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Volume 43

Number 2

THE COVER

Joe McKibben is an artist with a sense of humor and a deft touch. He shows both of these qualities in his sketch of his impression of the article on page 6 of this issue. One of his working drawings was so good it became the illustration for the article.

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TOMORROW: CATTLE IN THE COOP

THE HEREFORDS and other beefy members of the cattle family are acclimated to life behind a fence by now. Some western long-horns and Indian brahmas still roam pretty much as they please but the majority of the world's cattle have traditionally seemed happy moseying around green meadows attractively fenced, occasionally cropping a spot of grass or quietly resting under a tree chewing their cuds.

But alas, things may be changing. Lovely white-faced, brown-eyed cattle may be cooped up like chickens. They'll

have to spend their lives, from birth to butcher, in a feed lot eating themselves to death—a fate they would surely love to avoid but farmers and people everywhere will have a stake in the success of the plan.

To add to their frustration, the cooped cattle will no longer eat good, old-fashioned-textured hay because it—like cotton candy—is not terribly nutritious. Instead, they will crunch homogenized hay pellets which will be very, very green and therefore exceedingly healthful. The hay will be spinach-like in color because it will be dried in a very special drying machine, not by a harsh bleaching agent like the sun.

This marvelous machine will probably be similar in design to one built by Don Brock, a young engineer who has just completed work on his doctorate at Georgia Tech.

The dryer is the link that makes cattle-cooping practical. And even if cattle view it cagely, men see some extremely profitable advantages.

For instance, there is always the problem of the weather. Will there be a thunder-cloudless day in which to cut the grass and leave it to dry for 24 to 36 hours? Probably not and if it rains before the hay is gathered and taken to the barn, mildew and a host of agents of deterioration will be at work.

If the farmer is lucky the sun dries his crop, bleaches out its rich green color, and leaves hay that is about seven percent protein. This bulky, empty hay must be gathered, chopped, baled, and then stashed under the barn's roof, and although many parts of this operation have been mechanized, it is still time and space consuming.

But Don Brock's ever-green hay is 16 to 27 percent protein (fairly amazing when it is considered that grass is at least 70 percent water when cut) and the dryer assures the farmer he can cut his crop anytime he wants to, even in a downpour. For farmers and the bankers that back them, having a dryer will be like taking out an insurance policy because the crop will be guaranteed.

The only criteria for cutting will be that the grass be at its flavorful peak. Coastal bermuda grass is said to be best when young, tender, nutritious and green, or, when it is under 40 days old—the beginning of its middle-age. It is said to be at its prime when it is 21.

If the grass is cut regularly and dried in a machine like Don's, agricultural researchers believe the same track of land would support four times the weight gain on animals as it would if the animals grazed on it. It is significant to note that not only do the animals get more nutrition, but they do not waste energy walking around munching nor do they tramp down valuable grass.

When the dried hay is pulverized and mashed into little pellets by one of the pelletizing machines which have been on the market for some time now, storage for the farmer is very easy. Distributing machines can even be rigged to feed the pellets to the cattle mechanically.

A few commercial dryers are already being produced and used in the western part of the United States, but Don

does not believe they do the job they should since they bleach and parch the grass. The hay samples from Don's machine analyzed by the Georgia Department of Agriculture have looked much better.

Don and his father, J. A. Brock, plan to begin producing dryers soon at one of their companies in Chattanooga, the Chattanooga Welding and Machine Co., or the Industrial Boiler Co. The Industrial Boiler Co. currently produces hot oil operated asphalt heaters used in road construction (patented by J. A. Brock) while the other plant builds giant automobile baling and bail-slicing machines.

Don has sold a patent to the Singer Corporation for an improved drying machine for tufted carpets which is now being manufactured by Singer's Gowin Plant, Cobble Division, in Dalton, Ga. This dryer is much smaller and faster than others used by the industry and is being sold to rug makers. One was even bought by an English company recently.

It was in designing the rug dryer for his master's thesis that the creative young engineer got the idea for his hay dryer which will change the lives of so many cattle.

"These may seem like unusual fields for a mechanical engineer to be working in, but there is real industrial potential here and I believe we should do something practical," Don says.

"For instance, we are all interested in steaks and we might eat more if cattle were fed hay pellets. In the Southeast during the winter a steer that is just fed hay can only maintain its weight, not gain, so we have to bring in corn from the Midwest to fatten it. Hay pellets would do the same job quicker.

"Because of Coastal Bermuda grass, southern Georgia and Florida constitute one of the best hay growing areas in the world but our present methods of harvesting allow us to get only about one-third of the grass' food value.

"And each year about 30 percent of the crop is lost because of mold or deterioration or because rain keeps the farmer from harvesting the crop at the proper time. It is estimated that this amounted to about a \$2 million loss in the U.S. last year."

The young engineer believes that if the dryer and pelleters are used by Southeastern farmers, pellets might be shipped west during drought years on the great plains. "I look forward to the time when hay and forages will be on the same basis as grains." Thus would be achieved a kind of equality between hay and seeds.

The smallest commercial dryer will probably cost about \$20,000 and the largest, \$100,000, Don says. He suggests that a group of farmers might buy one and operate it cooperatively like the old cotton gin.

But will the skeptical farmer want to buy another expensive machine?

Just wait 'till he smells its freshly dried hay. "Ah," as one farmer told Don, "This is the best smelling hay I've ever smelled."

The second battle of *cow-pens* is joined.

NEW GIRL



PHOTOGRAPH BY BILL SUMITS, JR.

Marian Van Landingham takes her first look at Tech after four years on another campus

STEPPING ONTO THE TECH campus from the outside world is a little like getting out of my Volkswagen and climbing into a 700 mile-an-hour jet. I don't know how either works—the jet or Tech—but I'm terribly impressed by both. The little things give you the spirit of the place.

I'll never forget my first day here seeing the moving crew from Physical Plant arrive escorted by a jeep with a walkie-talkie equipped leader. This steel-helmeted crew was as coordinated moving furniture as a Tech football team moving the ball. Everything was done crisply, efficiently and quickly. I settled into my stained-glass-windowed office in the corner of the old E.E. Building, amazed at this approach to something as prosaic as moving.

ON CAMPUS



There *is* a kind of “go” feeling at Tech, not anyone can, of course, be sure exactly *where* it is all going. But watching the rapid physical growth of the campus and detecting the determined glint glittering in the eyes of faculty and students seemingly ceaselessly striving, I get the distinct impression this school is rapidly building the thrust necessary to meet modern challenges of science and technology.

It is amazing to record the progress that has taken place in only a year or two.

More academic degrees continue to be added, new programs of instruction included and whole new *centers* built such as centers for the study of water resources, nuclear

and space research, industrial management and continuing education. There are special programs reaching out to engineers in Afghanistan and businessmen in Colombia.

And Tech is looking for more campus growing room because space, if limitless above this planet, is confining here on earth. The *hill* and neighboring slopes are where 10,000 people now study, work and live on about 150 acres. They are confined by traffic arteries, business and residential sections.

Fortunately, the Tech administration has faced this space problem squarely. It went to urban renewal planners and

continued on page 10

NEW GIRL ON CAMPUS—continued

received a federal grant for a complete study of the area which the Atlanta Housing Authority is now conducting. It seems logical that most of the campus expansion will be to the west into 91 acres that have slipped into near-slum status.

When the study is completed the middle of next year the Housing Authority will buy the land, tear down all the old houses and then the *raw land* as they call it, will be resold to Tech. Joe W. Guthridge, director of development and assistant to the president, says Tech has the money to match the urban renewal grant to buy the land.

Tech has been helped mightily by the Board of Regents of the University System which seems to recognize the Institute's jet-age propulsion. Last April it awarded \$15 million for expansion, and Tech immediately hired a Chicago consulting firm, Perkins and Will, to work on a plan for using the urban renewal tract as well as to study the present campus and suggest possible changes. We should know the results soon.

Part of the \$15 million has already been divided and we may assume new buildings as shiny, bright and modern as the E.E. and Ch.E.-Cer.E. marvels will soon shoot up on campus. (They will provide an interesting contrast to the 1890-1900 hill but then one building, the Administration, does this all by itself. Stand outside and look at the late 19th century towers and turrets, walk inside into 1964 modernity. The effect is a tad jarring, but interesting.)

Anyway, there will be a \$2.5 million construction for chemistry, a \$1 million addition to the Aerospace Building providing up-lift for this department's plans and \$500,000 for an addition to the Computer Center and for new photo labs.

A million dollars can be traced to an addition atop the Radioisotopes-Bioengineering Building and \$2.7 million should build a student activities center and \$3 million a new Physics Building. The Engineering Experiment Station Facility will get \$2 million. Southern Tech will get \$400,000 for a multipurpose physical education plant and \$250,000 for a library.

Governor Carl Sanders announced a few months ago that Tech will get funds for another major piece of construction soon: an electronics research building. It should cost about \$1 million, be completed next summer and have 18,888 square yards of floor space—enough for a team of scientists and engineers to pass on to greater research efforts. The electronics division has long been one of Tech's first string research divisions and has made major contributions to defense and space-oriented electronics.

Speaking of space, Tech's thinking has been becoming increasingly other-worldly for a number of years. Whole programs like that in Aerospace Engineering have been re-evaluated to make sure they are in the right orbit. Doctorate degrees have been added in nuclear engineering, engineering mechanics, and mathematics while a depart-

ment of engineering graphics and a school of information science have been established.

The school of information science—first in the nation—was begun simply to try to keep up with all the rest of the wonderful knowledge being discovered. Here students are already studying to be masters—oops—to get master's degrees in this field.

Perhaps the one single event that has convinced Tech most that she is orbiting on the right track in space was the announcement last April that the National Aeronautics and Space Administration (NASA) had approved a \$1 million grant for a research building with all space devoted to space. This pad will be one of three planned for a proposed \$2.5 million space technology center here.

Tech's next two buildings—the \$1 million Electronics Building (right) and the \$3 million Physics Building will go up soon.



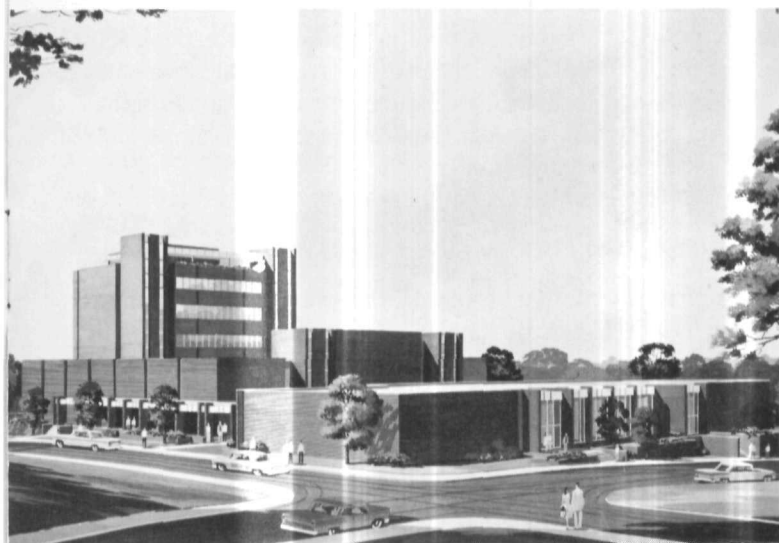
ROBERT AND COMPANY ASSOCIATES - ARCHITECTS AND ENGINEERS

More NASA grants may be coming

And there will probably be still more grants for NASA Administrator James E. Webb has spoken saying the projected facilities "will expand the national base of research laboratories (Tech is not in California or Massachusetts) available to competent scientific manpower, and will thus permit NASA to contribute more effectively to the preservation of the role of the United States as a leader in aeronautical and space sciences and technology."

Until it is ten years old the first NASA building will be used only for research in space related sciences and technology by both government and non-government agencies. The other two structures to rise in the not-to-distant future, will be a laboratory-office building and an auditorium building.

Tech also received another NASA grant last spring, a \$200,000 one for upper atmospheric studies directed by Dr. Howard Edwards. Dr. Edwards is research associate



ROTHWELL AND NASH - ARCHITECTS

professor of physics and head of the Space Sciences Branch of Tech's Engineering Experiment Station.

And as every Tech alumnus probably knows by now, Lt. Cmdr. John W. Young, USN and a graduate of Georgia Institute of Technology, has been named one of the astronauts for the two-man Gemini ring-around-the-earth flight this fall.

In addition to space, the modern world *in* study is nuclear research and Tech will go *critical* in this radioactive field soon. The \$4.5 million Frank H. Neely Nuclear Research Center was activated a few weeks ago and there is only one other university campus reactor that can be compared to it in power and diversity: that at M.I.T.

The laboratories attached to the giant dome that *contains* the reactor are far better than those of any other university in the U. S. and probably in the world.

All this means that Tech can expand vastly research in solid state physics and chemistry with emphasis on neutron diffraction techniques, in the areas of radiation chemistry, radiobiology, nuclear medicine (including *neutron capture therapy* the theory of which escapes me), and the study of high-temperature materials in metallurgy and ceramics.

There will also be other related reactor studies like reactor kinetics and reactor engineering problems, and, of course, the Nuclear Engineering graduate programs will be strengthened. Tech-grown radioisotopes will be shipped all over the Southeast for industrial, research and medicinal uses.

You wouldn't exactly have expected it but some of the scientists down at the Nuclear Center have developed a new teaching method. They can chalk-up a "first" in working out a remote teaching system using as professors specialists hundreds of miles from campus, researchers up at Oak Ridge.

Ten nuclear engineering graduate students at Tech are learning reactor technology through a two-way long distance

telephone hookup with an instructor at the Oak Ridge National Laboratory. A special electronic device transmits and projects on a standard television screen written material the professor wants to show students, a sort of long-distance blackboard.

Two new centers of excellence

Another new development at Tech is an Industrial Management Center through which Tech is expanding her services to business and industry in the Southeast. A unit in Tech's School of Industrial Management, it will be mainly involved in management training and management research and if the center manages these jobs it will be managing a good deal.

This center will have the cooperation of Tech's new Department of Continuing Education, a department so new it doesn't yet know what all its responsibilities will be. It was authorized by the Board of Regents in late April and is an outgrowth of the department of short courses and conferences.

Still another center just established at Tech is one for water resources supposed to stimulate the development and flow of broad-stream, inter-disciplinary programs in water resources education (as letting the public know about pollution) and resources research (getting the facts).

The center will work with researchers in hydrology, hydraulics, water-control structures, soil mechanics, sanitary engineering, systems analysis and computer technology, water chemistry and biology, geology, social science, resource economics, city planning, industrial engineering and industrial management as well as physics, chemistry and mathematics.

All the new facilities and new "centers" popping up around Tech are valuable not only because of the research they make possible but because they are where more graduate students can learn. They are a major reason why Tech's graduate division is becoming bigger and better known every year.

Faculty members from many other colleges and universities come to Tech to continue their education and a large number of graduate fellows and trainees are being supported at Tech by agencies of the federal government.

Dr. Mario J. Goglia, graduate division dean, says federal agencies are now investing over a half million dollars annually training graduate students at Tech.

Last year this was a national investment in the brain-power of 81 students. Dean Goglia feels this represents "additional proof that Georgia Tech's stature as a center of quality education and research is growing on a national scale." He adds that Tech gets these graduate training funds because it has managed to attract young men of high educational standing who qualify to receive support from federal agencies.

Thirty-seven of the 81 federally-aided students at Tech now are NASA trainees in a program begun at Tech in

NEW GIRL ON CAMPUS—continued

1962. They are working on doctorates in chemistry, mathematics and physics.

The National Science Foundation (NSF) is supporting 19 engineering trainees, three "regular" graduate fellows and five "cooperative" graduate fellows this year. (The NSF Graduate Traineeship Program is based on a staff paper by Dean Goglia who has served as a special consultant to NSF.) The awards are made by NSF following national competition and then they choose where they want to study.

Still other graduate students, 17, are at Tech this fall because of the National Defense Education Act.

Speaking of the graduate program in general, Dean Goglia says enrollment has more than doubled in the past 10 years, from 328 to 809. He says he thinks "Georgia should indeed be proud to have the South's leading technological university located in its capital city. I think the Board of Regents of the University System ought to be commended for its continuing and significant support of Georgia Tech. This is especially true now with the construction of new facilities for expansion of both the graduate and undergraduate programs."

Many of the research programs at Tech are still conducted by the Engineering Experiment Station but more and more is being done by all of Tech's schools and departments so the total amount of money spent on research

is now above \$5 million every year.

Georgia Tech today is where more than 500 experienced scientists and engineers helped by technical assistants, machinists and technicians conduct research in an enormous number of areas. At the Experiment Station alone over 400 projects are now under way.

The research is now diversified

Tech is proud that it has at the present time facilities where research can be carried on in almost all phases of science and engineering. There is every kind of laboratory *kitchen* in which to *cook*. There are general laboratories with standard equipment located in specialized buildings and departments and there are several major research facilities like the reactor.

Another of these "special facilities," the Van Leer Electrical Engineering Building costing \$3.5 million has been in use a couple of years, and a \$3 million Ceramic Engineering-Chemical Engineering Building will be completed at the end of this year.

And last year the Engineering Experiment Station built a standard seismic station to listen in on the Earth's rumblings and ramblings. A B5000 computer, one of the newest and largest mechanical thinkers was added to the rest of the "brains" thrust into the Rich Computer Center.

Private industry has been taking note of all this and a number of companies have moved into the Atlanta area to take advantage of Tech's outstanding research capabilities. Some new industries, particularly electronics industries, are off-shoots of Tech research.

Tech is not satisfied just to contribute to the growth of Georgia and the Southeast, however. It has several *out-reach* programs. It reached pretty far for one too: all the way to Afghanistan, which until the jet age, could only be reached by caravan. Another program is a little nearer home at the Universidad del Valle, in Cali, Colombia.

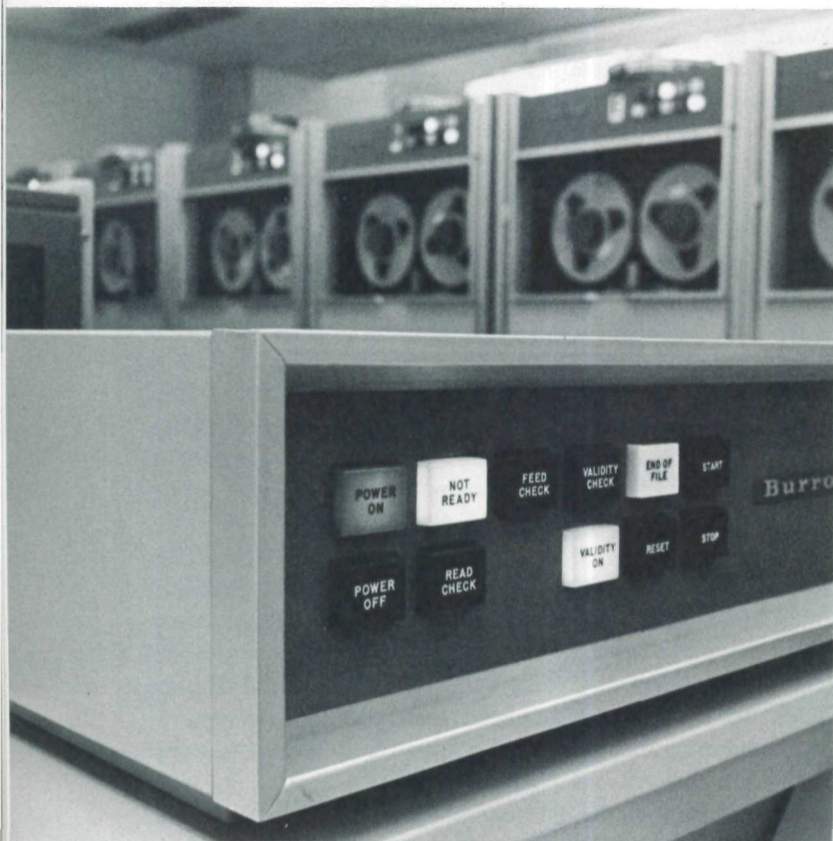
Two members of Tech's faculty are now teaching at Kabul University in Afghanistan's capital city in the Kabul Afghan-American Program. They are there to help this nation, tucked away on a high plateau between Russia, India and Iran, leap forward in education and economic development.

Bobby F. Barfield, assistant professor of mechanical engineering at Tech, was one of the American professors that arrived as an advance group in Afghanistan in the spring of 1963. Since then he has been teaching undergraduate classes in civil, electrical and mechanical engineering as well as courses in chemistry, physics and mathematics. Winston Boteler, head of Tech's Electromechanical Devices Branch, went to Afghanistan in June to teach mechanical engineering and will stay at least a year.

One of the eight Kabul University engineering faculty members now studying in the U. S., Bashir Ahmed Sayar, is at Georgia Tech.

The Kabul Afghan-American Program was begun in

THE CONSOLE OF TECH'S NEW B5000 COMPUTER



September 1963 when 11 American universities and institutions of technology joined with Educational Services, Inc., (ESI) and formed a *consortium* to help the Royal Government of Afghanistan develop and strengthen engineering education at Kabul.

The project is being supported financially by agreements between the U. S. Agency for International Development (AID), ESI and consortium members. AID administers the program.

Since Kabul University is Afghanistan's only center of higher learning the consortium is determined to give the best possible assistance to the local faculty: helping them develop curricula, good and appropriate classroom teaching methods, as well as how to teach using the research laboratory. It is a challenge for an American engineering educator to adapt and apply his technical knowledge and teaching skills to the problems of a developing nation.

There are currently 250 students working for engineering degrees at Kabul University out of a total enrollment of nearly 3,000. The Kabul Afghan-American Program will probably be *phased-out* in about 10 years when enough Afghani teachers are equipped to carry on by themselves. The Americans are just filling a temporary educational gap.

A project of importance to America

For the past two years Tech's industrial management school has been developing a program in Latin America unique among projects conducted by U. S. colleges. It all began when two businessmen in Colombia asked for advice. Daniel Vargas and Reinaldo Scarpetta, graduates of Tech's Industrial Management school, came back to Atlanta and talked to Dr. Walter Buckingham, director of the I. M. school, about conducting a seminar for top management in Colombia.

They told him that three years before, the Colombian business community, working with the U. S. Point IV Program, had created a nationwide training institute for managers, called INCOLDA (Colombian Management Institute). This ambitious project had given training to 16,000 middle-level managers in Colombia during its first three years of operation and was already influencing the industrial growth of the country.

But there was a need for a program designed specifically for top management, Mr. Vargas and Mr. Scarpetta said.

Dr. Buckingham called in one of his staff members, Dr. Roderick F. O'Connor, a man with extensive experience both in Latin America and in top management consulting in the U. S. Dr. O'Connor later met with Colombian business leaders in two visits to that country and then organized a top management seminar which was at Barranquilla in August, 1962. The seminar was run as a joint effort between the Colombian Management Institute and Tech.

Seminar leaders representing Colombia included a major industrialist who had been a cabinet minister, a develop-

ment banker once the ambassador to the U. S. and the president of Colombia's National Manufacturers' Association.

The seminar was such a success that business leaders from the Cauca Valley, one of Colombia's five major regions, asked Tech to work with them in planning the development of their region's resources.

It quickly became obvious that there were practical, economic benefits for Georgia in the Cauca Valley's development, because when the needs and resources of a developed country and those of a developing one are matched, an industrial pattern can be worked out that benefits both.

The work in South America grows

A country like the U. S. has technically trained people, managerial know-how, advanced centers of technical education and research, machinery, proven products, available money for investment—all the elements which make a productive economy. But development can itself bring serious problems. The more a country builds its production, the more its markets become saturated. This means that there is only so much honey even a big piece of toast can soak up and the competition between the salesmen promoting *improved* or *vitamin enriched* honey can become fierce with nobody making much of a profit.

Developing countries, on the other hand, NEED what the developed country produces. Manufacturing and marketing opportunities abound.

Back in April, 1963, Georgia Tech held a Latin American Industrial Development Seminar in Atlanta featuring the international management authority Professor Peter F. Drucker and four Colombian industrialists and economists.

Forty-five of Georgia's top industrial leaders attended and all became interested in a region-to-region development plan. So in October, 1963, the industrial, governmental and university leaders of the Cauca Valley decided to establish a center for economic research at the Universidad del Valle. This center would provide the basic economic data necessary for long-range development.

This was the beginning. The second step was taken when Tech's President Dr. Edwin Harrison and representatives of the School of Industrial Management met with the Cauca Valley leaders in Colombia in December 1963. They planned a graduate school in Industrial Management leading to a master's degree at the Universidad del Valle.

Joint U.S.-Colombian professor teams (including Dr. O'Connor) are now teaching in this program and for the next few years this graduate school will concentrate on night courses for those already in high-level management positions. There is no cost to the tax payers of Georgia since the expenses of the program are being paid by Colombians and a private foundation in Georgia.

And so this is what Tech has been doing the last year or so. I'd give it a gold seal of approval.

College Football Today: AN EXPOSÉ OF THE EXPOSÉS

by Dan Endsley

PHOTOGRAPHED BY BILL SUMITS, JR.

EVERYBODY KNOWS IT. As a means of gaining access to the college graduate's wallet, America's educators have developed a highly effective pocket-picking technique. They simply anesthetize old Joe Alumnus. The narcotic is a game called football—a game which at the college level features systematic brain scrambling by oversized, subsidized neanderthals whose only noticeable involvement in college life occurs on autumn Saturday afternoons. Right?

Wrong. As incredible as it may seem to a generation so often told otherwise, there is relatively little money obtained from college football—either directly in gate receipts or indirectly in gifts from hot-blooded old grads who parade their team's victories as proof of their own virility. And most players are bona fide students making normal progress toward graduation, without benefit of under-the-table aid, either academic or financial.

Muckraking gridiron exposés, from which we get most of our “knowledge” about football as an insidiously corrupting influence in college life, actually date from the 1920's, and most of the “information” is just about that old. Writing exposés has become a major sport in itself, and its most successful participants have been far better remunerated than even the most demanding of All-Ameri-

OPENING KICKOFF, 1964:



GRANT FIELD



EXPOSÉ OF THE EXPOSÉS—continued

can quarterbacks. But whether the work of big-timer or small potato, most of these exposés are several college generations behind the times.

Probably the two most persistent myths are these: (1) "Everybody does it" (whatever "it" is); and (2) college administrators, putting money before morality, look the other way as the cash rolls in.

"Everybody" does *not* do it. More than 600 American colleges and universities have football teams. No more than 10 percent of these—half a dozen conferences and half a dozen independents—can, in football terms, be considered "big time." Perhaps another tenth play follow-the-leader in recruiting, aid, and scheduling policies. *But four out of five do not.* They conduct low-pressure, honest, economical, student-oriented athletic programs. Football has not corrupted them, nor will it.

As to the charge of greed-inspired administrative hypocrisy—naïve indeed is the college official who still believes (if he ever did) that there is any significant relationship between alumni giving habits and a school's won-and-lost record on the gridiron. There is even less correlation between football and the really substantial gifts and grants from individuals, industry, foundations, and government. Nor does much money pour directly into the coffers from football itself.

There is hardly an administrator in the land who is not painfully aware of these realities. Even the most successful of bigtime operators hopes, at best, to cover the costs of athletic competition in all sports and maybe that of the institution's physical education program, and still be able to meet the mortgage payments on the field house. The era of building dormitories and laboratories with football money ended nearly a quarter of a century ago.

YET FOOTBALL goes on. Even though nearly a hundred schools have abandoned the sport since World War II began, more than 600 others still play the game. Why?

The answer is almost too simple to credit: football is a sport which young men like to play and which Americans of all ages like to watch. That was the game's strength back in the days when President Andrew Dickson White refused to let a Cornell team travel a thousand miles "to agitate a bag of wind," and that's still what keeps it going today.

It isn't the character- or body-building values, the public relations aspects, the money, or even the vested interest of large platoons of professional coaches and athletic directors. It's the fun. This fall approximately 2,000 college football games will be played. At each of these games, whether admission is free or six dollars a seat, there will be spectators. A few of the competing teams will even

The author, long-time editor of the Stanford Review, is a former sportswriter who gave it up because "it didn't seem a proper career for a grown man" — but he remains unapologetic about his love for sports. The high spot of his own football career came, he says, during World War II while he was a member of a Navy team. It was the day he tackled George McAfee of the Chicago Bears and got a Purple Heart. Not the medal, the real thing.

represent schools that have *dropped* football; the players will be students who, for no reward other than the joy of participation, have themselves organized new low-pressure programs at little expense.

Why such an inherently static and stereotyped spectacle as American football, which puts the rest of the world to sleep, continues to grip the interest and imagination of U. S. manhood is a question for the psychologists; perhaps one must grow up with it to appreciate it. But one thing is certain: it's only a game, and thus is in no way responsible for the asinities which sometimes accompany it.

ASININITIES there are, but virtually all of them occur at the one out of five schools which is "big time" or hopes to become so. Here are a few things which have actually happened:

¶ An All-American halfback, after signing his first professional contract, admitted (tongue only partly in cheek) that he "took a pay cut."

¶ A noted coach, when one of his players made a damaging mistake in a pressure-packed game, gave the culprit a punt in the posterior right in full view of 60,000 spectators.

¶ A rugged lineman who seriously injured an opponent *after the play was over* was defended by his coach with the argument that a winner must be aggressive.

These warts on the pigskin are typical of the things minimized by the Establishment sportswriters of the daily press, then blown up and flaunted as proof of incurable venality by mavericks writing for popular magazines and some few newspapers. Actually such examples are only a minuscule fraction of the list which could be compiled and verified with only minimal research effort. But even if the list cited 10,000 sins it would prove nothing against the game itself, or against the four out of five "football schools" to which such practices are completely alien. Nor would it necessarily reveal much about the real sins and policies of the other one in five. About all it would prove for sure is that in football as in other pursuits there are people who will seek advantage by cutting corners.

The impression most readers get from such stories is that college football—the bigtime practitioners directly and the others through association—is nothing but a vast cattle market where avid buyers bid for choice beef on the hoof.

Since in specific provable cases this impression is right, it's hard for many to understand that it can't be extended very far without grave error.

Lapses of virtue still occur, but these days they're actually more typical of basketball than of football. Ever since college football began drawing large crowds in the '20s, there have been abuses which make the game seem less a student activity than a great circus for the public—abuses which obscure the fact that long-range trends in bigtime college football point in a different direction altogether. If these trends had to be summed up in one word, that word would be "quantitative" or "collective"—take your pick.

SINCE THERE is still plenty of need for honest debate over the *real* trends in bigtime college football, the purpose of this article is merely to identify some of them—not attack or defend. Here are a few which tell far more about the State of the Pigskin than the most comprehensive list of violations can ever reveal:

1. *Quantitative Recruiting*: Because a factor called "desire" means as much as strength, speed, or agility and is impossible to spot for certain in even the most brilliant of prep school sparklers, football recruiters seek the largest possible group of promising prospects. Football coaches at top institutions have a hundred or more grants-in-aid to hand out; if all goes well, a solid 40-man squad will shake down from the larger group. A still new but increasingly popular recruiting device is the "letter of intent," which is supported as a means of preventing "other schools" from badgering a boy who has already made up his mind. This means the school which can get a recruiter there early and cozen the boy into signing a sheet of paper he may not understand can concentrate elsewhere without fear that he'll be pirated away—because he will lose a year of varsity eligibility if he changes his mind. This applies only where specific conference or other inter-school agreements have been made, but there is growing pressure to make its application universal by adopting it as a National Collegiate Athletic Association dictum.

2. *Standardization of Reward*: "Carrying" a large group of grid hopefuls is an expensive business, even at a large state school where the gate receipts are big and tuition is relatively low; therefore there is strong sentiment for a standard work-aid scale with individual need the governing factor. Occasionally it turns out that a particularly desirable star has been slipped something extra on the side, but most get no more than tuition, books, non-taxing part-time jobs that barely cover other basic expenses, and usually summer jobs at which they must work hard.

3. *Exchange of Information*: While a coach might prefer to keep his dealings with his own players a secret from his competitors, the only way he can find out what the

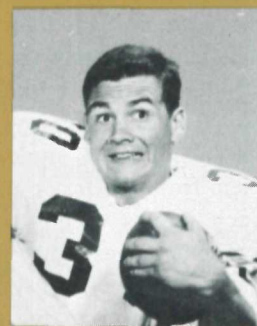
A FEW CASES IN POINT

Robert Lee Dodd has repeatedly talked about the character of this 1964 squad, calling it the finest group of boys he has ever had on one team. Here are four of the reasons why:



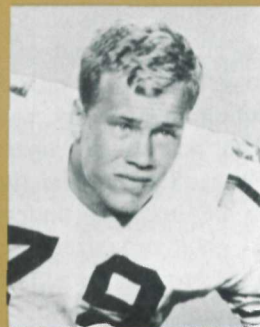
WILLIAM ALEXANDER CURRY is the Jackets best bet for all-American this year. A center of exceptional offensive and defensive abilities, Bill is the top leader in Tech's rapidly-growing group of workers in the Fellowship of Christian Athletes. He was named for Coach Alexander of Tech.

JOHNNY GRESHAM is a senior halfback from Washington, Georgia, who has become the first Tech athlete to head the senior class since 1947. He is considered the best of a fine stable of halfbacks and has been a student leader since the day he arrived on the campus.



DAVE SIMMONS is a 235-pound linebacker specialist who is also a member of the Fellowship of Christian Athletes, the prime force behind the change in the character of today's athlete. He is as dedicated to teaching Christianity as he is to becoming one of the country's finest defensive centers.

TOM BALLARD is an Industrial Engineering major who made the all-SEC academic team last year. The most underrated lineman on the team, he is also president of the Tech T Club and a man given to discussions of Plato, modern drama and several other subjects which hardly fit the stereotype of a tackle.



EXPOSÉ OF THE EXPOSÉS—continued

other fellows are doing is to trade reports. At the recruiting stage everyone knows the educational and other qualifications of all the prospects (and thus who, if anyone, is cheating on admissions standards), but it doesn't stop there any more; in several conferences each school now makes regular reports on every player—the aid he receives, if any, and his record of educational progress. Doctoring these reports is possible, no doubt, but perilous. Nowadays coaches actually get *fired* for unethical practices, and there are quieter and less drastic penalties which aren't very agreeable either.

4. *Insulation of Athletes:* Just as skyrocketing enrollments have made it more difficult to obtain admission of boys with high gridiron but low scholastic attainment, they have also exerted a very different kind of pressure on those who are accepted. Today's students have a broader range of values, and while football is still popular, it's several slots down from the top of the list. Since football players are students too, they are often influenced by the attitudes of their peer group—to the detriment of athletic performance; a boy who doesn't consider football all-important isn't likely to play as well as one who does. So coaches seek ways of screening their players off from the rest of the student body. (Some also try to screen them from the press and from participation in other sports.) Such efforts aren't too successful because, even when it strains out insidious influences, isolation only emphasizes the difference between non-athletes and athletes. This puts the latter in the position of paid Hessians whom the rooting sections still cheer when the team wins but whom they are likely to boo if it plays poorly.

5. *Quantitative Coaching:* Years ago, any team that had eleven good men and three or four capable substitutes had a chance for a successful season. Now only the "three deep" schools have much likelihood of becoming big winners, and injuries have become so common that even some of the most powerful squads are decimated by mid-season. Hence a coach wants enough depth to withstand attrition and still be strong enough to wear down the opposition in the third quarter and flatten it in the fourth. The 60-minute player, formerly a common species, is now about as rare as the whooping crane because a fresh reserve is a better risk than a tired star. This dictates a collective approach to coaching. Many more players must be given the kind of attention only the first eleven used to get; thus several different types of drills are conducted simultaneously by assistant coaches who are specialists. The head man supervises, plans, delegates, coordinates. He can't be as directly and personally involved as he used to be because, under present-day conditions, if he isn't "a good organizer" he isn't long for the big time.

6. *Mass Tactics:* Even the most casual glance at a sports page will verify that there are still individual stars, but it's stardom with a difference. The payoff goes to the team

that can concentrate its strength and hit hardest as a unit, the greatest proportion of the time. This requires greater interchangeability of personnel, so the star is likely to be a specialist who plays half or less of the game rather than an all-around man. Success requires waves of fresh men ready to belt with abandon. Hitting hard has always been an important element of football, but emphasis in post-war years has been so heavy that tactics which once would have drawn penalties for roughness or piling on are now admired as "good, hard, clean football." Coaches are no longer thrilled by good individual tackles; they want to know where "the pursuit" was; if they can see the ball carrier's jersey under the pile, something went wrong. As the size and ferocity of players has increased, so has the incidence of injury. (Strangely enough, this kind of jungle warfare seems to evoke more respect than resentment from opponents. When talking football, today's player seems to understand gridders at a rival school better than he understands adults or sportswriters or his non-athlete classmates—or even players of a previous era. Try to talk to him about the other team's inexcusably rough tactics and he'll probably think you're a square.)

THESE ARE half a dozen of the more obvious current trends in bigtime college football. Whether one approves of them or not, they point in a direction quite different from that so often decried by the writers of exposés: standardization of recruiting tactics and aid policies, conservatism, bureaucracy, orthodoxy—and *less* rugged individualism. The Organization Man has found a comfortable billet in college football too; in fact, he's running the show. And when he's through coaching he probably won't have to worry about a pay check. Many coaches who have lost their jobs, or tired of them, have moved right into big corporations at excellent salaries.

Of course many old-time college football fans find the game less interesting than it used to be, perhaps because coaches have worked so diligently to achieve perfection: i.e., to eliminate the element of chance. They seek to recruit a manpower advantage and then play it conservatively, grinding it out slowly in "four yards and a cloud of dust." They leave the pyrotechnics to the professionals. Only winning pays off; the crowds in the home stadium will gladly accept dullness if it means victory—and will reject "interesting" football when it's only a synonym for losing. It isn't how you play the game, it's whether you win or lose.

But whether one likes these trends or not, there has been *some* improvement over the past. In the early '30's it was possible for a boy to be sweet-talked into attending college on a football grant, while still a freshman to be splattered all over the field during a scrimmage with the varsity, and his football usefulness to be ended. Hastily he would



STILL ANOTHER CASE

ROBERT LEE DODD now in his twentieth year as head coach at Georgia Tech has been a major force in America for the continuation of full scholarship support for everyone who has been signed to a grant-in-aid. He continued the system initiated by Coach Alex and his belief in it eventually brought about the disenchantment with the SEC among other Tech officials including President Harrison. A rounder, himself, during his college days and his early assistant-coach period on the Tech campus, Dodd had his reformation when he took over as head coach in 1945. Since then he has become one of the many symbols for the best in college athletics and an influence of national importance in the athlete's changing attitude toward his responsibilities as a leader on and off the Georgia Tech campus.

be rolled out of school and left to fend for himself—alone, injured, penniless, perhaps a thousand miles from home. A little later, in 1940, I was myself invited to try out for the team of a most respected institution, on a sort of “free enterprise” or *caveat emptor* basis: the school had no obligation to me if I failed to survive the cut for *any* reason. (I didn’t go.)

Such practices used to be common 25 years ago; now they are black-listed as unethical and illegal, and any institution or coach caught in the act is in for a penalty that will hurt for years. Whatever football’s current sins may be, elimination of that kind of vulturous viciousness can only be considered progress.

PERHAPS FOR ALL TIME, the balance of football power has tipped in favor of the large tax-supported institutions—especially those which have not yet had to face the problem of selective admissions. Private colleges and universities that still consistently rank among the grid elite can be counted on the fingers of one hand, for perfectly valid, natural, and legitimate reasons. Since football squads are larger, the much lower tuition charged by state schools is a bigger advantage than ever before. Since these massive state schools have far larger student bodies, they can accept many talented athletes who, though they may meet listed standards of the “prestige” private institutions, are turned down because there are so many other applicants with even higher academic qualifications. And since the public institutions *are* public, representing entire states, they have far larger constituencies to support them at all

levels. Some private schools have met these new conditions by withdrawing from competition; others, by forming their own exclusive groupings, e.g., the Ivy League. Still more choose to battle it out with the behemoths, scouring the entire United States as avidly as they compete for National Merit Scholars, seeking student athletes who can meet the competition both on the gridiron and in the admissions office, attempting at the same time to increase scholarship funds so that more athletes can qualify for aid on the basis of *academic* merit. A few even fight fire with fire through such devices as schools of physical education with separate (i.e., lower) admissions requirements. But a look at the AP or UPI top ten during any week of the football season indicates that the tax-supported institutions are pretty firmly in the driver’s seat.

Maybe this is all just a reflection of the society in which we live, where emphasis is on the final result rather than on how it is obtained, and where the greatest rewards go to bigness, organization, and collective effort—not just in business and government, but in our educational institutions themselves.

That doesn’t mean, though, that college football will eventually be played only by the mastodons. While much is said about upgrading the caliber of play, to all but the most frenzied rooters the element of doubt is more important. There might not be much doubt if Ohio State played Princeton, so they won’t meet. But Ohio State will play Iowa and Wisconsin, Princeton will play Dartmouth and Yale—yes, and Pomona will play Occidental and Redlands. In each instance there will be people who are interested not just in the outcome but in the contest itself—because the outcome will not be a foregone conclusion. Occasionally even a Northwestern or Tulane or Stanford

EXPOSÉ OF THE EXPOSÉS—continued

will enjoy a brief moment in the sun between longer eclipses, and the moment will be all the pleasanter for its rarity.

College football attendance is at an all-time high, leading some to contend that competition from televised professional sports events need no longer be feared. Actually the gains have been spotty, going primarily to the perennial bigtime contenders—which also have the heaviest expenses. Many schools which once relied on football to finance the entire physical education plant and program are now faced with growing gaps in the phys-ed budget which must be plugged in other ways. But at most of them football still supports itself, and more—and apparently it will continue to do so at all institutions where ambition for gridiron glory doesn't outrace reality. (Most of the schools that dropped

football could easily have substituted a program geared to their own resources, but they apparently felt they had to be bigtime or nothing. Football will probably lose some more of those.)

The people who enjoy football will continue to do so, and will not apologize for their interest. To the intimation that a schoolboy game is beneath the notice of an educated man they will counter that recreation is a basic need for all; that some people find it in football—and others, perhaps, in attempting to dictate the interests of their neighbors.

As to the perennial charge that alumni pressure is to blame for all of football's sins, remember that the season-long sellouts which create pressure to win at all costs are not possible when interest is confined to alumni—and that schools where *only* the alumni are interested usually have a pretty safe and sane football program.

GRESHAM, BEST OF THE BACKS RUNS IN A FIELD OF GIANTS.



TWO TO MAKE READY

BOBBOY DODD'S optimism which he carried on his sleeve during the pre-season practices began to slip a little after Tech won its first two games without distinction.

The Jackets opened against Vanderbilt and, though never in danger of losing the game, they looked less than perfect in pass defense as the inexperienced secondary allowed 217 yards passing by the Commodores' ace, Dave Waller. The final score was 14-2 and only the superior speed of the Tech team kept this from being a disaster.

All of the scoring came in the first half of this one as Vandy led off by trapping Johnny Gresham for a safety in the first period. Tech came back early in the second period with a drive that carried 56 yards following a spectacular interception by Gresham who spent the next two games looking as if he were trying to atone for the safety which wasn't his fault in the first place. The key play in this drive was a fourth down pass completion from Jerry Priestley to Gary Williams, good for 13 yards, two more than needed for the first down. Priestley finally went in himself from the four on a twisting run that reminded most of the fans of Billy Lothridge at work.

The Jackets scored again with less than two minutes on the halftime clock on a 83-yard drive that was the best of the early season. Priestley, who started this one, was again at the helm as the

But whether college football is bigtime or penny ante, critics there are and will continue to be—many garbed in colorful academic hoods. For every professor or administrator who hates the sport, however, there is at least one who loves it. Lest we forget, the Ohio State faculty turned thumbs down not on football but on extending competition all the way to New Year's Day—and then only by one vote. Probably more typical of professorial attitudes than the occasional, well-publicized academician's diatribe is a recent faculty referendum at the University of Oregon, where 70.8 percent voted in favor of the present athletic program.

Says Frederick G. Marcham, Goldwin Smith Professor of English History at Cornell and that institution's representative on an Ivy League committee to study and report on sports problems: "Athletics have been a big part of Cornell. The athletes have contributed much to student

life. More and more of them go on to distinguished careers in the graduate schools. . . .

"We need athletics. If Cornell did not have its large diversified athletic program and its fine intramural program, the character of the undergraduate group would change decisively."

On every campus where college football is played one can find lots of scholars who agree with Professor Marcham. Of course each program must be individually tailored to fit the needs and resources of its own institution; no college has any obligation to divert educational funds to the support of fun and games for the alumni and general public. But as long as football can support itself, as long as students retain interest in it as a valued extracurricular activity, and as long as it doesn't become too perilous to the participants—none of which will happen with proper management—college football will survive.

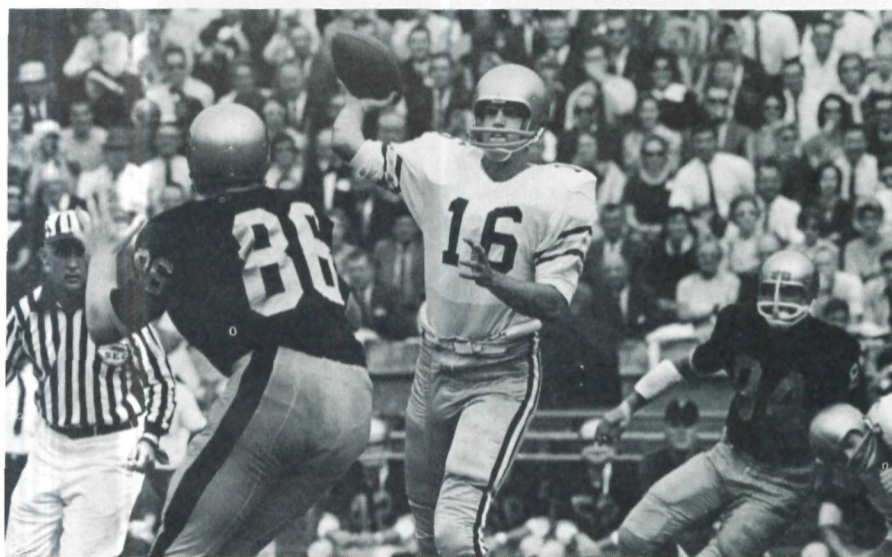
drive ended with Gresham going in from the three without being touched. Jack Clark added both points.

Against Miami, Tech developed a sudden propensity for dropping passes and multiple-men in motion. The offensive errors held the score down, but Charlie Tate's first team as head coach was too inexperienced and too slow to cope with the Jackets. This time the defense looked much better, and Miami never crossed the Tech 33 during the afternoon.

Dodd went back to his beloved two-platoon system in this game. It worked well except for a few times when the new neither-fish-nor-fowl rules made it impossible to stop the clock to substitute without a penalty.

Again Gresham was the hero. He and Terry Haddock were the main weapons in Tech's first scoring drive which resulted in a Jack Clark field goal after one of those dropped passes. Then with 15 seconds to go in the half, Gresham made an impossible diving pass catch of a Priestley pass that put the ball on the four. Another dropped pass and two incomplete throws again forced Clark to put three points on the board just as the half ended, 6-0, Tech. Late in the final period, Tech moved 38 yards with a Bruce Fischer pass for 12 yards being the big gainer. This time, Jeff Davis went in from the one after two unsuccessful attempts from the same spot.

The final points came on a drive that featured (you guessed it) a 32-yard scamper by the young Mr. Gresham. Priestley hit Haddock for six yards and the touchdown with only 20 seconds on the clock and Bunky Henry added the point to make it 20-0, Tech.

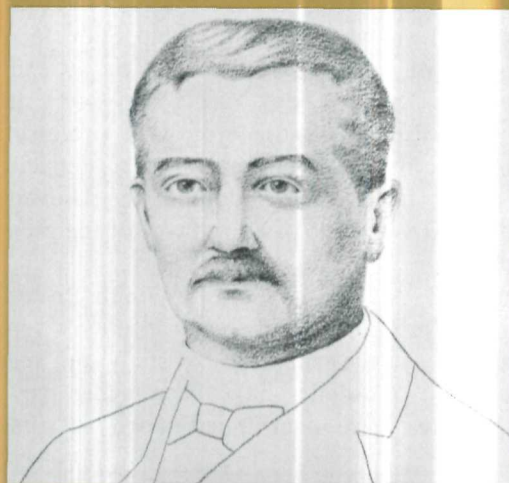


Jerry Priestley, rapidly becoming an excellent quarterback, throws for a completion against Vandy (above) and the other great Tech running back, Terry Haddock, starts on his turn in a long gallop against Miami.



PROFILES OUT OF TECH'S PAST

The Alumnus presents a series of articles on the history of Georgia Tech condensed from the book, Dress Her in White and Gold, by Robert B. Wallace, Jr. Copyrighted 1963 by the Georgia Tech Foundation.



DR. ISAAC S. HOPKINS
PRESIDENT 1888-1896

II. ENTER THE PREACHING PHYSICIST

The first president of the small insignificant school was a man of strength and vision but his primary love was for the church he served

AFTER establishing the location of what was to be Georgia Tech, securing the nine acres of land, and getting the buildings under way, the Commission turned its full attention towards the most important task of all — building a faculty. During the November 3, 1887, meeting, the Commission began this phase by appointing members Harris and Inman as a committee to meet with the Board of Trustees of the University of Georgia at the earliest date to secure authority for the Commission to "organize the school and elect a faculty."

At the same meeting, Harris and Inman were also named as a committee to draft a request to be sent to the Board of Trustees of the Worcester Free Institute seeking a vacation of one year for Professor M. P. Higgins of that school in order that he might come to Atlanta to install the new equipment and

to assist in getting Georgia Tech started. At the December 1 meeting, Harris and Inman reported that this request was granted. The Commission then voted a salary of \$5,000 for Professor Higgins' one-year stint as advisor to the new school. It was December 21, 1887, before the Commission could meet with the University of Georgia trustees at the Kimball House in Atlanta. At this meeting, four resolutions were offered before the University governing body could agree upon one. The final resolution was offered by Henry W. Grady and read: "Resolved. That the Commission on Technology be authorized to fill the chairs hereby created. Also elect the President, the Superintendent of the Mechanical Department and the Secretary and Treasurer of the Faculty and to fix the salaries of said officers. The chairs hereby created are 1st, Chair of Chemis-

try; 2nd, Chair of Mechanical Engineering; 3rd, Chair of Physics; 4th, Chair of Free-hand and Mechanical Drawing; 5th, Chair of Architecture; 6th, Chair of Mathematics; 7th, Chair of English; and 8th, Chair of Geology and Mineralogy."

The Commission thus armed began its search for a faculty. To head it, only one man's name was ever mentioned in the Commission's minutes. He was Dr. Isaac S. Hopkins, then president of Emory College at Oxford, Georgia, and a rare combination of a preacher and a physicist. Hopkins, who held both the Ph.D. and D.D. degree, was offered the position of president on April 5, 1888, at a salary of \$3,500 a year. (It is interesting to note here that the new president was paid \$1,500 a year less than the consultant brought in to start the school.) On May 3, 1888, Hopkins officially accepted the presidency and began to work

with the Commission in the search for teachers to man the new school.

Now it may appear odd that a man would leave the presidency of an established university such as Emory to take on the thankless task of opening a new school, which at the time was no more than a department of a state university some sixty miles away. But Hopkins obviously had become disenchanted with the Emory job. He had arrived there in 1869 as a professor of natural science after a tour of duty with the Confederate Army and eight years as a pastor of various Methodist-Episcopal Churches in the South Diocese. In 1884, he was named president of Emory and began an active campaign to secure a building in which to teach technical work on that campus. A refined, classical scholar, Hopkins was also proficient in the mechanical arts. He owned his own workshop in his home and actually spent many hours doing the work of a master mechanic in Atlanta's railroad shops. In 1886, his campaign for a new building at Emory was finally successful, and the state's first college-level technical program was established.

Before Hopkins could get his new program started, the classical scholars, who looked upon this new-type education as beneath the dignity of a university, opened fire on him. The Methodist ministers soon joined them. When the Tech offer came, Hopkins, a quiet, dignified man, saw a way out of his dilemma and immediately accepted it.

Hopkins picks his successor

A month after Hopkins took over as president, he nominated as his first faculty member, the professor of mathematics, Lyman Hall, a man who in eight years would succeed him as head of the school. On the same day, June 7, Hopkins put up the name of Reverend Charles Lane of Macon for the chair of English. Both were unanimously elected by the Commission at a salary of \$2,000 a year. These appointments were followed by the July 5 election of R. B. Shepherd as professor of mechanical and freehand drawing and the August 2 election of Dr. W. H. Emerson as professor of chemistry, both at the standard \$2,000 a year.

With the opening of the Georgia School of Technology, then a department of the University of Georgia, now set for the first Wednesday of October, 1888, the president and his staff began advertising for students. On October 3, the first registration day, 85 students signed the official registration book and began working toward the only degree offered, Bachelor of Science in Mechanical Engineering. Thirty-one other students regis-

tered between October 4 and November 26, according to the official book in the Registrar's office. And during the second-semester registration, an additional 13 students came in between January 5 and January 7, 1889, making a grand total of 129 registrants in the first year of operation of the new school. Most of this group were in the apprentice class, as the freshmen were then called, although there were ten juniors (equivalent to today's sophomores) and two members of the middle class (today's juniors). All but one of the new students were from the State of Georgia. The lone exception came from Chattanooga, Tennessee.

Tech was tough from the start

Tech was tough from the start. Only 28 of the October class graduated. The rest either withdrew or were found deficient in classwork or conduct. The two members of the middle class—George G. Crawford and Henry L. Smith—became the school's first graduates when they received their degrees in 1890. And both men scored outstanding records in business life after leaving Tech: Crawford eventually became head of Birmingham's giant Tennessee Coal, Iron and Railway Company and was voted Alabama's first citizen at the height of his business career. Smith became head of a manufacturing enterprise in Dalton, Georgia, and was one of that city's leading civic leaders right up to his death in 1957.

Smith actually had the honor of being Tech's first graduate, and in 1955 told this writer, "It was the greatest honor I ever received, and I received it through chance. George Crawford and I got together before graduation and agreed that this decision was too important to make on an alphabetical basis so out came a coin—it was a 50-cent piece—and I won the toss."

The official opening ceremonies of Tech took place on October 7, 1888, at the Atlanta Opera House. President Hopkins was the master of ceremonies and as was only fitting, Nat E. Harris, the man who had labored so diligently, at times almost single-handedly, to make Major Hanson's dream of 1882 a reality, was the first speaker. His short speech closed with this dramatic plea: "Sir, our work is done and with our hands outstretched in blessing and in prayer, we commit the child to the keeping of that great people into whose favor and affection it must struggle to make its way." With these words, Nat Harris once again showed his great vision, for a struggle it was from that day forward.

Other speakers on the program included Judge John J. Gresham, chair-

man of the University Board of Trustees; Governor John B. Gordon, who was Lee's great lieutenant during the war; Dr. H. C. White, representing the faculty of the University; and Henry Grady, the South's most electrifying speaker, who moved the audience with his cogent remarks, according to one observer. Grady, who was to die within 26 months of that date, later made his famous "Pickens County Funeral Speech," which was credited with creating the idea of a *New South* dedicated to manufacturing its own goods.

Student life of those early days was as different from the modern concept as the horse and buggy was from modern space ships. According to the first catalogue, the leading object of the school was to "teach the principles of science especially those which relate to the mechanical and industrial arts." Also, according to the same source, there were no elective courses and "the time and attention of the students will be duly proportioned between scholastic and mechanical pursuits, and special prominence will be given to the element of practice in every department."

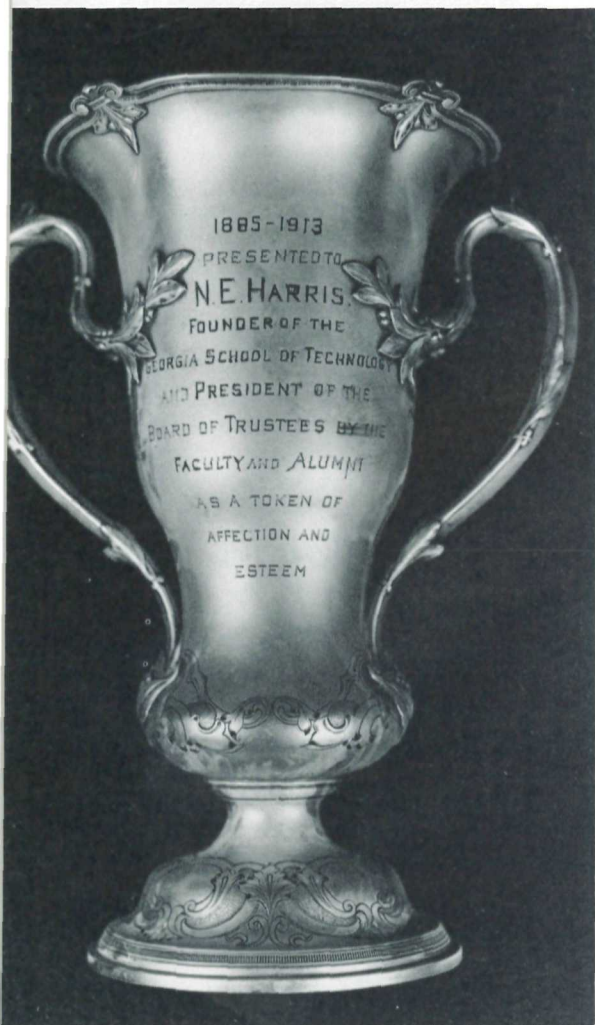
This catalogue also emphasized that the methods of the school were in the main the ones used by polytechnic schools of Europe and by the Worcester Free Institute, with the modifications to adapt them to the peculiar needs of the section. The final statement in the introduction to this catalogue said: "To thorough supervision and instructions in handicrafts will be added the stimulus of production for the market and such other conditions as are likely to be met within the active business of life. Students will not receive money compensation for their work."

The problems begin to develop

This one paragraph was the key to a number of problems in the early days of Georgia Tech. The students were making items during their shop exercises which the school then sold. This gave even more impetus to the idea prevalent at the time that Tech was nothing but a training grounds for machinists and "blacksmiths" and made it extremely difficult to get across the idea that technological education was anything more than trade-school training.

The entering students of those days had to take examinations administered by the school prior to acceptance for admittance. A copy of that first "Arithmetic" competitive examination gives an indication of what the 1888 equivalent of the "College Boards" was like:

1. Define: Arithmetic; Notation; Numeration.
2. Find the Greatest Common Divisor of 45, 105, 135.



The Georgia Tech founder's cup presented to N. E. Harris at the quartercentennial.

PROFILES OF THE PAST—cont.

3. Find the Least Common Multiple of 14, 21, 28, 42.
4. From 57 2-11 take 23 4-5.
5. Divide, by decimal division, two tenths by one tens of millionths.
6. Divide 34 bu., 2 pks., 5 qts., 1 pt. by 7.
7. A speculator sold 18 mules for \$2148.84 thereby making a profit of 27 per cent. What did the mules cost apiece?
8. What is the amount of \$792.60 for 5 yrs. 11 mo., 26 da. at 6 per cent?
9. If the freight on 17 bales of cotton for 85 miles is \$22.00, what will be the freight on 35 bales for 171 miles?
10. If 450 soldiers are to be furnished with clothing, each suit requiring 9 yds. of cloth 1 yard wide, how many yards of flannel $\frac{3}{4}$ of a yard in width would be required to line the suits?

Other major differences in student life of those early days and now included the fact that each student was required to attend at least one church service each Sunday and chapel exercises in the main building (Administration Building) each morning as well. With no dormitories or eating facilities, the students were forced to live in boarding houses if they came from outside the City of Atlanta. The president, himself, recommended certain facilities in the catalogue with statements such as these from the 1888 edition:

"Board can be obtained in good families in the city at rates varying from \$12.50 to \$20.00 per month. Special arrangements can be made for fuel and lights. Washing costs from \$1.50 to \$2.00 per month.

"By correspondence with the following parties students can make satisfactory arrangements for board.
 Mrs. S. M. Macy, 72 Pine St.,
 cor. Calhoun, \$12.50 per month
 Mrs. J. W. Jaynes, 138 Capitol Ave. 18.00 per month
 Mrs. M. S. Wright, 85 W. Cain St. 15.00 per month
 Mrs. J. D. Stocker, 363 W. Peachtree \$18.00 to 20.00 per month"

The first student activities begin

In order to draw the students closer together and try to create a school spirit, the administration approved Georgia Tech's first publication, *The Technologist*, which appeared in the spring of 1891 under the editorship of W. P. Walthall. It collapsed from lack of interest and support within a year. It was followed by *The Georgia Tech* in February, 1894, with Edward A. Greene as editor-in-chief. This publication established a fairly strong editorial policy and became the voice of the students for such things as the need for a dormitory and mess hall and for better athletic and debating programs, a rare combination even for that period.

With Alabama Polytechnic Institute (now Auburn University) and the University of Georgia fielding football teams, the Tech students felt that they should get into intercollegiate athletics. Tech fielded its first team with little financial support and no practice field to speak of in 1892. It was coached by Professor Ernest West, a Naval College graduate, and it lost to Mercer, 0-12; Vanderbilt, 10-20; and Auburn, 0-26. The following year, Tech won its first game in what has become one of the nation's most colorful series, the one with the University of Georgia. The game, like the series that followed it, was one of much controversy. Tech, still

listing Professor West as coach, was led to a 28-6 victory by Leonard Wood, who later became General Leonard Wood, but who at the time was stationed at Fort McPherson and taking some undergraduate work at Tech. Wood, an experienced lineman, was for all intents and purposes Tech's coach that day and became the center of one part of the controversy that surrounded the game when Georgia claimed he was not a bona fide student and was in reality a surgeon of the United States Army who matriculated at Tech for the express purpose of playing football. The Georgia rooters protested that Tech fullback Park Howell was not a student either. The Athens crowd threw rocks at the Tech team and generally made the afternoon of the first victory in Tech's history an unpleasant one. The Tech coach countered the Georgia accusations by declaring that one of their halfbacks was a paid professional trainer. To top off the day, the Tech train wrecked at Lawrenceville on the way back to Atlanta, and the crowd didn't arrive back in Atlanta until after midnight.

There were no records of any Tech yells or songs of that period, but it is interesting to note that this game brought out the first reference to the colors, white and gold, which were worn by a group of young ladies from Lucy Cobb Institute for Girls, who had journeyed to Athens to cheer for the Tech team.

During that same season, Tech tied Auburn, 0-0, and lost to St. Albans, 0-6, for a 1-1-1 record. From that year until John Heisman took over as the first full-time head coach in 1904, Tech only had one winning season, 1901, when it registered a 4-0-1 record. During these years of temporary coaches and poorly financed squads, the teams won only eight games while losing 32 and tying five. The golden years were still to come.

Hopkins sums up his concept of engineering

Near the end of the first year on May 2, 1889, President Hopkins delivered an important and controversial address before the Georgia Education Association meeting at Athens. In this speech, he tried to explain to this important group of Georgians the need for a technological school in Georgia and its potential for aiding the growth of the State. After summing up the growth of technological education in Europe following the founding of France's famed *Ecole Polytechnique* in 1802, which Napoleon once called the "hen that laid the golden eggs," Hopkins launched into a strong philosophical defense of technological education with these words:

"Not every educational enterprise, intrinsically meritorious though it may be,

is feasible. The agricultural college is not a new idea. It is within the memory of some who hear me to-night, that this type of education, conceived by wise men and sustained by earnest efforts seemed doomed to failure. To give currency to an idea or permanence to an institution needs something more than the recognition of its necessity and the forecast of its value to future generations. Along with such intuitive recognition by the few and the most strenuous advocacy of its claims, there must come the response of public recognition and approval. Great ideas, whether in individuals or nations, or the race, are of slow growth—they are not to be forced. When once the seed has found its habitat and, under favoring conditions of warmth and light, it has struck its roots downward and lifted the branches upward and outward, growth seems easy and life assured. It is not extravagant to affirm that no movement in education within the entire history of education has met with such universal recognition and welcome as has this one of technical education of high grade. At another time it would be an interesting inquiry to look into the philosophy of this general sentiment of approval and endorsement. But such inquiry would be apart from our purpose now. I cite it to show that the technical school has a place, not a temporary and insecure place, but one imbedded in the convictions of men of all grades of culture and all modes of thinking, a place in which it is destined to abide through time and from which it will send forth streams of influence irresistible in their depth and sweep, to change the types of nationalities and mould anew the civilizations of the world.

"Having seen that the place of Technological Schools is not one held on sufferance and by grace, let us inquire into the right and title by which this place is held. And I think we shall find that this right is an inherent one and that the title is unassailable.

"In the first place, then, such schools hold their place and will continue to do so because they are schools in the highest and best sense—because they educate."

Hopkins points to the ideal

Hopkins then pointed out the features of the ideal technological school by reviewing the curricula and teaching methods of Worcester Free Institute, which by that time had become almost in absolute model for the Tech administration. His comments that followed concerning the need for this type of education also are worthy of repeating here.

"Our own section, the South, presents a striking illustration of the necessity of such training for our engineers of public works. Each year our various institutions are sending out men, thoroughly equipped under the old idea, as engineers, and it is a serious question as to what becomes of them. Now and then we hear of one surveying a new route for a railroad, but more frequently acting in a subordinate capacity to some one who has been more fortunate in his training. The lack of opportunity for the application of their specialty drives them into other callings. How many men do we know, of Southern birth and Southern training, who are superintendents of mills and managers of manufactories or engaged in the development of mining industries?

He gives it the Henry Grady touch

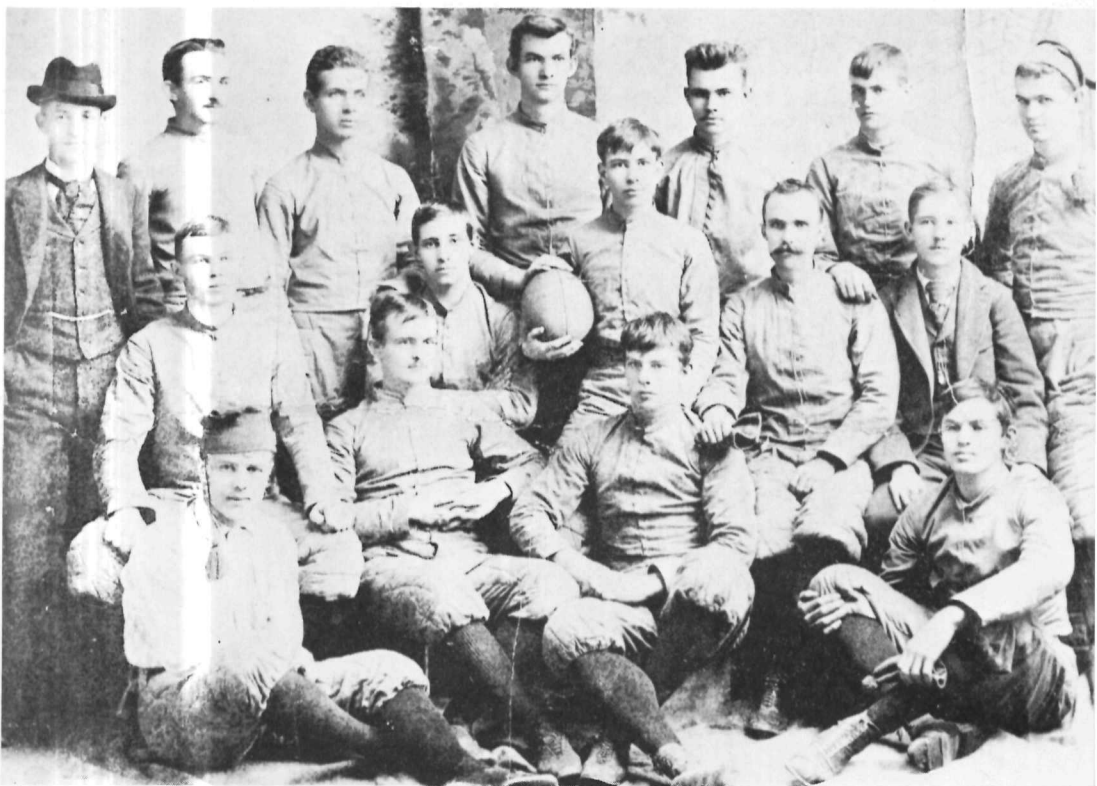
"As further illustration of our poverty in men, it may be mentioned that of the men employed in the work shops of the Georgia School of Technology, the superintendent and three foremen out of four in the several departments had to be brought from beyond the limits of our own State, and not from the South. We did not have the men for the enterprise.

"No question touching the matter of education is more vital to the material prosperity of the State and the South in

general than the one we are now considering.

"We hear much of the material advantages of the South, its genial climate, its sunny skies, its water powers, its rich mineral deposits, ores and coal in convenient proximity, its rich soil and wonderful staple; we congratulate ourselves ever and anon on some new enterprise which marks our material advancement, and yet, when we come to consider the facts as they really exist, we are doing almost nothing in material development as compared with our possibilities and as compared with the advancement made by our Northern brethren. Of the total manufacturing done in the United States, the census of 1880 shows that only nine per cent of it is done in the Southern States. For the full development of the resources so abundant and so varied, special training in the direction of mechanical skill is the demand too obvious almost for statement. But this skill must be allied with knowledge of the forces to be met and mastered, and only in the conjunction of the lecture room and the work shop is such a combination to be found. The engineer, after all, must be distinct and separate from the mere artisan or mechanic. Call him a civil engineer and set him to building highways, railroads, waterworks and sewers, or call him electrical engineer and set him to constructing telegraph lines, or

TECH'S FIRST FOOTBALL SQUAD WITH PROFESSOR WEST AT LEFT.



PROFILES OF THE PAST—cont.

chemical engineer and set him to making dye stuffs and supplying the great industrial acids, it all comes to the same thing at last; he is efficient only by as much as he possesses large and accurate knowledge of the principles of the science with which he deals and has learned in laboratory and workshop to verify these principles by actual experiment and observation."

Hopkins closes as an orator should

After this segment of the speech, Hopkins who was obviously an excellent orator went into a superior presentation of the relationship of the new concept of technological education to the traditional classical educational image. From this he proceeded to outline what Tech was trying to do through its educational programs. His speech ended on another typical philosophical note that was both well spoken and prophetic:

"By this new education we have led the boy of to-day to unaccustomed heights. We have bidden him to look below into the broad valleys and beautiful fields of human endeavor. The sun of an old civilization is setting behind him, a civilization of which he, perhaps, could not without experience understand the charm. The mystery of vision is upon him. The shadows are taking shape, and the Titan whose marvelous size fills him

with awe is the shadow of himself. As the spectre stretches itself in lengthening and broadening sweep over valley and plain, and to the horizon beyond, it remains with the boy to give substance to the shadow, to fill its darkness with a living light, and to give it power over earth and air and sky."

During his administration, Hopkins was unable to secure any new buildings for the young school with the exception of a replacement of the Shops Building which was completely destroyed by fire in the early morning hours of April 21, 1892. The cost of the rebuilding project, which was completed by December of the same year, was paid by the State of Georgia and an insurance company.

A newspaper account of the fire contained two paragraphs that vividly illustrated the inaccessibility of the school in the early days.

"A watchman was dozing by a stove in the Shops Building. He had removed his shoes and was relaxed in comfortable sleep until oppressive heat awakened him.

"Finding the place a mass of flames, he ran from the building, not even stopping to get his shoes. He had to go to Plum Street to turn in the alarm. For some reason the firehouse mistook the call for Peachtree and North Avenue instead of for Plum Street and North Avenue. When the horsedrawn engine reached that point, it was impossible to

travel the dirt road over to the school because recent heavy rains had turned it into a quagmire. The engine had to return to town and come out Marietta Street. Even from Marietta Street and North Avenue, the firemen met with difficulties. The engine came down the sidewalk to Cherry Street, twice bogging down in the mud before being extricated and able to continue. When finally the scene of the fire was reached, only smoldered embers told of the fire and the Shops Building that had been there. All that had been rescued was a chest of machinists' tools."

Hopkins had difficulty enough just keeping the school operating in those first eight years. The General Assembly's annual appropriations varied from \$18,000 to \$22,500 during that period. And the remainder of the operating expenses were derived from the \$2,500 annual grant from the City of Atlanta and from tuition fees disguised under the name, "contigent expenses," as Tech at that time was not allowed to charge tuition.

Hopkins continued as president of Tech until 1896 when he resigned to return to his first love, the ministry. He had done his part in getting the new school started. But the battles for status and financial support had tired him of administrative work, and he wanted only to preach the rest of his life. He died on February 3, 1914.

He had done his part.

THE ORIGINAL TWO BUILDINGS—THE OLD SHOP WAS REBUILT SANS TOWER AFTER THE 1892 FIRE.



GEORGIA TECH

A digest of information about Georgia Tech and its alumni

Journal

The Institute

Continuing Education activity at new high

THERE WAS AN AMAZING amount of activity in what is usually considered the late summer, between-quarter doldrums.

A covey of Tech professors went down to Puerto Rico to help the islanders lower their food and commodity prices while engineers, scientists, civic leaders and political figures gathered on campus to discuss a comprehensive, coordinated plan for managing the water resources of the Southeast.

Georgia Tech's School of Industrial Engineering and Department of Continuing Education conducted two seminars Sept. 14-18 for Puerto Rican food wholesalers to show them how to cut prices through more efficient use of equipment, warehouses and labor.

"Prices tend to run two and a half times as high as in the U.S.," Paul Eaton, professor of industrial engineering and academic administrator of the seminars said. "You understand why when you see three men lifting one 50-pound package of cod fish. What costs one cent to handle here, costs four cents there."

One seminar was for 30 of the top executives in wholesaling on the island; the other for managers in the middle ranks of their companies. Both courses were specifically to meet the needs of Puerto Rican wholesalers.

Faculty members included: Paul Eaton; Robert N. Lehrer, associate director of industrial engineering; Jackson Birdsong, lecturer in industrial engineering; five or six national leaders in the U.S. materials handling industry including the editors of several of the industry's outstanding trade magazines; and representatives from the Puerto Rican commerce department.

This was the first time that Georgia Tech had conducted a short course outside Georgia although the school has supported or

contributed to a number of special projects in foreign countries and individual professors have led seminars all over the world.

The Puerto Rican commerce department asked Tech to lead the seminars because of the international reputation Tech has received for the material-handling short-courses it has conducted over the past 14 years.

September 24-25, Tech's water resources center under Carl Kindsvater sponsored a conference discussing implementation of the comprehensive plan for the development of land and water resources presented to Congress last December by the U.S. Study Commission for the Southeast River Basins.

Honor guests at the meeting were Gov. Carl Sanders and Fifth District Congressman, Charles Weltner. Among the speakers were Dr. Roscoe C. Martin, an authority on water planning from Syracuse University; J. W. Woodruff, Jr., chairman of the Resources Advisory Board, Southeast River Basins; Dr. James Venable, director of the Georgia Health Department and chairman of the Georgia Water Quality Control Board; Major A. C. Welling, USA, division engineer, South Atlantic Division of the Corps of Engineers.

Kindsvater says that while some regions of the U.S. where there are severe water problems have long realized the importance of organized water planning, the Southeast has tended to table water problems.

"Georgia, for instance, has a law which is the basis for pollution control, but there is no legal basis for a comprehensive water resources development program. Pollution and navigation are only parts of a comprehensive water management problem."

Campus planner joins Tech staff

THE DOLDRUMS were also a time when plans were being made, the institute properly rigged for full-blown sailing this fall, even for the next few years. Among new staff and faculty appointments is Clyde D. Robbins who will be campus planner in the Office of Development.

He will be responsible initially for assistance in the preparation of a comprehensive, long-range campus plan. After this plan is completed he will advise the administration on all matters related to its implementation and later, for the development of new plans.

Before coming to Tech, Mr. Robbins was County Planning Director for Cattaraugus County, N.Y. He is a native of Wellsville, N.Y., and an honor graduate of Syracuse University where he received degrees in forestry and landscape architecture. He received a master's degree in planning from Ohio State University.

Top international engineers join ME faculty

DR. TAKASHI NAKADA, the past president of the Japanese Society of Mechanical Engineers and the Japanese Society of Precision Engineering, arrived with his family on campus a few days ago to spend a year at Tech teaching and doing research. He is here as a National Science Foundation senior scientist fellow.

Dr. Nakada was described in a recent issue of *Production Engineer* magazine as one of the leaders in the explosion of advanced technology in Japan. Dr. Nakada is a professor at the Tokyo Institute of Technology where he directs the Research Laboratory of Precision Machinery and Electronics.

"This man is one of the top people in the world in developing automatic control devices for machine tools," Dr. Kenneth Picha, director of the School of Mechanical Engineering where Dr. Nakada will teach, says. "He should be able to train some of our undergraduate and graduate students and younger faculty members in his specialty."

In 1953, Dr. Nakada was awarded the Japan Academy Prize for his research on gears and in 1959 won the Japanese Society of Mechanical Engineers' Prize for his paper on "Feedback control Increases the Accuracy of Machine Tools." He has been the author or editor of five books and

THE INSTITUTE — continued

numerous papers in engineering journals.

The visiting professor will continue his own research while at Tech and is expected to lecture at other schools in the area and at scientific meetings.

Also joining the ME department this year as visiting professor is Dr. Geoffrey Boothroyd who is a senior lecturer at the Royal College of Advanced Technology in Salford, Lancashire, United Kingdom. He received his Ph.D. from the University of London and his special interest is in the field of metal cutting.

Tech professors go international

THIS FOREIGN SCHOLAR exchange is two-way and as Tech begins another year it finds a number of its professors abroad, often in rather exotic habitats. Dr. Winston Boteler will spend a year in Afghanistan at the University of Kabul.

Dr. Roderick F. O'Connor, professor of industrial management, is at the Universidad del Valle in Cali, Colombia, teaching his specialty in a program which has been established there in cooperation with Tech. At the University of Baghdad will be Dr. Joseph P. Vidosic, regents' professor in mechanical engineering, teaching machine design, kinematics and vibrations. And there are others in far away parts of the world.

Industrial Development branches out over state

ON THE GEORGIA FRONT, Tech's Industrial Development Division has opened three new branch offices: one for southwest Georgia at Albany, for Carroll County at Carrollton and another in Savannah.

The Savannah branch was opened July 1 with P. T. Bankston as director. The IDD has a contract with the *Forward Savannah* program of the Savannah Foundation, Inc.

Jerry Bange opened an office in Carrollton the first of September to service Carroll County. His work will be mostly involved in the implementation of research reports already compiled and in the general industrial development of the community.

The Albany office directed by Wallace B. Bishop, Jr., is servicing a 37-county area of southwest Georgia. It is lending research and technical support to southwest Georgia's industrial efforts and coordinating development plans. It is encouraging the development of a full range of industrial activities which are needed to exploit the economic potential of the area.

Mr. Bishop is working with four area development commissions: the Southwest Georgia; Lower Chattahoochee; Coastal Plain; West Central Georgia. In cooperation with the Atlanta staff, there will also be day-by-day technical assistance to municipal and county development agencies and local manufacturers.

The work of all the branch offices is coordinated with the activities of the Atlanta office by Ross W. Hammond, director of the Industrial Development Division's area development program.

The precedent for the new offices was set by the highly successful Rome office which has served the Coosa Valley in northwest Georgia for the past four years. This office has provided a program of research and technical assistance for the Coosa Valley Area Planning and Development Commission.

—Another note about the IDD of some kind of relevance: the off-campus quarters of the IDD are across the hall from the ICC—Interstate Commerce Commission.

Faculty members receive honors

TECH FACULTY MEMBERS have been honored recently. F. F. Groseclose of industrial engineering has been awarded a Life Member Card in the American Institute of Industrial Engineers, Inc. In addition to serving on a number of AIIE committees, Groseclose was the first editor-in-chief of the *Journal of Industrial Engineering*, was national president in 1953-54 and for a number of years has served as chairman of the editorial advisory committee. Col. Groseclose was also recently awarded this year's Honorary Life Membership by the Armed Forces Management Association in recognition of "significant contribution to the objectives of the Association, particularly in relation to your support and guidance of Atlanta Chapter 24."

Lawrence V. Johnson, director of engineering extension, has been named chairman of the Subcommittee on Engineering Technology Curricula of the Engineers' Council for Professional Development, Inc.

More grants come to campus

TECH CONTINUES to get more grants. Charles E. Weaver, associate professor of geology, has received a \$11,500 grant from the National Science Foundation to conduct a conference on "The Changing Identity of Graduate Earth Science Education." Scientists from across the country will discuss the present revolution now taking place in the geological sciences. Where geologists were once concerned with climbing mountains, searching for gold, iron or coal, recent technological advances have thrust them into the forefront of research and exploration of the interior of the earth, the depths of the ocean, and the surface of the moon and the planets. These advances have caused a drastic revision in the graduate training of earth scientists.

John R. Dyer in chemistry has received a \$11,200 grant from the National Science Foundation to support an "Undergraduate Research Participation Program."

Faces in the News



During the weekend of September 18-19, the Georgia Tech National Alumni Association sponsored its second annual Club Officers' Weekend. Over 100 club leaders and their wives from all over the country (including two from California) came to the campus to hear members of the Tech staff talk about the plans for the future and to take part in a workshop designed to instruct them on how to operate a successful alumni club. They also attended the Tech-Vanderbilt game and were the guests of the Association at the annual trustees banquet where President Dan McKeever (right with Foundation President John Staton and President Harrison) was the master of ceremonies for a short program featuring Coach Dodd.

The Clubs

COLUMBUS, GEORGIA — The annual late summer meeting of the Columbus Georgia Tech Club brought out approximately 120 alumni on August 27 at the Union Oil Farm.

Coach Bobby Dodd gave an unusually interesting talk on Georgia Tech football revolving around his enthusiasm for this year's squad. Other guests from Atlanta included Coach Richard Bell, Coach Jack Fligg and Roane Beard. All were given gifts from local manufacturers.

George Mathews, president for 1963-64, presided and introduced the guests. Officers elected for the coming year were George C.

APPRENTICE

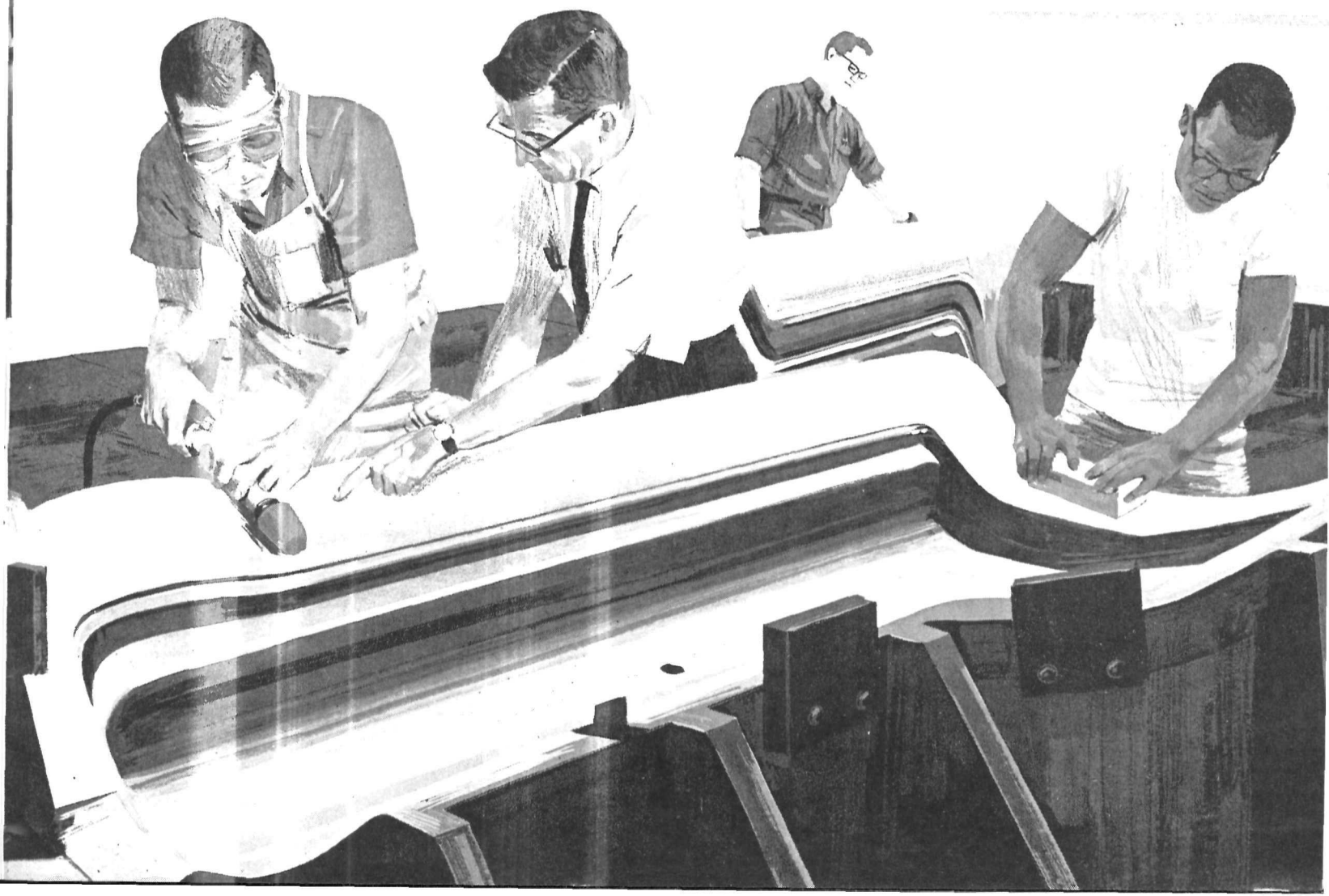
These young men are preparing for important careers with General Motors. Under the GM apprentice plan, they are learning the diemaker's skills. Once they have mastered this craft—and it will take them four years (8,000 hours) of on-the-job training and classroom study—each will be a skilled journeyman, qualified to make the complex dies, jigs and fixtures so vital to modern industry.

This year, 2,753 General Motors apprentices are being trained for this and other trades—more than 30 in all. They are learning to be pattern makers, pipefitters, bricklayers, toolmakers, diesinkers, electricians and millwrights, to name a few. From the time they start training they are paid good wages on a regular rising scale.

At the conclusion of their four-year courses, apprentices will have gained skills that will serve them well throughout their working careers. They are free, of course, to work anywhere they wish—but most stay with GM. We're glad of that. We need them. Talented people are indispensable to General Motors.

GENERAL MOTORS IS PEOPLE ...

Making Better Things For You



THE CLUBS—continued

Trussell, president; George E. Bailey, vice president; and Harold C. Lummus, Jr., secretary-treasurer.

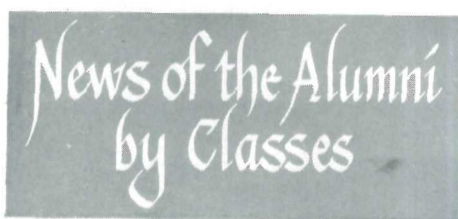
JACKSONVILLE, FLORIDA — Coach Bobby Dodd, spurred on by a hilarious introduction by Ed Swanson, the club president, made an exceptional presentation to the Jacksonville club at the August 5 dinner meeting. During the business meeting, President Swanson presented resolutions to Mrs. Carl Cesery and Al Oosterhoudt in memory of the affection the club members had for the late Carl Cesery and the late O. J. Oosterhoudt. Announcement was made of the alumni buffet to be held prior to the Tech-Navy game, October 9. The following officers and trustees were elected along with President Swanson: Don Zell, vice president; Morgan Smith, secretary; and Dave Augustine, Dick Osgood, Wes Paxon, Bill Queen, Warren Parker, Ash Verlander, Lou Aichel, Ivy Smith, Rick Altobellis, and Cliff Doyle, trustees.

MEMPHIS, TENNESSEE — Seventy Memphis alumni had as their guests prospective and current Tech students and their families at the summer smoker meeting, August 25. Tech's associate registrar, Bill Eastman, gave an entertaining and enlightening talk to the gathering. A question-and-answer session followed.

Officers elected for 1964-65 are T. S. Harris, president; George E. Cates, vice president; and J. E. Harwood, III, secretary-treasurer.

TULLAHOMA, TENNESSEE — The late summer meeting of the Middle Tennessee Alumni Club was held August 7 in Tullahoma. Twenty members were present for dinner and the business meeting. It was unanimously decided by those present to undertake a scholarship fund to benefit an outstanding Tech enrollee from Middle Tennessee.

Officers for the coming year included Freeman Fly, president; Ted C. Austin, vice president; Greg Klein, secretary; and Virgil Powell, treasurer.



'00 Col. Henry L. Freeman, EE, died September 5 in a Birmingham hospital. He retired from the Alabama Power Company and Southern Natural Gas Company in 1955 and joined the faculty of Howard College. He retired from Howard in 1961. His widow lives at 300 Clermont Drive, Birmingham, Alabama.

'03 Alexander Robinson Howard died August 8 at his home after an extended illness. He was former president and treasurer of Gibson Manufacturing Company. His widow lives at 311 South Union Street, Concord, North Carolina.

Samuel H. Wilson, former Georgia state chemist, died in August. His widow lives at 2773 Veltre Place, S.W., Atlanta, Georgia.

'09 Joel Chandler Harris, Jr., retired newspaper advertising executive, died September 12 after a long illness. Son of the author of the Uncle Remus Stories, he was born in the "Wrens Nest" in Atlanta and spent most of his life here. His widow lives at 2973 Habersham Road, N.W., Atlanta, Georgia.

'16 Wade H. Wright, retired vice president and secretary of the Georgia Power Company, died September 11 in Atlanta. He was one of the founders of Associated Industries of Georgia.

'22 We were recently advised of the death of E. B. Heyward, Clarksville, Georgia.

'25 Robert G. McCamy died August 5 in a Dalton, Georgia hospital. He was one of the founders of Cabin Crafts, Inc. and served as president for 10 years. His widow lives in Dalton, Georgia.

'29 Marcus A. Powell, Com., died August 28 at his home, 2885 Elliott Circle, N.E., Atlanta, Georgia. He was assistant trust officer at the First National Bank. His widow lives at the above address.

Col. C. B. Drennan, ChE, is the new Army PMS & T at Georgia Tech.

H. Price Shipley, EE, has an article published in the June, 1964 issue of the *Bureau of Ships Journal*. The title of the article is "Deep Sea Ship Moor." He is with Hull & Seamanship Branch, Bureau of Ships, Washington, D. C.

'34 James Roy McArthur, GS, died September 9 after a brief illness. A basketball star while at Tech, he later returned to serve as head football scout. He left Tech in 1951 to enter private business.

'35 Col. Robert A. Erdin, USAF, AE, is with the Air Force Logistic Command Unit, Olmsted AFB, Pennsylvania.

'37 Homer Wilson Burgess, EE, has received his Master of Industrial Education degree from Clemson College.

'38 Lt. Col. Bertram B. Dales, USA, EE, has retired after more than 20 years of service. He lives at 985 Los Angeles Avenue, N.E., Atlanta, Georgia.

'39 Homer G. Hutchinson, Jr., ME, has been promoted to Brigadier General in the U. S. Marine Corps.

'40 Charles R. Wood, IM, has been promoted to Division Marketing Man-

ager with Southern Bell and transferred to the Nashville, Tennessee office. His business address is 150 9th Avenue North.

'41 Frank M. Burt, ME, has been promoted from district to regional manager by the Rubber Products Division of Dayce Corporation and is in charge of the regional headquarters in Atlanta, Georgia.

W. E. Marshall, Jr., IM, presided at a management seminar session during the 14th convention of the National Association of Equipment Jobbers in Philadelphia in October. He is president of the W. E. Marshall Company, 975 Ashby Street, N.W., Atlanta, Georgia.

'45 Cdr. Hurbert W. Keith, Jr., CE, has been appointed commanding officer of the C & GS ship "Bowie" by the Coast and Geodetic Survey. The "Bowie," a hydrographic survey vessel, is presently engaged in current surveys in Puget Sound, Washington. Cdr. Keith's permanent address is 1575 Monroe Street, Denver, Colorado.

'46 Eugene T. Blanton, USAF, EE, has been promoted to Lieut. Colonel. He has been awarded the first oak leaf cluster to the USAF Commendation Metal for meritorious service as an operations officer while stationed in Viet Nam. He is now stationed at Langley AFB, Virginia.

'48 Walter D. Pittman, AE, has been appointed assistant director of the orbital space station studies office with Aerospace Corporation. He lives at 30523 Rue de la Pierre, Palos Verdes Peninsula, California.

'50 Alvah Barron, EE, has been promoted to sales promotion manager of Industrial Nucleonics, Columbus, Ohio.

Frank Holladay has been promoted to vice president of engineering with the Southwire Company, Carrollton, Georgia.

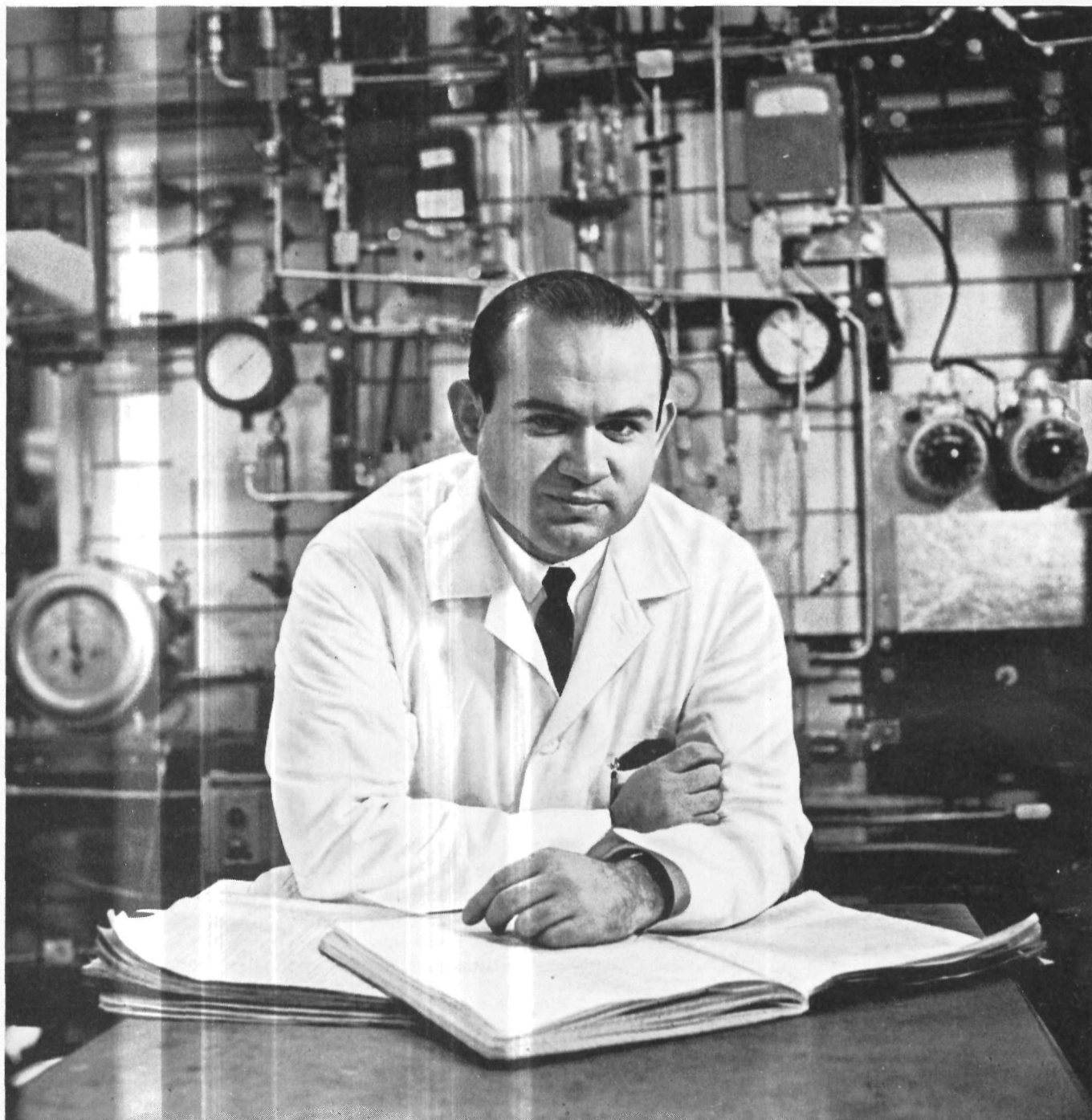
'51 Paul Edward Copeland, EE, has been appointed general sales manager, Amarlite Division of Anaconda Aluminum Company, Atlanta, Georgia. He was formerly Southwestern district manager in Dallas, Texas.

'52 Born to: Mr. and Mrs. William H. Blohm, III, IM, a son, Robert Chancy, August 2. They live at 2248 Rando Lane, N.W., Atlanta 18, Georgia.

Born to: Mr. and Mrs. William C. Jeter, EE, a son, Keith Wallace, August 2. Mr. Jeter is sales engineer, REC and Municipal Electric Utility Sales for General Electric in St. Louis. They live at 421 California Avenue, Webster Groves, Missouri.

Dan C. Mathes, Jr. has been appointed assistant manager of the Memphis brokerage office of Connecticut General Life Insurance Company.

Robert W. Robinson has been appointed product manager for finishing liquids in the Shoe Products Sales Division of the United States Machinery Corporation. He



Anyone for hydrodesulfurization?

How about it? Want to hydrodesulfurize? Hydrodesulfurize oil, that is. Fuel oil. Dr. James Mosby, Purdue, '64 does. He experimentally optimizes the commercial procedure for removing sulfur. He's been working on hydrodesulfurization ever since he joined the American Oil Company as a chemical engineer last January. That's his pilot plant behind him.

Even if you'd rather not hydrodesulfurize, there are

literally scores of other science and engineering opportunities at American Oil. If you're interested in a career in the petroleum industry, write to J. H. Strange for information. His address: American Oil Company, P. O. Box 431, Whiting, Indiana.

AMERICAN OIL COMPANY



Faces in the News



William J. Cooper, '28, has been elected chairman of the Board of Directors and will continue as chief executive of United Illuminating, New Haven, Connecticut. Cooper has been with UI since 1942 and a president since 1958.



Richard G. Brusch, '39, has been appointed plant industrial engineer with U. S. Steel's Gary Sheet and Tin Works. Prior to this promotion, Brusch had held the post of assistant plant industrial engineer since 1961. He joined Gary Sheet and Tin in 1941.



Oliver K. Lewis, Jr., '43, has been appointed by Governor Carl Sanders as a member of the State Board of Registration for Professional Engineers and Land Surveyors. He is head of the Albany, Georgia, firm of Oliver K. Lewis and Associates, Consulting Engineers.



Kendall Green, '46, was recently elected vice president—research and development of Goodrich-Gulf Chemicals, Inc., Cleveland, Ohio. He joined the company several years ago as director of economics and planning. Prior to this, he was associated with Gulf Oil Corporation.



James W. Castleberry, '49, has been named manager of the Southern sales division of Johnson's Professional Products Company, a division of Johnson & Johnson, and will be located in Atlanta. In 1959 he was honored as the outstanding salesman of the year.



E. J. (Dutch) Docekal, '49, a Co-op graduate with a B.S. degree in civil engineering, has been promoted to Chief Manufacturing Engineer at the Lockheed-Georgia Company in Marietta, Georgia. Prior to this appointment, Docekal was Plant Engineer.

NEWS BY CLASSES—continued

lives at Argilla Road, Ipswich, Massachusetts.

'53 Married: **Freddie Haas Wood, Jr.**, TE, to Miss Emily Reynolds, October 2 in Milledgeville, Georgia. Mr. Wood is a management consultant with Kurt Salmon Associates in New York City.

'54 **Capt. Ralph K. Baber**, USAF, IE, has graduated from the flying training course for USAF C-124 transport pilots at Tinker AFB and is now stationed at Charleston AFB, South Carolina.

'55 Born to: **Mr. and Mrs. Carroll Jo Whitfield**, ME, a son, Miles Gandy, June 30. Mr. Whitfield is a senior project engineer with the Lilliston Implement Company. They live at 2022 Stuart Avenue, Albany, Georgia.

'56 **Charles I. Hancock**, ME, received his MD degree from the Medical College of Georgia in June, 1963. He served 1 year of internship at the University Hospital in Augusta and is presently serving as resident in orthopedic surgery at Georgia Baptist Hospital, Atlanta, Georgia.

Born to: **Mr. and Mrs. Gerald W. Lynes**, ME, a daughter, Amy Louisa, July 20. Mr. Lynes is with West Virginia Pulp & Paper Company. They live at 512 Kell Place, Charleston, South Carolina.

Charles W. O'Rear has joined the Division of Science Faculty at East Carolina College, Greenville, North Carolina.

Robert E. Poupard, EE, has been promoted to project engineer and appointed Flight Performance Analysis Department manager at IBM's Space & Guidance Center, Huntsville, Alabama.

'57 Born to: **Mr. and Mrs. Bobby G. Beeland**, TE, a son, Jay Alexander, May 19. They live at Apartment 61, Myrna Court, Athens, Georgia.

T. I. Johnson, Chem, has been named chief process engineer at the Atlas Plant of Atlas Chemical Industries, Inc.

Born to: **Capt. and Mrs. Edward L. McGaughy**, USA, ChE, a son, Edward Hunt, August 7. They live at 716 Cumberland Drive, Rt. 3, Pascagoula, Mississippi.

Wade T. Mitchell, TE, has been promoted to assistant vice president by the Trust Company of Georgia.

'58 **John M. Ennis**, USAF, is now commander, 6570th USAF Dispensary and Director of Base Medical Services, Brooks AFB, Texas. He received his MD from the University of Alabama.

Born to: **Mr. and Mrs. Richard Lowndes, III**, AE, a daughter, Laura Ann, July 16. They live at Route 1, Estill Springs, Tennessee.

Roy George Rollins is with Babcock & Wilcox Company Refractories Division in Augusta, Georgia. He is manufacturing engineer in the Ceramic Fiber Department.

His home address is 3194 Wrightsboro Rd., Apt. D., Augusta, Georgia.

Born to: **Mr. and Mrs. Michael E. Tennenbaum**, IE, a son, Andrew Richard, February 18. Mr. Tennenbaum is with Bear, Stearns & Company. They live at 20 Holt Court, Glen Rock, New Jersey.

'59 **Jack C. Aycock**, ME, has been named plant engineer of Florida Power & Light Company's Cape Kennedy Plant. The Aycock's live at 979 Demaret Drive, Rockledge, Florida.

Married: **A. Lee Brand, Jr.**, IM, to Miss Janella Sammons, June 27. Mr. Brand is with American Mutual Liability Insurance Company in New Orleans, Louisiana.

Born to: **Mr. and Mrs. T. H. Cobb**, IM, a son, Howard Winfield Cobb, August 24. They live at 3009 Hemlock Road, S.W., Roanoke, Virginia.

Born to: **Mr. and Mrs. Milton S. Hall, Jr.**, EE, a daughter, Diana Bordley, July 20. Mr. Hall is on the Technical Staff of Bell Telephone Laboratories. They live at 57 Lippincott Road, Little Silver, New Jersey.

Born to: **Mr. and Mrs. Jerome H. Horwitz**, EE, a daughter, Sheri Alyse, July 19. Mr. Horwitz is a staff engineer at General Atronics Corporation. They live at 17 Birchwood Lane, Willingboro, New Jersey.

Owen Schweers, ME, has been made plant superintendent of the Sharonville, Ohio plant by Union Bag-Camp Paper Corporation. He lives at 5975 E. Kemper Road, Cincinnati, Ohio.

Born to: **Mr. and Mrs. J. D. Viness**, a son, Mark Herman. Mr. Viness is with Robert and Company. They live at 1073 Woodland Avenue, N.E., Atlanta, Georgia.

'60 We recently received word of the death of Harlan Eugene Deal of Patterson, Georgia.

Born to: **Mr. and Mrs. Robert E. Epps**, ChE, a son, Robert Edward, July 23. Mr. Epps has been appointed Reports Group Manager, Western Division of Arinc Research Corporation. They live at 16413 Everest Circle, Mountain Valley, California.

Mr. and Mrs. John S. Parker both graduated from the University of North Carolina Graduate School. Mr. Parker is with M. L. Eakes, Inc. as project manager. They live at 4607 Jackson Road, Greensboro, North Carolina.

Oscar N. Persons, IE, has moved to Rome, Georgia where he is campaign director for Ed Chapin. Republican candidate for Congress. His address is 33 Dempsey-Covington Building.

Married: **Lt. Roland M. Toups**, USAF, ME, to Miss Kathryn Beasley, August 8 in Houma, Louisiana.

Born to: **Mr. and Mrs. Harold Woods, III**, a daughter, Karen Elice, August 30. They live at 227 Garden Lane, Decatur, Georgia.

'61 Born to: **Mr. and Mrs. Harcourt Bull, III**, a son, Harcourt, IV. Mr. Bull is a chemical engineer with DuPont at the Heavy Water Components Test Reactor,



New England Life agent Norm Masters (Michigan State, '56) discusses a Key Man insurance proposal with Nelson Mulligan (center) and son Patrick. The senior Mr. Mulligan is owner of the world's largest Mercury dealership.

Norm Masters took six months off for football, yet sold \$1,000,000 of life insurance last year.



Professional football's long season means a short selling season for Norm Masters. Six months of the year, he plays tackle for the Green Bay Packers. But how Norm sells during the other six months! Between January and July of 1963, for example, he sold \$1,000,000 of New England Life insurance—more than the average agent sells in a year.

How does he do it? Norm can tell you it's not easy, even with an athletic reputation to help open doors. This is a career that demands a high order of competence. You are, after all, dealing with the financial security of families and businesses. The training and support of a good company is absolutely essential.

Norm can testify to the unusual advantages of working with New England Life. He lives and works where he wants to; he knows his company will never ask him to move. He is his own boss, setting his own

hours, fixing his own goals. His current sales keep paying off, year after year. As the insurance he writes is renewed, his commissions are renewed, too. After seven years with New England Life, Norm's annual commissions on old sales amount to almost as much as his commissions on new business.

Perhaps you would like to investigate a career with New England Life. There's an easy first step to take. Send for our free Personality-Aptitude Analyzer. It's a simple exercise you can take on your own in about ten minutes. Then return it to us and we'll mail you the results. (This is a bona fide analysis and many men find they cannot qualify.) It could be well worth ten minutes of your time.

Write to New England Life, Dept. AL, 501 Boylston Street, Boston, Massachusetts 02117.

NEW ENGLAND LIFE

NEW ENGLAND MUTUAL LIFE INSURANCE COMPANY: ALL FORMS OF INDIVIDUAL AND GROUP LIFE INSURANCE, ANNUITIES AND PENSIONS, GROUP HEALTH COVERAGES.

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G. Nolan Beardon, '29, Los Angeles.

Carl S. Ingle, CLU, '33, Jacksonville • Joe A. Sowell, '47, Montgomery.

Faces in the News



Lawrence C. Gray, '51, (M.S.C.E.) is now the new chief of the Construction and Management Section of the Office of Architecture and Engineering, Division of Research Facilities and Resources of the National Institutes of Health, Bethesda, Maryland.



Chapple Chandler, Jr., '52, was just recently promoted to Assistant Vice President, Sales, for the Southwire Company in Carrollton, Georgia. Mr. Chandler is also a Major in the United States Marine Corps Reserve.



Clinton W. Eads, '52, has been appointed manager of Continental Can Company's can manufacturing plant in Shoreham, Michigan, where approximately 255 million cans are made annually. He joined Continental in 1953 and held several positions before advancing to manager.



Alec Redfearn, '57, has been promoted to Assistant Vice President in charge of Industrial Engineering, Personnel, and Industrial Relations for Southwire Company in Carrollton, Georgia. Redfearn has been with the manufacturing firm for seven years.



Roy George Rollins, '57, has become associated with the Refractories Division of Babcock & Wilcox Company in Augusta, Georgia. Rollins will be in charge of coordinating the development, manufacture, and promotion of ultra high temperature ceramic fibers.



James W. Standard, '60, has been appointed Project Engineer in charge of Management Science Atlanta's branch office in Orlando, Florida. Standard was transferred from Atlanta, and is responsible for MSA's consulting services throughout Florida.

NEWS BY CLASSES—continued

Savannah River Lab. They live at 1006 Williams Drive, Aiken, South Carolina.

William R. Burson has been promoted to plant engineer with Southwire Company at Carrollton, Georgia.

Robert L. Martin, CE, has been transferred to Raleigh, North Carolina as a resident planner with Harland Bartholomew & Associates. He lives at 600 Ralph Drive, Raleigh, North Carolina.

Married: **George Brown Pilkington, II, CE**, to Miss Ann Stevens, September 11 in Atlanta, Georgia.

Lt. Randy A. Pirkle, USAF, is assigned to Hqrs., Aeronautical Systems Div. as Management Research & Development Officer, Wright Patterson AFB. He lives at 5313 Cobb Drive, Dayton, Ohio.

'62 Married: **John Pierde Brewster, IM**, to Miss Bernardine Lawton, July 24. They live at 97 Peachtree Park Drive, N.E., Apt. 3, Atlanta, Georgia.

Born to: **Lt. and Mrs. John B. Duggan, USA, ME**, a son, John Benjamin, Jr., July 11. Lt. Duggan is stationed at Aberdeen Proving Ground, Maryland. They live at 2704 F West Court Road, Aberdeen Proving Ground, Maryland.

Ed Ebgin, IE, is now with the Concrete Pipe Division of Vulcan Materials Company in Atlanta. He lives at 1077 Lynmoor Drive, Atlanta, Georgia.

Born to: **Mr. and Mrs. Gerald Allen Epps, IM**, a son, Gerald Allen, Jr., January 3. Mr. Epps is a service representative, commercial department, with U. S. Steel. They live at 409 Maytide Street, Pittsburgh, Pennsylvania.

David L. Federer, CE, is now an Instructor of Civil Engineering, Merrimack College, North Andover, Massachusetts.

Engaged: **William Minor Force, Jr., IM**, to Miss Frances Felch. The wedding will take place October 18. Mr. Force is with First Federal Savings and Loan Association, Augusta, Georgia.

Wayne Little, ME, received his masters in ME from the University of Southern California in June. He is now in the Research Department, Brown Engineering Company. He lives at 416 Julia Street, N.W., Apt. 212, Huntsville, Alabama.

Jerry M. Littlefield, ME, is an Aerospace Technologist for the National Aeronautics & Space Administration in Houston. He lives at 9333 Tallyho, Apt. 46, Houston, Texas.

Born to: **Mr. and Mrs. Juan A. Michelena**, a daughter, Elena Patricia, May 16. They live at 1751 Emorywood Drive, Charlotte, North Carolina.

John Kenneth Pfohl, IM, has completed a two year tour of duty with the Navy and is now in Data Processing Sales with IBM. He lives at 173 King Circle, N.E., Apt. 3, Atlanta 5, Georgia.

Engaged: **F. Manuel Reyes, ME**, to Miss Barbara Blake. Mr. Reyes is with Allied Chemical in Columbia, South Carolina.

Lt. William E. Rushin, USN, IM, was killed August 4 in a Navy jet crash which

occurred shortly after take off from San Clemente Island. His home base was Miramar Naval Air Station near San Diego, California.

John E. Seals, Jr. received the bachelor of professional arts degree in merchandising design in June from the Art Center School. He lives at 859½ N. Lafayette Park Place, Los Angeles 26, California.

Lt. Ralph E. Vick, USAF, received his pilot wings last December at Webb AFB. He and his wife live at Enid, Oklahoma, where Lt. Vick is stationed at Vance Air Force Base.

'63 **Ben H. Granade, IM**, is with Ford Motor Company. He lives at 2637 Old Hapeville Road, S.W., Apt. 3-H, Atlanta, Georgia.

Born to: **Lt. and Mrs. Maurice J. Maguire, Jr., IM**, a daughter, Mary Sarah, July 5. Lt. Maguire is a management engineer with Det. 15. Hdqr. MATS, McGuire AFB, New Jersey.

W. B. Redmond, Jr., CE, is with Columbia Gulf Transmission Company. He lives at 6034 Bellaire Boulevard, Apt. 912, Houston, Texas.

Lt. Frederick A. Stoller, USAF, IM, completed an Aircraft Maintenance Officers course at Chanute AFB, Illinois in August and is now assigned to Turner AFB, Georgia where he is with the 484th Bomb Wing of the Strategic Air Command.

Married: **Dan Swearingen, EE**, to Miss Martha McKinnon, September 5. They both will continue graduate work at Stanford University for the next year.

Married: **Lt. Fitzhugh L. Wood, USAF, IM**, to Miss Gisela Seeling, August 8. Lt. Wood is with the Manpower Engineering Team at Lowry AFB, Denver, Colorado.

'64 **Lawrence Brantley, IE**, has joined Eli Lilly and Company, Indianapolis-based pharmaceutical firm, as a methods engineer. He will assist in production methods and layout studies.

Lt. Robert A. Cumble, USAF, IE, is now assigned to Amarillo AFB, Texas for training as a procurement officer.

Married: **John Herbert Keisling, IM**, to Miss Juanda Hawkins in September. Mr. Keisling is with Southern Bell in Atlanta, Georgia.

Fred E. Mills, II, USAF, IM, has been commissioned a second lieutenant following graduation from Officer Training School at Lackland AFB. He is now assigned to Chanute AFB, Illinois.

Married: **David Maner, ME**, to Miss Linda Ann Criger, August 9. They live at 1412 Highland Avenue, Apt. 12, Knoxville, Tennessee.

Married: **Robert M. Ragsdale** to Miss Gayle C. Curtis, July 4. They live at 2514 Q Street, Apt. 4, Sacramento, California.

Married: **John Franklin Scarborough, III, ChE**, to Miss Julia Conner, October 3 in Vidalia, Georgia.

Henry C. Taylor, Jr. has joined Shell Oil Company's Southwest Exploration Division in Lafayette, Louisiana. He lives at 213 Bendel Road, Apt. 29, Lafayette, Louisiana.



Is it possible that a builder of space simulation equipment has a hand in Becky Hull's ballet lesson?

You'd expect that the leading maker of arc carbons that produce the brilliant light for projecting motion pictures would be called upon to duplicate the sun's rays in space simulation chambers. These chambers are used to test space devices, such as the communications satellites and space vehicles... and even the astronauts themselves.

And it probably wouldn't surprise you to learn that a company that produces half a dozen different types of plastics would also create an anti-static agent as part of the vinyl plastic it developed for phonograph records. This keeps dust from sticking to record surfaces. The sound is improved. The record lasts longer. And Becky Hull's ballet lessons are performed to music that's more faithfully reproduced.

But would space simulation equipment and better materials for phonograph records come from one company? Indeed they would, in the unusual case

of the company known as Union Carbide.

All kinds of seemingly unlikely side-by-side activities turn up at Union Carbide every day. As a leader in metals and alloys, it developed a new, stronger stainless steel, and among the results are better subway cars for New York City. In cryogenics, it manufactures the equipment for a technique in brain surgery based on the use of supercold liquid nitrogen. Its consumer products include "Eveready" brand batteries and "Prestone" brand anti-freeze. And it is one of the world's most diversified private enterprises in the field of atomic energy.

In fact, few other corporations are so deeply involved in so many different skills and activities that will affect the technical and production capabilities of our next century.

And we have a feeling that Becky Hull's future is just as bright as ours.

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