of Georgia. (For a detailed discussion of this exciting new scheduling technique, see "Critical Path to a New East Stand," July, 1962, *Alumnus*.)

Thanks to MSA, Georgia is doubtless one of the best trained states in the Union in the use of scheduling techniques. MSA has recently completed CPM courses for the Atlanta and Pensacola chapters of the American Institute of Industrial Engineers of America. Approximately 170 Georgians have been trained in the use of CPM by MSA. These courses are taught by Cecil Phillips and run from three to five days with the last day being devoted to PERT (Program Evaluation and Review Technique), a variation of CPM. In addition to CPM, two other courses, Industrial Operations Research running two days, and Inventory Management running three days, are offered by MSA. Newberry, who teaches both courses, says that MSA is the only firm in Georgia, and possibly the only one in the South, offering these courses. These last two draw heavily from the textile industry with personnel from 12 to 15 different mills in attendance.

Phillips said that the CPM courses have been especially useful to MSA. "We get to know industry people better and they learn something useful."

MSA has "taken a dose of its own medicine" as far as scheduling techniques are concerned, Phillips pointed out. On the walls of his office are networks for MSA projects. Phillips said the use of CPM is planning MSA's work load had been suggested by Newberry and the results were rather astonishing when the networks were applied.

"During the course of a month, one project director might think he had 20 days of one of our specialists' time on a given job," Phillips explained, "while another project leader thinks he can use the same specialist for a period of 15 days. Now CPM has ended such confusion and shown us how to schedule each individual's time and the application has worked very well for MSA."

The firm's bulletin, *The MSA Pathfinder*, appears periodically and each issue is devoted to a timely and technically useful discussion of advanced methods in management. Recent issues have covered such topics as the competition of manual CPM methods with computers, the need for modern approaches in textile controls, and the use of scheduling techniques. Articles are written by staffers and contributors in industry.

A CPM manual written by Phillips and Moder has sold nearly 1,000 copies since its first printing last fall. MSA printed the book and its success has given rise to the possibility of having it printed commercially. Another volume on production and inventory control for the textile industry is in the works.

The MSA officers feel that their greatest area of expansion will be in the textile industry. Phillips and Newberry said that this is true because management in the textile

industry today is more receptive to the use of management science. The "new look" in the textile business is demonstrated by the surprising number of computers being put into use for production and inventory control, plant and warehouse operations, as well as such mundane tasks as bookkeeping. Management science methods are regarded as revolutionary in the business.

MSA is also looking toward wider applications of management science methods to the retail business.

Recent and current projects by the MSA staff include:

The determination of cost of beverage handling methods used by retailers and the development of improved methods for a beverage producer.

Designing and installing production and inventory control systems for production to inventory and to order for a textile manufacturer.

Assisting in the application of critical path methods for project planning, scheduling and control for general contractors.

Development of a statistical work measurement program in maintenance activities for an airline.

Development of improved controls on inventories by the use of simulation techniques for a retailer.

Brief biographical notes on the officers of MSA show that Tom Newberry graduated from Tech with honors in 1954. After three years in the Air Force he returned to pursue graduate studies and to serve as consultant to several industrial and retailing firms. In 1961 he received the first Ph.D. awarded by Tech's School of Industrial Engineering. His dissertation concerned the statistical and probabilistic aspects of inventory control. In the same year he joined ORI and organized the Atlanta office. His consulting experience has ranged over a variety of fields, including production and inventory control, maintenance methods and systems, telephone and ticket-counter services, and sales forecasting.

Cecil Phillips graduated from Tech in 1955 and then studied a year at Zurich, Switzerland, under Tech's World Student Fund program. After two years with the General Electric Co. he returned to Tech for further graduate work in industrial engineering and operations research. He joined ORI when he completed his master's degree in 1960, and transferred to the Atlanta office in 1962. Phillips has developed management control systems for large research and development laboratories, industrial firms, and building contractors. He has been especially active in the applications of CPM.

Don Kelley obtained his master's in 1958. He worked for Colonial Stores as an industrial engineer until 1961, when he joined Newberry's staff at ORI. His experience includes the development of a cotton inventory control system for textile mills, studies in beverage distribution and handling systems, and various projects in retail store operations, warehouse inventory control systems, and railroad car dispatching systems. He has developed both computer and noncomputer inventory control systems, and has taught in courses on inventory management.



# GEORGIA TECH

# Journal

A digest of information about Georgia Tech and its alumni

## The Institute

### Tech alumni score again in competition

GEORGIA TECH alumni have done it again. For the third consecutive year, Tech has been awarded first place money of \$1,000 for "the best sustained performance in alumni giving" among public institutions of higher learning in this country. The competition is sponsored by the U. S. Steel Foundation and administered by the American Alumni Council.

This marked the first time that any of the 1,100 institutional members of the American Alumni Council has ever won one of the coveted first-place awards three times in the competition which is now in its fifth year.

The announcement came from Atlantic City where the American Alumni Council celebrated its 50th Anniversary conference, July 8-12. Roane Beard, executive secretary of the Alumni Association, accepted the check and trophy during the award ceremonies held in conjunction with the conference.

Major emphasis in the judging was placed on the number of dollars raised through the annual fund and all other alumni channels. Also evaluated were the number of contributors, the level of giving, the purposes for which the funds were raised, and evidence of a deliberate effort to sustain all types of alumni giving at a high level. Tech's award was in recognition of its roll call campaign and other fund raising efforts during the 1961-62 year coupled with the fact that over 40% of Tech alumni had contributed to its roll calls for six consecutive years. During the 1961-62 campaign, 45.3% of the known Tech alumni gave \$224,560 to the roll call to be used mainly for faculty salary supplementation, a program that is also sponsored by the Joint Tech-Georgia

Development Fund and the Georgia Tech Foundation, Inc.

Tech's 1962-63 roll call has already far surpassed last year's record-setting program.

### Tech publications program honored

THE Georgia Institute of Technology publications received the highest number of awards among Southeastern District schools vying in the 1963 American College Public Relations Association Honors Competition, according to an ACPRA headquarters announcement.

Tech publications took awards in the categories of special events, periodicals, and published interpretative education feature story by news bureau. Winner in the special events category was "The Anniversary Guide to the Georgia Tech Campus," a map-brochure marking Tech's 75th Anniversary Year, which was conceived and designed by Bob Wallace, Jr., publications director. Periodicals winner was *The Research Engineer*, the institutional magazine published five times yearly to announce Tech's contributions to science and engineering, edited by Wallace and Frank Bigger, head of Tech's science news bureau. The education feature award went to "Science and Technology/Today," a science news series designed to acquaint the general public with Tech's research programs. The series is written and edited by Bigger.

**Lockheed establishes memorial scholarship at Tech**  
A \$30,000 Robert E. Gross, Lockheed Aircraft Corp. Scholarship-Fellowship fund has been established at Georgia Tech by Lockheed as a memorial to one of its founders who died in 1961.

Interest from the fund will provide scholarships or fellowships for Tech students majoring in scientific engineering, economics, or other fields applicable to the aerospace, electronic, marine, manufacturing or construction industries. Georgia Tech will

invest and administer the fund and also select the recipients. The first award may be made in the fall of 1963.

Robert E. Gross served as principal officer of Lockheed for more than a quarter of a century. In 1932 he and a few others purchased assets of the former bankrupt Lockheed Co. for \$40,000. Under his leadership, Lockheed produced more than 30,000 military and commercial airplanes. By the time of his death in 1961, he had built Lockheed into one of the nation's largest industrial companies—a leader in aerospace efforts with 70,000 employees and annual sales of almost \$1.5 billions.

### 1963-64 publication editors and business managers named

GUINN LEVERETT, industrial management senior from Molena, Georgia, has been selected as editor of the Georgia Tech student newspaper, *The Technique*, for the 1963-64 academic year.

Selected to edit the other three official student publications were: Larry Tucker, Winston Salem, N. C., the *Blue Print*, yearbook; Earl Roberts, 2774 Redding Rd., N.E., Atlanta, Ga., the *Georgia Tech Engineer*, monthly technical magazine; and Jack Robinson, Sedalia, Mo., the *Rambler*, monthly feature magazine.

Business managers for the four publications will be Steve Perry, Decatur, Ga., *Technique*; Albert E. Price, Baltimore, Maryland, *Blue Print*; Tom Tuttle, Florence, S. C., *Georgia Tech Engineer*; and Royle R. Duff, Decatur, Ga., *The Rambler*.

### School of Engineering Mechanics gets top professor

DR. HELMUT F. BAUER, formerly chief of the Flutter and Vibration Section of the George C. Marshall Space Flight Center in Huntsville, Ala., has joined the staff of the School of Engineering Mechanics at the Georgia Institute of Technology as a full professor.



## Kennedy to Speak at Tech on Anniversary Day, But No Honorary Degree Will Be Given

THE CHIEF EXECUTIVE of the United States will speak on the Tech campus for the first time in 28 years when President John F. Kennedy will appear as the speaker at the 75th Anniversary Day celebration this October 7. The last time a President spoke at Tech was on November 29, 1935, when Franklin D. Roosevelt delivered an address at Grant Field during the dedication ceremonies of the Techwood Homes project.

The announcement of President Kennedy's acceptance to visit Tech came out of Washington on Tuesday, May 28, the day following a conference between the President and Governor Carl Sanders. The original White House announcement stated that the President would receive an honorary degree from Tech during the ceremonies, a statement that brought immediate reaction from Tech officials. Tech President Harrison stated then that there was no mention of an honorary degree in the Institute's invitation. And on May 30, the White House news secretary, Pierre Salinger, said that he "stands corrected." The President will not receive an honorary degree from Tech and he, Salinger, was "misinformed originally."

At only one time in Tech history have any honorary degrees been presented. That was in 1931 and the recipients were Harry F. Guggenheim, Howard E. Coffin, and George Gordon Crawford. Since Tech became a member of the University System, there have been no indications that the Institute will ever again present an honorary degree.

Invitations for Tech alumni to take part in the large-scale 75th Anniversary Day will be mailed this summer along with full details of the day's events.

A native of Germany, Dr. Bauer received his master's and Ph.D. at the Technical University in Darmstadt. He served as a research scientist at the Research Department of the Bundespost in Darmstadt where he worked on problems of electrostatics, wave guides and wave propagation, and computers. Later he was an assistant at the Aeronautical Institute of the Technical University and pursued research on lifting surface theory, the effect of ground on lift during landing, and fuselage interference influence.

He worked on problems involving the aerodynamics of delta-shaped wings at Heinkel Aircraft in Stuttgart just prior to coming to the United States where he was named research engineer and chief of Vibration and Flutter of the Aeroballistics Division at Redstone Arsenal in Huntsville. He became a U. S. citizen in 1961.

His position at Huntsville encompassed work on flutter and vibration; advanced fluid dynamics; propellant sloshing and control feedback stability; response of large space vehicles to wind and other disturbances; and nonlinear vibrations. Dr. Bauer has published over 30 technical papers in these areas of research.

He was a part time instructor at the University of Maryland Extension unit in Germany and since has taught graduate courses in mathematics and engineering mechanics at the University of Alabama's Huntsville Extension where he was an associate professor in engineering mechanics. He is a

member of the Society of Applied Mathematics and Mechanics.

### Tech scientist gets Public Health grant

A \$22,100 U. S. Public Health Service grant has been awarded to a scientist at the Georgia Institute of Technology for continued study of a new radiation method in the treatment of cancer.

The project, entitled "Histochemistry of Boron," is being conducted by Dr. A. B. Eschenbrenner of Tech's Radioisotopes Laboratory and involves the radiation technique known as neutron capture therapy. Because of its high degree of selectivity of cells to be killed and its greater intensity, the technique is regarded as potentially more effective against tumors, especially of the brain, than either x-radiation or radium.

In neutron capture therapy, boron is injected into cancer patients and serves as a "target" for radiation brought about within malignant cells by a stream of neutrons. The surrounding healthy tissue is untouched by the radiation.

## The Clubs

ALBANY, GEORGIA—Over 50 persons attended the second annual Ladies' Night meeting of the Albany, Georgia Tech Club on May 24. Joe W. Guthridge, assistant to the

president and director of development at Tech, was the guest speaker for the dinner meeting. Dick Richard presided over the business meeting at which the following officers were elected for the coming year: R. M. "Mickey" Marbury, Jr., president; J. Lamar Reese, Jr., vice president; Wallace Couch, Jr., secretary; Elmer Levie, treasurer; and Rosser Malone, Jr., sergeant at arms.

BATON ROUGE, LOUISIANA—Sixteen members of the Georgia Tech Alumni Club of Baton Rouge, Louisiana met at the home of James R. Barfield recently for the annual election of officers. The newly elected officers are Tom Davenport, Jr., president; F. W. "Beef" Lewis, first vice president; G. B. Massengale, second vice president; W. D. Williams, secretary; and Calvin Moore, treasurer.

The club also held a June 1 picnic at L. W. Eaton, Jr.'s camp on the Amite River. Harry Cassady and Dick Hudson, Jr. prepared the barbecued chicken for the crowd.

BIRMINGHAM, ALABAMA—The Birmingham Alumni Club held a spring meeting on May 10 with 73 alumni in attendance. Special guests were six of the applicants for the club scholarship, and Chris Denney, who will attend Tech on a football grant-in-aid next fall. Coach "Whack" Hyder was the guest speaker. Bill Eastman of the Tech staff gave a progress report on past scholarship winners.

The fall meeting of the club will be held at the Gold Nugget on Monday, October 14. Tentative plans for the meeting include the showing of the LSU game films, if they are available. "Dynamite" Goodloe will be the guest speaker.

COLUMBUS, GEORGIA—Seventy-five alumni and their wives attended the Columbus Georgia Tech Alumni Club meeting on May 10. Featured speaker for the evening was Howard (Bo) Callaway, an alumnus and a member of the Board of Regents of the University System of Georgia, who directed the attention of the alumni to the function of the Regents and the over-all goals of higher education in the State of Georgia. Tom Hall, associate secretary, was present at the meeting to thank the alumni in the Columbus area for their support of the Annual Georgia Tech Alumni Roll Call and the Joint Tech-Georgia Development Fund Drive.

GAINESVILLE, GEORGIA — Coach John "Whack" Hyder and publications director Bob Wallace, Jr. were the guest speakers at the May 9 meeting of the Gainesville Georgia Tech Club. Over 50 alumni, wives and dates turned out to hear Hyder talk about Tech's 1963-64 basketball chances and Wallace present a background talk on his forthcoming history of Tech, *Dress Her in White and Gold*. Jimmy Bagwell presided at the meeting. New officers elected for the coming year included Bill Winters, presi-



## THE CLUBS—continued

dent; Jimmy Bagwell, vice president; and Ed Waller, secretary-treasurer.

GREENVILLE, SOUTH CAROLINA—Bob Wallace, Jr., Tech's publications director and editor of the *Alumnus* briefed the Greenville Club on "The Art of Serendipity in Writing a History" at the May 13 meeting. Over 50 attended the meeting at which Gabe Hill introduced Wallace. A special guest was Robert A. Adamson, winner of the Greenville scholarship for 1963. George Race presided at the meeting.

HUNTSVILLE, ALABAMA—Dean George C. Griffin was guest of honor and speaker at the May 29 spring meeting of the Huntsville Georgia Tech Club. Alumni and wives numbering 103 were present at the dinner meeting.

Dean Griffin referred to the recently completed self-study pertaining to the Athletic Association and its current operation. He recalled the struggling days under Coach Alex and some of the past characters. Hugh Camp introduced the Dean. President Paschal E. Redding presented Dean Griffin with a Sergeant Missile.

Charles M. Becker, Roll Call chairman, reported that 240 alumni had given to the current Roll Coll. This amounted to 57.7% of those solicited. He predicted that Huntsville should hit over 70% before June 30.

Officers elected for the coming year were Vernon F. Hutchins, Jr., president; William D. Fiser, vice president; Charles A. Price, secretary; and Robert L. Puckett, treasurer.

Mrs. George Griffin and Mr. and Mrs. Roane Beard were guests at the meeting.

A committee was appointed to make a recommendation with regard to a scholarship or loan fund. This report is to be made at the next meeting which is tentatively set for August 29 with Fred Ajax as speaker.

KNOXVILLE, TENNESSEE—Bob Wallace, Jr., was also the guest speaker at the May 3 meeting of the newly-organized Knoxville Georgia Tech Alumni Club. He was introduced by Bud Woods who organized the meeting. Officers elected at the meeting included Felder Weeks, president; Charlie Lindsay, vice president; Charlie Hayes, corresponding secretary; Charlie Ligon, recording secretary; and Gary Satterwhite, treasurer.

MILLEDGEVILLE, GEORGIA — The Baldwin County alumni met on May 10 at Baum Bay, Lake Sinclair, home of Mr. John P. Baum. There were 35 alumni present.

Dean George Griffin was guest speaker. His talk covered a number of subjects. Special guests introduced were Bill Terrell, Carter Terrell, Howard Ector, Morgan McNeel, and Roane Beard.

At the conclusion of the meeting Dean Griffin was presented a sport coat by Mr. Baum.

NEW YORK, NEW YORK—The high-level duo of President E. D. Harrison and Atlanta Mayor Ivan Allen, Jr. were the guest speakers at the May 23 meeting of the New York Club. Special guests at the meeting included Mrs. Harrison and Mrs. Dorothy Crosland, Tech's director of libraries. Allen, an outstanding Tech alumnus, spoke on the role that the Tech alumni are playing in developing the City of Atlanta while Harrison brought the large crowd up to date on the growth of the Institute and its future plans.

SHELBYVILLE, TENNESSEE — The spring meeting of the newly-formed Middle Tennessee Alumni Club was attended by 40 members and guests.

Committee chairmen named during the business meeting were Ben Wilkins, scholarship; T. C. Austin, publicity; and John Lewis, program.

R. I. Lowndes, the club chairman, introduced Assistant Coach Jim Carlen who gave an enlightening talk on the problems of obtaining scholastically capable athletes. He emphasized strongly that the scholastic standing of the school will not suffer for want of excellent athletes.

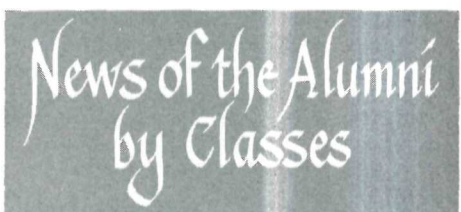
HOUSTON, TEXAS—President Harrison addressed the South Texas alumni on Thursday, May 16. Special guests of the club were three scholarship recipients who received awards from the club: Royston C. Waltmyer, San Jacinto High; David E. Evans, Jesse H. Jones High; and Richard M. Kenney, Stephen F. Austin High.

Officers elected for the coming year were Paul Woodruff, president; Frank H. Whitely, vice president; W. A. Snellgrove, secretary; Charles P. Morton, treasurer.

The Alumnus of the Year Award was made to Howard Tellepsen, '34, outstanding alumnus, business and civic leader.

WINSTON-SALEM, NORTH CAROLINA — The Winston-Salem Alumni Club elected the following officers at their annual business meeting on May 3: Louis E. Watta, president; William P. Jent, vice president; Robert G. Schultz, secretary; and John W. Yarbrough, treasurer.

After the meeting the Georgia Tech Football Highlights of 1962 film was shown.



'05 Fred C. Morton of Punta Gorda, Florida died in November, 1962.

'10 James W. Flythe, Augusta, Georgia, died recently. No further information was available at this writing.

'14 William W. Pace, Jr., Albany, Georgia, died in the spring of 1963.

'15 Bishop Clements, St. Petersburg, Florida, died May 9. He was retired from Wright Aeronautical Corporation after 33 years of service.

'16 E. M. Jackson, illustrator and fabric manufacturer, died March 25 at his home in Montauk Point, New York.

'17 We have just received word of the death of John M. Battson of Lavonia, Georgia.

'20 Leonard S. Roan, former Atlantan, died June 19 in Los Angeles after a long illness. He was formerly night managing editor of the *Los Angeles Times*.

'21 H. L. Jacobs, EE, retired from Southern Bell, Jacksonville, Florida, April 1 after 42 years of service. He now lives on Wood Nymph Trail, Lookout Mountain, Tennessee.

'22 Mika A. Khoury, EE, retired from Armour and Company in January and now lives at 240 Grand Concourse, Miami Shores 38, Florida.

We were recently advised of the death of Arthur H. Waite, Jr. of Atlanta, Georgia.

'23 W. E. Dimmock, ChE, has been elected chairman of the board of National NuGrape Company, Atlanta, Georgia.

'24 We were recently advised of the death of S. Sibley Fort, Lumpkin, Georgia.

'25 Louis A. Hawkins, Com, has been elected president of the Florida Association of Insurance Agents. He is president of the S & H Insurance Company, West Palm Beach, Florida. Mr. Hawkins' mailing address is P.O. Box 1628.

'26 J. Leo Johnson, superintendent of the maintenance department of the Atlanta Transit System, died May 4. His widow lives at 2364 Adina Drive, N.E., Atlanta, Georgia.

Mac D. Moore, Vice President of The Keyes Company, major Miami, Florida real estate company, has been appointed to the steering committee of the industrial division of the Florida State Chamber of Commerce.

W. Tucker Wayne, chairman of the board of directors of Tucker Wayne Advertising Agency, was killed in an automobile accident April 6 in Atlanta. His widow lives at 3227 Habersham Road, N.W., Atlanta, Georgia.

'27 Homer D. Fincher, ChE, died at his home of a heart attack May 16, 1963. He was process engineer with Anderson, Clayton & Company. His widow lives at 2420 Nottingham in Houston, Texas.



We were recently advised of the death of *J. W. Marshall, III*, of 2241 Poplar Springs Drive, Meridian, Mississippi.

**'28** *H. A. Cassady* has been appointed division commercial manager for the central Louisiana division with Southern Bell at Baton Rouge, Louisiana.

*William J. Cooper*, GE, has been elected to the Executive Board of the Yale Engineering Association. He is President of the United Illuminating Company, New Haven, Connecticut.

**'29** *Truman M. Holland*, Com, 2305 Vistamont Drive, Decatur, Georgia, died June 7 in an Atlanta hospital. He had been an accountant with the Atlanta Public Schools for 15 years.

*Roland H. Jenkins*, veteran civil engineer for the Army's Office of the Chief of Engineers, Washington, D. C., and his bride of six weeks were killed in an automobile accident April 29. Mr. Jenkins is survived by two sons by a previous marriage.

**'32** *Jose M. Cabrera* died unexpectedly in May. He had been an avid supporter of Georgia Tech in Mexico and was instrumental in getting the Tech alumni together for meetings in that area. His widow's address is Maquinaria y Servicio Para Las Industrias, Cinco de Mayo No. 32-416, Mexico 1, D.F.

*Charles M. Graves*, Park and Recreation Specialist of Atlanta, Georgia, has been honored by the Southeastern Recreation Executives for his outstanding service to the recreation field.

**'33** Engaged: *William Young Querry, Jr.*, ChE, to Miss Virginia Morgan.

**'34** *L. E. Turner*, Arch, 8746 Banzer, Houston 24, Texas, died April 23.

**'35** *Harrison W. Bray*, USAR, BS, has been appointed to full colonel in the U.S. Army Reserve and has a Mobilization Assignment with Deputy Chief of Staff for Logistics at the Pentagon, Washington, D. C. He is owner of the H. W. Bray Company, Manchester, Georgia.

*James S. Dougherty*, 603 N. Jackson Street, Albany, Georgia, died December 1, 1962.

*G. E. Perry*, Claxton, Georgia, died April 1, 1963.

**'36** *Lt. Col. Lyman H. Robertson*, USAR, Arch, has completed a one week instructor training conference at the U.S. Army Command and General Staff College, Fort Leavenworth, Kansas. He lives at 2596 Parkside Drive, N.E., Atlanta, Georgia.

**'37** *Lt. Col. Ben H. Keyserling*, USAR, ME, has completed a one week instructor training conference at the U. S. Army Command and General Staff College at Fort Leavenworth, Kansas. He is a transportation engineer with the U. S. Army

Missile Command at Redstone Arsenal, Alabama.

*Emory S. Lanier*, Atlanta, Georgia, died in September, 1962.

**'38** *Spencer Virgil Montgomery*, EE, Atlanta, Georgia, died in June. He was associated with the Hartford Fire Insurance Company.

*C. H. Renfro*, 2153 Council Bluff Court, N.E., Atlanta, Georgia, died October 29, 1962.

*Samuel Graham Robertson*, agency manager of Equitable Life Assurance Society of the United States in Nashville, Tennessee, died May 23 of injuries received in an automobile accident. His widow lives at 208 Vaughan's Gap Road, Nashville, Tennessee.

**'39** *W. Arthur Hasty*, Technical Assistant to the national sales manager of Virginia Metal Products, Inc., Orange, Virginia, has been elected president of the VMP Management Club. He lives at 224 Dabney Street, Orange, Virginia.

**'40** *J. B. Gillenwater*, ME, has been appointed general superintendent of Standard Lime and Cement and Dragon Cement in Baltimore, Maryland.

*G. Wendell Morriss*, TE, is now vice president and general superintendent of Avondale Mills, Sylacauga, Alabama.

*J. F. Scruggs*, IM, has been named manager of the Valdosta, Georgia Office of the Atlanta Gas Light Company.

**'41** We were recently advised of the death of *Frank D. DeFreese*, Columbia, South Carolina. Mr. DeFreese died in March, 1963.

**'42** *Dr. Kurt E. Shuler*, Chem, has been named Assistant Director and Senior Research Fellow at the National Bureau of Standards, U. S. Department of Commerce, Washington 25, D. C.

**'43** *Raymond R. Pritchard*, AE, has been appointed head, Evaluation Section, Operations Analysis Department at the San Bernardino, California Aerospace Corporation.

*Robert L. Rinehart*, EE, has been appointed generating station engineer in the new System Power and Engineering Department of Pennsylvania Power and Light Company, Allentown, Pennsylvania.

*Dan E. Sewell*, CE, has been re-elected chairman of the Citizens' Advisory Committee on Savannah's Improvement Program and Urban Renewal Program. He is President of Sewell and Associates, Inc., 13 York Street, East, Savannah, Georgia.

**'44** *Dr. Walter W. Gilbert*, ChE, has been promoted to research supervisor in DuPont's Materials Research Division at Wilmington, Delaware.

Born to: *Mr. and Mrs. A. Preston McIntosh*, Arch, a daughter, Mary Helena, April 5 in Atlanta.

**'45** *Eugene Miller*, vice president of public affairs and communications for the McGraw-Hill Publishing Company in New York, received the annual Achievement Award of the Bethany College Alumni Association at the annual alumni day luncheon June 8. The award was made in recognition of Mr. Miller's significant achievements in the field of journalism. He lives at 2751 First Place, Baldwin, L. I., New York.

*J. Frank Willett*, EE, has been promoted to vice president-sales at Tennessee Stove Works, Chattanooga, Tennessee. He joined the firm in March, 1962 as sales manager for special accounts. Frank lives with his wife and three children on Peter Pan Road, Lookout Mountain, Tennessee.

*Leonard R. Daniel*, ChE, is now vice chairman of the Division of Science and Mathematics at West Georgia College, Carrollton, Georgia.

*John C. Mayson*, ME, has been named manager of Atlanta Gas Light Company's South Georgia Division with offices in Brunswick, Georgia.

**'47** *Howard H. Callaway*, Pine Mountain, Georgia addressed Georgia State College graduates at the school's commencement exercises June 2 in Atlanta. He is President of Callaway Gardens and the Ida Cason Callaway Foundation and chairman of the Education Committee of the Board of Regents, University System of Georgia.

*Thomas L. Jones*, CE, is now with the Federal Aviation Agency in Washington, D. C. as Contract Labor Relations Manager. He lives at 1902 No. 15th Street, Arlington 1, Virginia.

**'48** *Evert E. Clark*, IE, is assistant vice president of Turner Halsey Com-

## Faces in the News



*C. B. McGehee*, '25, has been made general manager of the Alcoa-Hico Co., and also has been elected vice president of the Hico Corporation of America. Alcoa-Hico is jointly owned by Alcoa Service Corp. and the Hico Corporation of America.



*Dr. Earle S. Hannaford*, '27, a certified psychologist, has retired after more than 34 years of service with the American Telephone and Telegraph Company. He was safety engineer for AT&T's Long Lines Department at New York headquarters. He is author of many texts.



# Faces in the News



**Hubert O. Sibley, Jr.**, '41, has been elected to the board of directors of Merchants Bank of Miami. Sibley has a background as a bank examiner, past director of National Credit Union Assoc. and 12 years service as treasurer of the Dade County, Fla. Teachers Credit Union.



**H. C. Anderson, Jr.**, '42, has been promoted to the position of marketing consultant for Southern States, Inc., Hampton, Georgia. Anderson has been a member of the organization since 1946. Formerly a resident of Hampton, he now lives in Atlanta.



**R. M. Thompson, Jr.**, '42, is now president of Investment Property Builders, Inc. of Miami. The company develops and builds investment properties for their own account and that of other investors. Thompson joined the firm in 1962 as executive vice president.



**Henry L. (Buck) Andel**, '43, head athletic trainer at Tech, has been named a trustee of the Bike Training Room Foundation, an organization devoted to improving training room standards and athletic safety techniques at the high school level. Andel will consult with high school coaches.



**Harold V. Fleming**, '47, has been elected president and chief executive officer of Lacquer Products, Inc., Cleveland, Ohio. He was formerly executive vice president and general manager. Fleming, his wife and three children will make their home in Cleveland.



**George T. Cummins**, '48, is the chief engineer in charge of Brighton Engineering Company's (Frankfort, Ky.) Central City Field office where the company will supervise and coordinate all construction operations on the 127 mile Western Kentucky Turnpike.

## NEWS BY CLASSES—continued

pany, Inc., 40 Worth Street, New York 13, New York.

**Dr. Leonard M. Diana**, Phys, is now Associate Professor of Physics at the University of Richmond. He lives at 4111 Hillcrest Road, Richmond 25, Virginia.

**'49 Charles M. Anderson**, IM, has been promoted to assistant controller with Chemstrand at Pensacola, Florida.

**Walter F. Barney**, ME, has been awarded a 1963-64 Sloan Fellowship in Executive Development at MIT.

**Grady C. Goodroe**, IM, is now sales executive in the Property Insurance Department with Carson & Armistead, Inc., 1300 American Trust Building, Nashville, Tennessee.

**George A. Roberts** has been appointed factory manager with Norris Candy Company, Atlanta, Georgia.

**'50 Bobby Joe Anderson**, IM, is now on the sales staff at Puritan Chemical Company, Atlanta, Georgia.

Married: **Paul Aronin**, IE, to Miss Bonnie Gershen in June. Paul is with the firm of Aronin, Van Houten & Company in Atlanta, Georgia.

**Frank Anderson Bazemore**, EE, received his masters in business administration from Rollins College in June and is now a group engineer with the Martin Company in Orlando, Florida.

**M. W. "Bill" Bonwell, Jr.**, IE, is a sales engineer in the Miami, Florida area for Acme Industries, Inc. His address is 4646 N.W. 183rd Street, Opa-Locka, Florida.

**Mr. and Mrs. Nathaniel J. Couch**, Arch, announce the adoption of a son, Nathaniel, Jr. Mr. Couch is a partner in the architectural firm of Couch and Hollis. They live at 4860½ Forsyth Road, Macon, Georgia.

**Maj. Robert I. Hughes, Jr.**, USA, received a certificate of achievement recently while attending the Command and General Staff College at Fort Worth, Kansas.

**L. Walter Rabun, Jr.**, IM, is vice president of the Rice Coal Company in Atlanta. He lives at 5560 Mt. Vernon Parkway, N.W., Atlanta, Georgia.

**'51 H. S. Becker**, AE, has been named director of launch vehicles at North American Aviation's Space and Information Systems Division, American Aviation, at Downey, California. He lives at 1428 Via Cataluna, Palos Verdes Estates, California.

**Maj. Ralph A. Cone**, USAF, IE, has returned to Carswell AFB, Texas, following graduation from the U. S. Air Force instrument pilot instructor course at Randolph AFB, Texas.

Born to: **Mr. and Mrs. Robert S. Duggan**, Jr., EE, a son, Timothy Benjamin, May 17. They live at 1112 Mason Woods Drive, N.E., Atlanta 29, Georgia.

**George Hawthorne**, EE, received his doctorate in electrical engineering in June, 1963. He is an assistant professor of elec-

trical engineering at Georgia Tech.

**'52 F. T. Bauchspies** has been appointed to the staff at MIT after 6 years of overseas assignments in Europe and the Middle East with California Texas Oil Company. His address is Liaison Office, MIT, 77 Massachusetts Avenue, Cambridge, Massachusetts.

**Dan C. Mathes, Jr.** has been appointed a senior brokerage consultant at the Memphis, Tennessee office of Connecticut General Life Insurance Company. He lives at 305 Ridgeway Drive, Little Rock, Arkansas.

**J. Strom Williams**, TE, is manager, cost department, at Greenwood Mills. His home address is RFD 5, Chinquapin, Greenwood, South Carolina.

**William L. Willis**, ME, is now president of Aluminum Building Products Company. His business address is 1391 Chattahoochee Avenue, N.W., Atlanta 25, Georgia.

**'53 W. H. Brogdon**, IM, has been named plant superintendent of Shell Oil Company's Miami Airport plant.

**Lt. Frank H. Lewis, Jr.**, USN, received his masters in Civil Engineering Construction from Stanford University in June. He attended Stanford under the Navy's Post Graduate Educational Program. He is now stationed at Adak, Alaska.

**Walter M. Ligon**, ChE, received his doctor of medicine degree from Emory in June and is now an intern at Emory University Hospital. His home address is 1809 DeFoor Avenue, N.W., Atlanta 18, Georgia.

**Capt. Clyde A. Young, Jr.**, USA, IM, received the Army Commendation Medal while serving with Headquarters, Third U. S. Army at Fort McPherson, Georgia.

**'54 Born to: Mr. and Mrs. Ray H. Pettit**, EE, a son, Theodore Gordon, April 8. Mr. Pettit has completed the requirements for his doctorate at the University of Florida and is now with the Martin Company. They live at 922 Baltimore Drive, Orlando, Florida.

**Capt. Leon H. Stone, Jr.**, USA, IM, has completed the officer career course at the Transportation Center, Fort Eustis, Virginia.

**'55 Jeremiah E. Abbott**, CE, is a structural designer with Hazzard, McRoy and Cone. His home address is 113 Lorena Lane, Birmingham 13, Alabama.

Born to: **Mr. and Mrs. Percy Dexter Allen, Jr.**, IE, a son, John Davidson Allen, April 25 in Los Angeles, California. His grandfather is I. M. Davidson, '34. Mr. Allen is with Consolidated Systems, Inc.

Born to: **Mr. and Mrs. Joseph M. Black**, a son, Scott McEntire, May 2. They live at 6437 Blenheim Road, Baltimore 2, Maryland.

**James A. Bushong** has been given the Navy Department's "Superior Accomplishment" award for his outstanding design work on airfield runways at the NAS, Guam. He is resident officer in charge of construction, Bureau of Yards and Docks Contracts, Pacific.



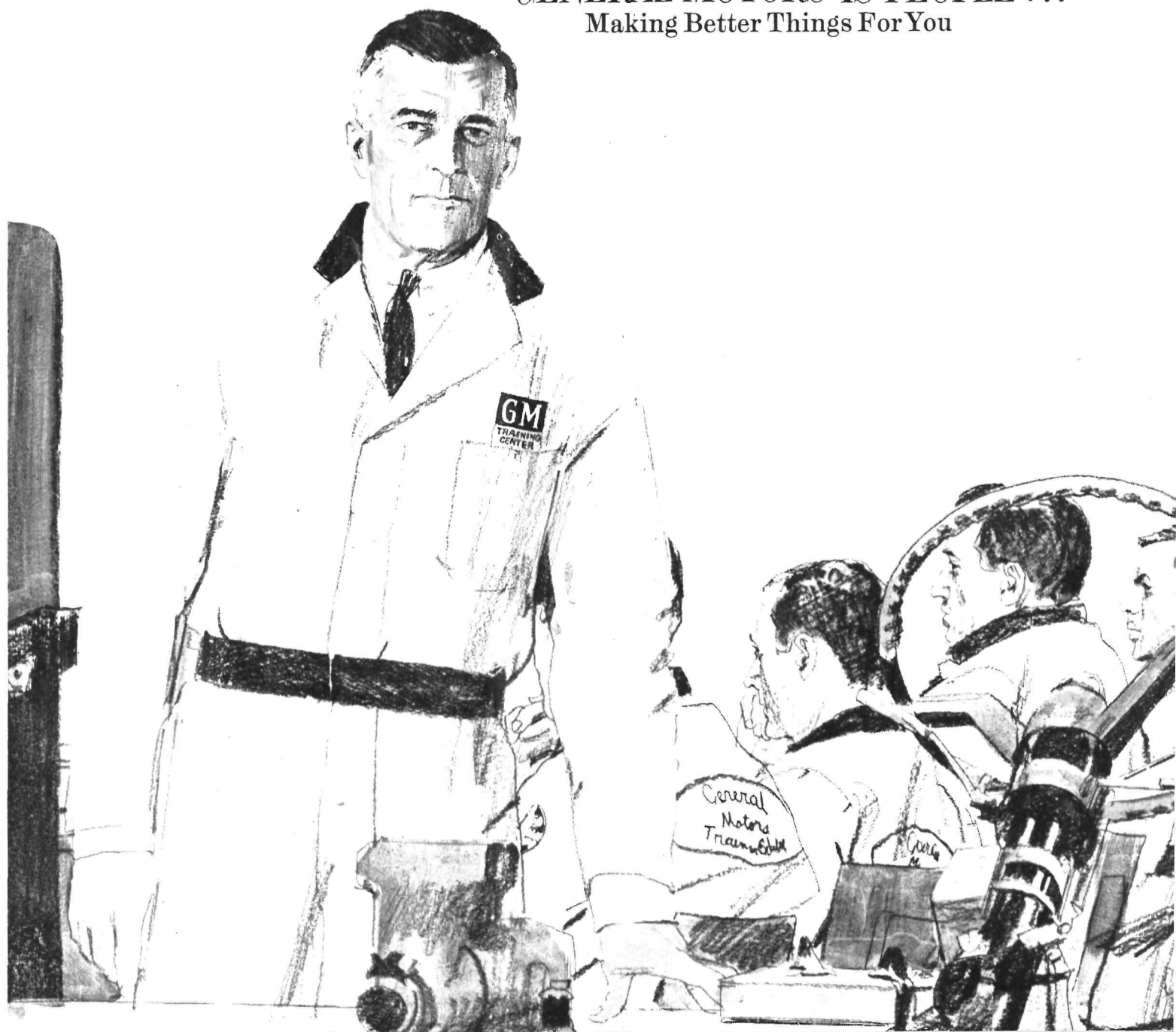
# INSTRUCTOR

He's a staff instructor in a typical General Motors Training Center. His full-time job is updating GM dealer servicemen on new skills, tools and service techniques . . . as new features and changes appear on your GM car. His goal—*developing better manpower for greater owner satisfaction, year in and year out!*

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Thirty General Motors Training Centers across the nation, with 262 classrooms, contribute to the training and development of GM dealer manpower, just as every state in the nation contributes manpower to the entire General Motors team. Indeed, the world over, GM's greatest asset is its *people!*

**GENERAL MOTORS IS PEOPLE . . .**  
Making Better Things For You





## Faces in the News



**K. A. Erikson, '49**, has been promoted to cost accounting supervisor in Chemstrand Company's Acrilan Plant Accounting Department, Decatur, Alabama. He has been with the company since 1955 when he joined the firm in Pensacola, Florida and then transferred to Decatur.



**Harold E. Masback, Jr., '49**, has been elected president and chief executive officer of Garden Equipment Corporation (Floral Park, L. I., N. Y.), one of the country's largest independent distributors of home and garden power equipment. Masback has 14 years experience with the firm.



**J. M. Tomme, '50**, has been promoted to the position of sales manager of Southern States, Inc., Hampton, Georgia. Formerly sales manager-power switching equipment, he assumes full commercial responsibility for the entire line of electrical apparatus. Tomme resides in Hampton.



**Michael Rebich, '53**, has been named program manager for Autonetics' new *Monica* computer. Autonetics is North American Aviation's electronics division in Anaheim, California. He joined the firm in 1960 as a sales engineer on such programs as Dynasoar.



**W. B. Henderson, '53**, has been promoted to project leader within Chemstrand Company's Acrilan Development department, Decatur, Alabama. Henderson, formerly senior engineer in Acrilan Development, joined Chemstrand in 1956.



**Joseph L. Young, '55**, associate professor of architecture at Clemson College, has received an appointment as a Fulbright Scholar in Architecture from the U. S. State Department's Board of Foreign Scholarships. He will lecture at Middle East Technical University, Ankara, Turkey during '63-64.

## NEWS BY CLASSES — continued

**Capt. Charles E. Connors, Jr.** is a fighter pilot with the Tactical Air Command Unit at George AFB, California.

**William Skelley, IM**, has received his masters in business administration from the University of Connecticut and is now research administrator at Pratt and Whitney, Inc. He lives at 258 Hillcrest Avenue, Newington, Connecticut.

Born to: **Mr. and Mrs. Talbert E. Smith, Jr., IE**, a daughter, Sharon Louise, April 18.

**'56 Maj. Frank W. Draper, USAF**, has been selected for promotion to lieutenant colonel. He is Research and Development officer at Patrick AFB, Florida.

**Ezra Hutto, IE**, is now a partner in Tools Manufacturing Warehouse. He lives at 5795 Pinebrook Road, N.E., Atlanta 5, Georgia.

**George R. Massey, AE**, died unexpectedly of a heart attack April 12 while in San Francisco on a business trip. He was assistant deputy director for Research and Development at the Marshall Space Flight Center, NASA, Huntsville, Alabama. His parents, Mr. and Mrs. Carl H. Massey, live in Milledgeville, Georgia. Their mailing address is P.O. Box 732.

**L. S. Payne, Jr., IE**, has formed a new company, The L. S. Payne Company, with the subsidiary company being Atlanta Infra Red. He lives at 55 Lake Forrest Lane, N.E., Atlanta 5, Georgia.

**Lt. Roger L. Rich, Jr.** has been selected for the U. S. Navy Test Pilot School, NAS, Patuxent River, Maryland.

**Wilford D. Thompson, Jr.** is a partner in the firm of Thompson, Sheppard and Jones, Inc., insurance consultants, with offices at 922 Peachtree 25th Building, Atlanta 9, Georgia.

**'57 Walter G. Davis, IE**, has been promoted to staff programmer, AIDS/USAF, Intelligence Systems with IBM, Bethesda 14, Maryland.

**Capt. Joseph S. Ford, II, USAF**, is development engineer at the Northrop Corporation with the Office of the Air Force plant representative.

**William P. Killian, ChE**, spoke at the American Institute of Chemical Engineers in Buffalo, New York in May. He is general supervisor of the Process Research and Development Department at Thiokol Chemical Corporation's Wasalch Division, Brigham City, Utah.

Married: **Lt. William Thomas Lee, USA**, to Miss Colby Scott, June 14. Lt. Lee is stationed at Fort Benning, Georgia.

Born to: **Mr. and Mrs. Wilmon N. Linger, AE**, a son, Mathew Douglas, March 25. Mr. Linger is Superintendent of Aircraft Engineers with Delta Airlines. They live at 2469 Paul West Drive, College Park, Georgia.

Married: **Forrest Wayne Pate, IM**, to Miss Elizabeth Averett, September 8, 1963. Mr. Pate is district sales representative with Texaco, Inc. Their mailing address is P.O.

Box 315, Decatur, Alabama.

Born to: **Mr. and Mrs. Herbert R. Sherrow, IE**, a daughter, Kimberly Katherine, February 2. They live at 2400 Harrison Avenue, Apartment C-2, Cincinnati 11, Ohio.

**'58 Dan L. Albritton, EE**, is working on his doctorate in nuclear physics at Georgia Tech on a NASA fellowship. He lives at 217 Peachtree Circle, N.E., Rear Apartment, Atlanta 9, Georgia.

**Charles R. Cook, Jr., EE**, has been promoted to senior project engineer in the semiconductor networks department at Texas Instruments. He lives at 411 Vernet Street, Richardson, Texas.

**Leonard A. Lampert, CE**, is now a practicing attorney with the law firm of Golenbock & Barrell, 60 East 42nd Street, New York, New York.

**Wesley Emile Lerdon** is now with the firm of Peter Muller-Munk Associates in Pittsburgh, Pennsylvania. He was married July 6 to Miss Anita Lee Coward.

Born to: **Mr. and Mrs. Reinaldo Scarpetta, IM**, a son, Alexander. They live in Palmira, Colombia, S. A., where Mr. Scarpetta is an engineer with Industrios Metalicas de Palmira.

**George Sherlock** has been named assistant trust officer and is corporate trust operations manager with the Citizens and Southern Bank in Atlanta, Georgia.

**Paula C. Stevenson, TE**, recently completed a 5 week tour of the Pacific, visiting Tahiti, American Samoa, The Fiji Islands, New Zealand, Australia, Singapore, Thailand, Hong Kong, Japan and Honolulu. She is a research assistant with the Experiment Station at Georgia Tech.

Married: **Wesley Ramage Tabor, IM**, to Miss Helen Stowers, May 18. Mr. Tabor is a computer programmer with the Lovable Company, Atlanta, Georgia.

**Donald V. Young** is now a project manager for J. Young Construction Company at the U. S. Naval Station, Yorktown, Virginia.

**'59 Married: W. G. "Tony" Battaglia, ME**, to Miss Maria Elena Meraz, May 25. He recently completed his tour of duty with the Army and is now with the Sandia Corporation in Albuquerque, New Mexico.

Engaged: **Theodore Charles Beacham, IM**, to Miss Elaine Tarleton. The wedding will take place in July. Mr. Beacham is with General Motors in Baltimore, Maryland.

**Kenneth M. Carter, IM**, is now quality control director at the Ottaray Mill of Pacolet Industries, Inc., Union, South Carolina. He lives at 200 Spruce Street.

**Sam H. Fowlkes, III, IM**, has been promoted to associate systems engineer with IBM. His home address is 1701-D Valley Avenue, Birmingham 9, Alabama.

Born to: **Mr. and Mrs. David F. S. Gallo-way, III, ME**, a son, David Fulton Shall IV, May 14 in Pensacola, Florida.



*Fred T. Gillespie* has been appointed supervisor in the Atlanta general agency of Aetna Life Insurance Company.

*Lt. Robert W. Glenn*, USA, is commander of the 8th Infantry Division's 12th Engineer Battalion in Germany.

Married: *Robert Duncan Gotsch*, IM, to Miss *Barbara Marsh*, April 27. Mr. Gotsch is a standards analyst with Ford Motor Company. They live at 3619 Ivy Road, N.E., Atlanta, Georgia.

*Leroy M. Hair*, AE, is an aerodynamics engineer with Lockheed in Huntsville, Alabama.

*Gerald L. Lattal*, AE, is a senior project engineer with United Aircraft Research Labs in East Hartford, Connecticut. He recently completed a two year tour of duty with the Army. His home address is 42 Greenwood Road, Windsor Locks, Connecticut.

*Lt. Edward G. Miller, Jr.*, USA, has been assigned to the Chemical Research and Development Labs at Edgewood Arsenal, Maryland.

Married: *Grattan W. Rowland, Jr.*, IE, to Miss *Sara Jordan*, June 22. Mr. Rowland is a field engineer for Square D in Raleigh, North Carolina.

*Donald C. Sistrunk, Jr.*, IM, was recently separated from the service and is now a senior industrial engineer with Hudson Pulp & Paper at Wellsburg, West Virginia.

Born to: *Mr. and Mrs. Robert Swank*, Jr., ChE, a daughter, *Lori Ellen*, September 27. Mr. Swank is attending Graduate School at Georgia Tech. They live at 1927 Valencia Road, Decatur, Georgia.

*Leon W. Transeau*, IE, received his MBA from the University of Delaware in June and is now with Operations Research, Inc., Silver Spring, Maryland.

*James Jack Wilson* was killed in an automobile accident in St. Albans, Vermont June 29, 1962. He was an industrial engineer with Union Carbide Consumer Products Division.

**'60** Born to: *Mr. and Mrs. Vernon B. Chance, Jr.*, ChE, a daughter, *Mary Lynn*, February 7. Mr. Chance is stationed at Barksdale AFB, Louisiana.

Married: *James Russell Cleveland, Jr.*, IM, to Miss *Alice Armstrong*, June 22. Mr. Cleveland is attending graduate school at Emory University, Atlanta, Georgia.

*Lt. Robert D. Dixon*, USA, recently received the Army Commendation Medal while serving with the First Guided Missile Battalion at Fort Bliss, Texas.

*Joel Esmond*, IM, is now supervisor, production scheduling, Stone Manufacturing Company. He lives at 109 Karen Drive, Greenville, South Carolina.

*Robert D. Fowler*, IE, has been promoted to full professor at West Virginia University.

Born to: *Mr. and Mrs. Lee Hughey*, a son, *Richard Lee*, April 15. They live at 4845 Crescent Street, N.W., Washington 16, D. C.

Married: *Rev. James Harmon Humphreys*, TE, to Miss *Martha S. Sanders*, June 8 in Smyrna, Georgia.

Engaged: *Lt. John Graham Hunter*, USN, to Miss *Elizabeth Harbin*. Lt. Hunter is serving aboard the USS *Charles P. Cecil* in Norfolk, Virginia.

*Mr. and Mrs. Kenneth E. Kent* announce the adoption of a son, *David Elwood*. David was born January 12. Mr. Kent is a design engineer with Douglas Aircraft. They live at 4901 Greenbrook Drive, Charlotte, North Carolina.

*James C. Lockwood*, ChE, recently received his law degree from the University of Michigan Law School and is now associated with Hansell, Post, Brandon & Dorsey with offices in the First National Bank Building, Atlanta, Georgia.

*Chester A. Lowe, Jr.*, USAF, has been promoted to first lieutenant. He is a missile combat crew deputy commander in the 579th Strategic Missile Squadron at Walker AFB, New Mexico.

Born to: *Mr. and Mrs. David A. McNeill, III*, IM, a son, *David IV*, February 22. They live at 299 West Hall Street, Thomson, Georgia.

Married: *Lt. Heidt Neal, III*, USN, to Miss *Elizabeth Lee*, May 4. Lt. Neal is serving aboard the USS *F. D. Roosevelt* (CVA-42), c/o FPO, New York, New York.

Born to: *Mr. and Mrs. Eugene R. Pledger*, EE, a daughter, *Misti Jean*, February 25. Mr. Pledger is Product Line Administrator for Static Inverters with Westinghouse Electric in Buffalo. They live at 6421 Seneca Street, Spring Brook, New York.

Married: *Don Paige Pullum*, ME, to Miss *Ruth Anne Haywood*, April 6. Mr. Pullum is a process engineer for DuPont in Camden, South Carolina.

*T. G. Reddy*, IE, has been transferred to the Air Conditioning Division of the Worthington Corporation's Washington, D. C. Office. He lives at 5006 57th Avenue, Apartment B-7, Bladenbury, Maryland.

Married: *Charles DeWitt Roberts*, Math, to Miss *Edna Nieves*, May 30. They live in Washington, D. C.

Married: *Robert W. Saacke*, IE, to *Nancy McComack*, March 3. They live at 5315 Lynnvile Avenue, Apartment 11, Charlotte 5, North Carolina.

Married: *Robert Otis Crouch, III*, IM, to Miss *Rena Westmoreland* June 22. Mr. Crouch is with B. F. Goodrich in Atlanta, Georgia.

Born to: *Mr. and Mrs. Elige Wilson Smith, Jr.*, a daughter, *Melissa Rose*, April 23. They live at Route 9, Box 191-C, Tucson, Arizona.

Born to: *Lt. and Mrs. Emil E. Spieth*, USA, ChE, a daughter, *Susan Monique*, May 2 at the U.S. Army Hospital in Orleans, France. Lt. Spieth is Repairs & Utilities Officer with the Command Engineering Division.

*Lt. Leon H. Toups*, USAF, has been commended for his work with the Atlas Operations Branch, 6555th Aerospace Test Wing, Patrick AFB, Florida.

*S. T. Vella*, IE, is now program analyst on the Strategic Air Command Control

Project with the Systems Development Corporation. He lives at 221 River Road, Apartment A-7, Bogota, New Jersey.

**'61** *Pfc. Walter H. Brasington, Jr.*, USA, is serving with Troop A of the 1st Armored Divisions first Squadron at Fort Hood, Texas.

Born to: *Mr. and Mrs. Barry Duggan*, EE, a son, *Keith Andrew*, March 13. Mrs. Duggan is the former *Susan Putnam*, '62. Barry is with General Dynamics, Fort Worth, Texas.

*Bill R. Grimer*, IM, is now with the Oak Ridge Institute of Nuclear Studies. He lives at 192 North Purdue Avenue, Apartment 112, Oak Ridge, Tennessee.

*Walter R. Herbert, III*, EE, received his masters in electrical engineering in June from Georgia Tech and is now with Electro-Mechanical Research, Inc., P.O. Box 3041, Sarasota, Florida.

Married: *Edwin H. Hooper*, AE, to Miss *Sandra Ragsdale*, June 8. Mr. Hooper is with Lockheed in Marietta, Georgia.

Married: *Kenneth F. Howell* to Miss *Phyllis M. Scott*, November 24. Mr. Howell is with IBM as associate systems engineer. They live in Tallahassee, Florida.

*Harold C. Isgett*, USA, EE, has been promoted to first lieutenant in Korea where he is a member of the 304th Signal Battalion.

Born to: *Mr. and Mrs. James Henry Jarrell*, a son, *James Ernest II*, February 20. Mr. Jarrell is with the Computer Installation Department of The Trust Company of Georgia. He lives at 2788 De Foors Ferry Road, N.W., Apartment 11-B, Atlanta, Georgia.

*Kenneth R. Kase*, Phys, has completed his masters in bioradiology at the University of California on an AEC Health Physics Fellowship. He lives at 3408 Richmond Boulevard, Oakland 11, California.

*Lt. Thomas E. Lewis, Jr.*, USA, Arch, is a planning engineer with the Aeronautical Chart and Information Center at St. Louis, Missouri.

Born to: *Mr. and Mrs. Robert L. Martin*, a daughter, *Amy Ann*, March 16. Mr. Martin received his masters in civil engineering in June and is a city planner with Harland Bartholomew and Associates, Atlanta, Georgia.

Married: *William P. McKibbin*, Math, to Miss *Valerie Trent Jackson*, June 23 in Griffin, Georgia.

Married: *Lt. Charles Lee Parham*, USN, to Miss *Emily Jones*, April 20. Lt. Parham is stationed aboard the USS *Robert K. Huntington*.

Engaged: *Lt. R. Y. Shuping, Jr.*, USN, CE, to Miss *Melissa Mitchell*. The wedding will take place October 5. Lt. Shuping is serving aboard the USS *Holder* (DD-819), c/o FPO, New York, New York.

*Lt. Bridges W. Smith*, USAF, ME, has received a citation for his work in redesigning and upgrading munitions trailers for use in the ground-air missile program at Kelly AFB, Texas.

*Lt. Robert B. Stipe*, USN, IM, has been



## NEWS BY CLASSES—continued

transferred to the Navy Supply Corps School at Athens, Georgia for instructor duty.

Born to: *Mr. and Mrs. Bobby J. Studard*, IM, a daughter, Julia Anne, March 30. Their mailing address is Box 391, Sandersville, Georgia.

Married: *James Robert Wallace*, CE, to Miss Turea Thompson, June 8. Mr. Wallace is with MIT where he is also working on his doctorate.

*Lt. Ross H. Woods*, ME, is maintenance platoon leader, 556 Ordnance Company (DS), APO 696, New York, New York.

**'62** *Lt. Morgan D. Adams*, Chem, has graduated from the Infantry Officers Orientation School at Fort Benning, Georgia and has been assigned to Fort Ord, California as an infantry training officer.

Born to: *Mr. and Mrs. James F. Ansel*, ME, twin sons, Richard Bennett and James Kirk. Jim is an engineer with Stone Manufacturing Company. They live at 204 Thornwood Drive, Route 4, Taylors, South Carolina.

*Lt. Hilton J. Arnold, II*, USAF, IM, has been assigned to Patrick AFB, Florida.

Married: *Ens. Wilbur Fisk Boswell, III*, USN, to Miss Rebecca Hasty in June. Ensign Boswell is serving aboard the USS Basilone.

*Lt. William R. Calvert*, USA, CE, is currently stationed at Fort Bragg, North Carolina, after completing qualifications for Special Forces prefix. He lives at 155 North Dougherty, Fort Bragg, North Carolina.

*Len Chavis*, EE, is with Thompson Ramo Wooldridge, Inc., Canoga Park, California. He lives at 7939 Reseda Boulevard, Reseda, California.

*Lt. David R. Fairburn*, USAF, AE, is attending the Air Force School for T-37 jet aircraft instructor pilots at Williams AFB, Arizona.

*Lt. Thomas H. Fitzpatrick, Jr.*, USA, has completed the officer orientation course at The Chemical School, Fort McClellan, Alabama.

*Lt. John J. Fletcher*, USA, ME, has completed the officer orientation course at the Ordnance Center, Aberdeen Proving Ground, Maryland.

*Lt. Foster W. Harrison*, USAF, IE, has been awarded the U.S. Air Force pilot wings following graduation from pilot training at Moody AFB, Georgia and is now assigned to Homestead AFB, Florida.

Married: *Dale Franklin Harsh*, ME, to Miss Mary Evelyn Rogers in May. Mr. Harsh is with Western Electric. They live at 81 Perry Street, New York, New York.

Married: *John Alexander Henderson*, IE, to Miss Carolyn Akin, June 23. Mr. Henderson is an engineer at Robins AFB, Georgia.

Engaged: *Clifford Raymond Holt, Jr.*, IM, to Miss Carey Collinsworth. The wedding will take place July 27. Mr. Holt is with Genuine Parts in Atlanta, Georgia.

*Pvt. Kenneth M. Hofmann*, ANG, has

completed advanced armor training at Fort Knox, Kentucky.

*Lt. Daniel D. Hull*, USAF, CE, has been awarded pilot wings following graduation from pilot training at Moody AFB, Georgia and is now assigned to Evreux Air Base, France.

*Lt. Willis H. Jahnke, Jr.*, USAF, has been reassigned to Laughlin AFB, Texas following graduation from the U. S. Air Force training course for supply officers.

*Capt. Warner D. McClure*, USA, IM, has been assigned to the U. S. Army Tripler General Hospital in Hawaii as medical supply officer.

Born to: *Mr. and Mrs. J. A. Michelena*, ME, a daughter, Bettina, April 7. They live at 1751 Emerywood Drive, Charlotte 9, North Carolina.

*Ens. Thomas A. Morris*, USN, Phys, recently completed U. S. Naval School of Pre-Flight at Pensacola and the U. S. Naval Intelligence School in Washington, D. C. and is now an instructor in the Intelligence/Communications Department at the U. S. Naval Amphibious School, Little Creek, Virginia.

Born to: *Mr. and Mrs. Jimmy A. Nail*, IM, a son, Keith Darren, February 8. Mr. Nail is with Cobbs, Allen & Hall Mortgage Company, Inc. They live at 1408 Linda Vista Drive, Regent Forest, Birmingham 16, Alabama.

*Joe Lamar Pattillo, Jr.*, ME, was killed in a skin diving accident off Catalina Island in California March 31, 1963.

*Stanley Sattinger*, ME, is a candidate for his masters in engineering mechanics at Cornell University, Ithaca, New York.

*Lt. Arthur M. Sims*, USAF, IM, recently received his pilot wings following graduation from pilot training at Vance AFB, Oklahoma and is now assigned to Altus AFB, Oklahoma.

*Lt. Ben R. Sumrall*, USAR, ME, has been assigned to the 47th Air Defense Brigade, Fort MacArthur. He lives at 3535 S. Western Avenue, Apt. 5, San Pedro, California.

Born to: *Mr. and Mrs. Guy M. Tarrance, Jr.*, a daughter, Carla Dolvin, April 19. Mr. Tarrance is with the Market Research Department of the Coca-Cola Company. They live at 3876 Parian Ridge Road, N.W., Atlanta 5, Georgia.

Engaged: *Paul L. Taylor*, ChE., to Miss Sally Ann Hewlett. The wedding will take place August 24. Mr. Taylor is attending Washington University in St. Louis, Missouri.

*Pvt. Peter D. Wev*, ANG, has completed 8 weeks of advanced infantry training at Fort Polk, Louisiana.

*Lt. Harry C. Whitehead*, USA, ME, has completed with honors a nine week officer orientation course at The Ordnance Center, Aberdeen Proving Ground, Maryland.

*Eddy N. Whitley*, IE, has been transferred by the Firestone Tire & Rubber Company from Akron, Ohio to the company's Los Angeles Tire Plant. He lives at 8709 Cavel, Downey, California.

*Lt. Marshall K. Wyman*, USA, has com-

pleted the officer orientation course at Fort Belvoir, Virginia.

**'63** *Lt. Anthony M. Bradford*, USA, TE, has completed the officer orientation course at The Ordnance Center, Aberdeen Proving Ground, Maryland.

Engaged: *James Knox Brookshire, Jr.* to Miss Marilyn Brown.

*Lt. James R. Brown*, USAF, IM, graduated from Officer Training School at San Antonio, Texas and is now working in research & administration at Eglin AFB, Florida.

Married: *John McMurray Carpenter, III*, ChE, to Miss Evelyn Davis June 9. Upon graduation from Georgia Tech in June he was commissioned a second lieutenant in the U. S. Army.

Married: *Robert Winston Carter* to Miss Cecelia Lacey, June 20. He will enter N. Y. University in the fall to work toward his masters degree.

*Milton A. Cash*, USAF, IM, has been commissioned a second lieutenant following graduation from Officer Training School at Lackland AFB, Texas and is now assigned to Olmstead AFB, Pennsylvania as supply officer.

*Bruce P. Ellen, III*, USAF, IM, has been commissioned a second lieutenant following graduation from Officer Training School and is now assigned to Craif AFB, Alabama.

Engaged: *Lt. Charles Shockley Gilbert*, USAF, IE, to Miss Herlene Evelyn Coile. Lt. Gilbert is stationed at Grand Ford AFB, North Dakota.

Engaged: *James Franklin Gillen*, IM, to Miss Melanie Ann Davis. Mr. Gillen is with C & S Bank in Atlanta, Georgia.

Married: *Jack Gold*, ME, to Miss Julia Gilfarb, June 2. Mr. Gold is a sales engineer with Johnson Service Company, 2515 Galiano Street, Coral Gables 34, Florida.

Engaged: *Benjamin Hugh Granade*, IM, to Miss Virginia Haygood.

*Thomas L. Guillebeau*, USAF, IM, has been commissioned a second lieutenant following graduation from Officer Training School at Lackland AFB and is now assigned to Chanute AFB, Illinois.

*Lt. Dan E. Hunt*, USA, has completed the officer orientation course at the Chemical Corps School, Fort McClellan, Alabama.

Engaged: *Thomas Cottrell Redford, Jr.*, CerE, to Miss Kaye Stapleton. The wedding will take place in September.

*Thomas Raleigh Turner*, BC, is an engineer in training at Shell Oil Company's Atlanta District Office. He lives at 3471 Maplehurst Drive, Decatur, Georgia.

Married: *William Jerome Vereen*, IM, to Miss Evelyn King, June 9. Mr. Vereen received his commission in the U. S. Marine Corps in June and will report for duty in July.

Engaged: *Albert Allen Ward*, IE, to Miss Linda Ike. The wedding will take place August 3. Mr. Ward is with Union Carbide Metals Corporation in Alloy, West Virginia.

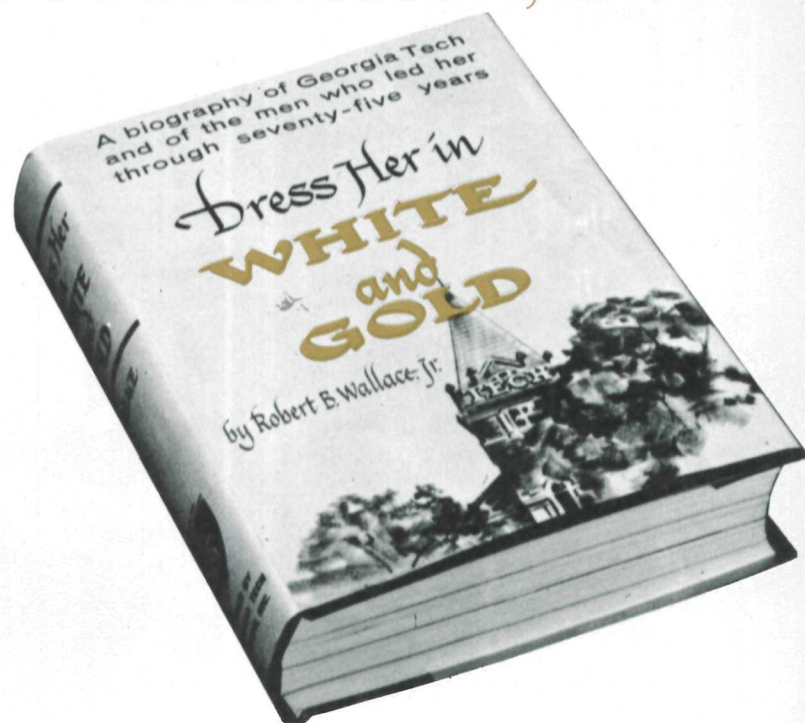
Married: *Thomas K. Winingder* to Miss Lesley Ward June 15, in Norfolk, Virginia.



# THE GEORGIA TECH FOUNDATION, INC.

announces the publication  
of a factual history of  
the first seventy-five years  
in the life of Georgia Tech

BY ROBERT B. WALLACE, JR.



*Dress Her in White and Gold*, the new history of the Georgia Institute of Technology, has been over two years in the researching and writing. This hard-bound book will contain over 400 pages of text and 32 pages of photographs selected from the collection of Dean George C. Griffin. It will also include special sketches by Jane D. Wallace of Tech's six presidents. The book will feature chapters on the six presidents, the three football coaches, the student of today and yesterday, and the traditions and legends surrounding the school ranging from Sideways, the dog with the poor front-end alignment to the bear that once lived under the East stands of Grant Field. The selected appendices will include records of legislation relating to Tech; complete scores of all Tech football games; the administrative and faculty leaders of the year 1888, and the present, and the great teachers who have passed this way. Publication is scheduled for mid-September and you can order your copy now by using the attached form.

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Please send me a copy of *Dress Her in White and Gold* this fall and bill me after I receive the book (\$5.00 includes postage and sales tax).

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