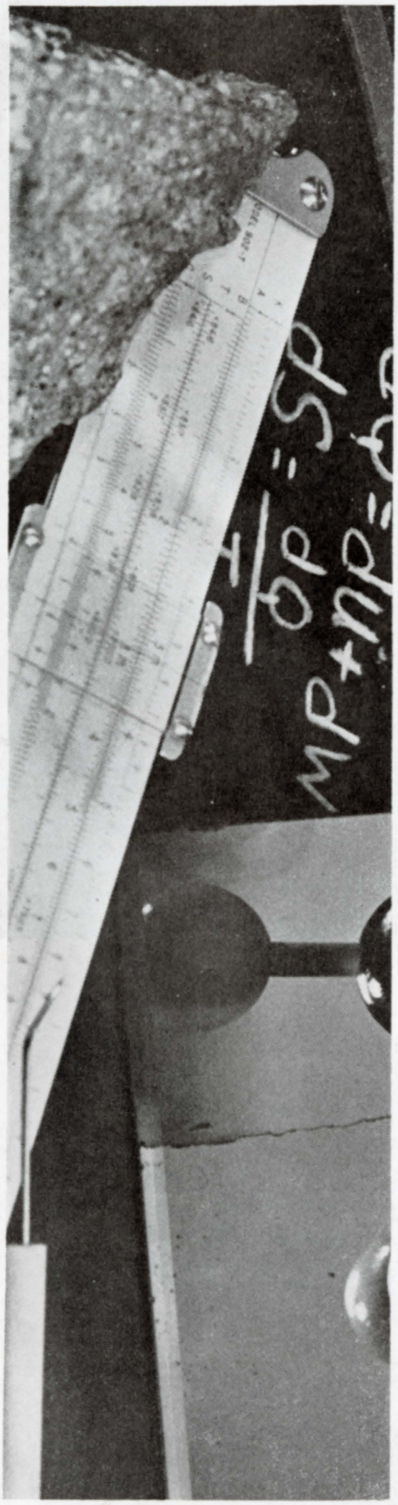
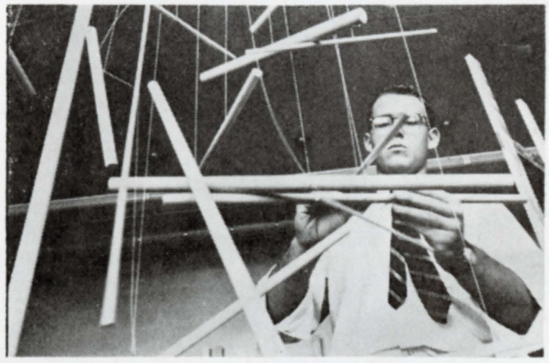
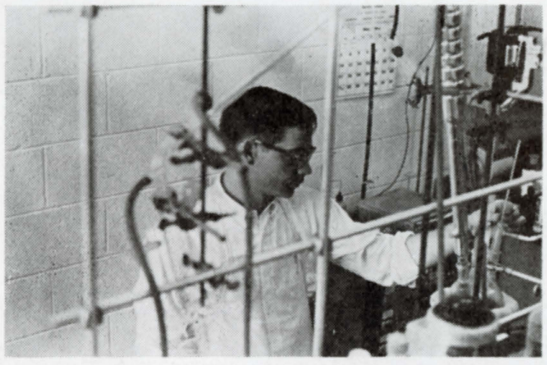
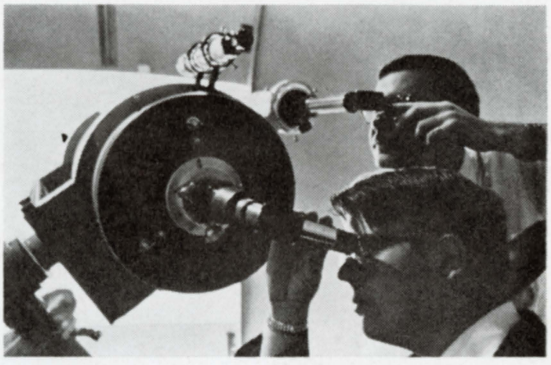
Washington and Lee University Bulletin Spring Issue 1967

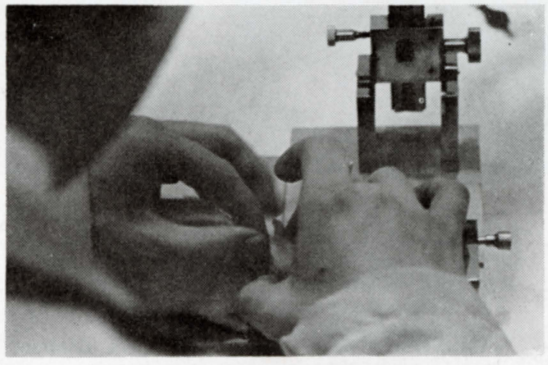
THE University Magazine

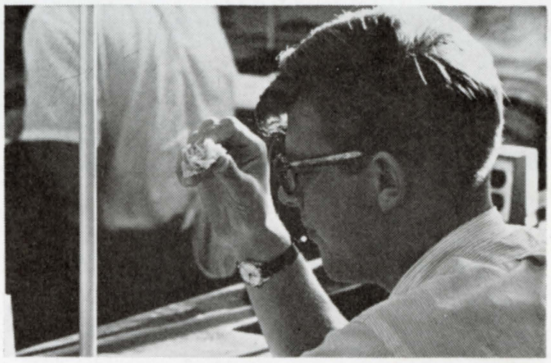


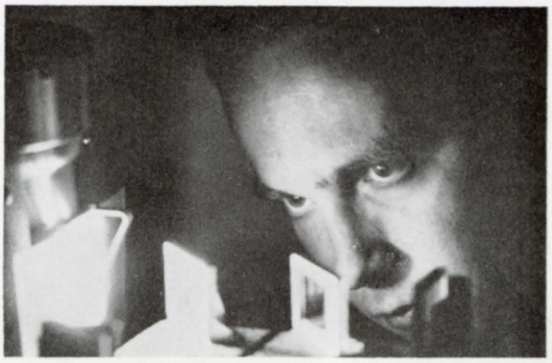


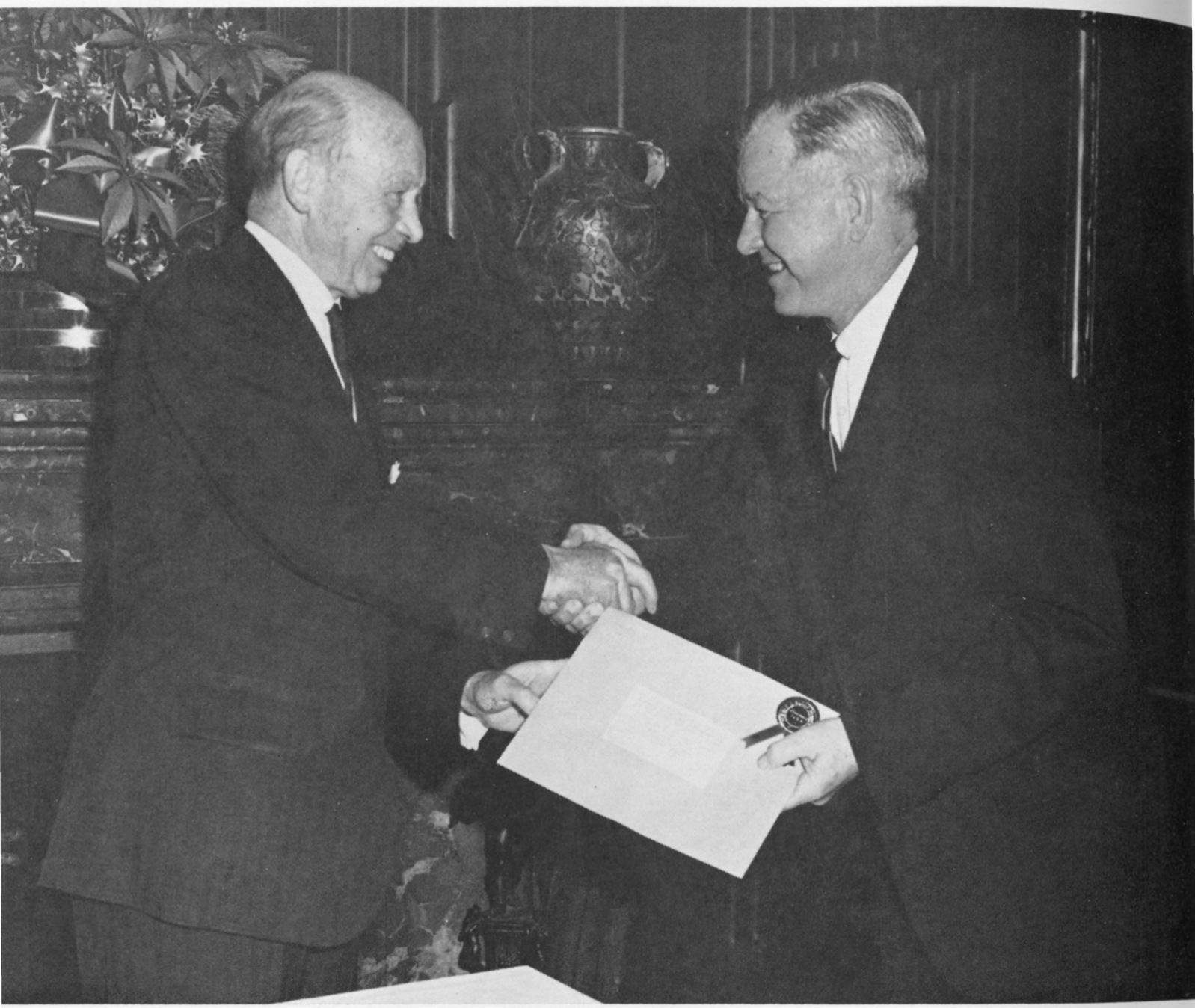












A Gesture of Faith

At a luncheon in New York City, Everett Case (left), president of the Alfred P. Sloan Foundation, presented to President Fred C. Cole a grant of $250,000 to be used at Washington and Lee University to strengthen science instruction. Mr. Case said the Foundation has faith that private four-year colleges, like Washington and Lee, can remain significant centers of undergraduate scientific learning and added, "It is now up to the colleges and all who believe in their future to vindicate this gesture of faith." Thus has the University crossed the threshold of a new era in the sciences. See articles on Pages 8 and 14.

THE

University Magazine

October, 1966

THE WASHINGTON AND LEE UNIVERSITY BULLETIN

A STATEMENT

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THE COVER

On January 4, 1967, the Alfred P. Sloan Foundation awarded Washington and Lee University a grant of $250,000 to strengthen instruction in the sciences. The photographs on the cover show Washington and Lee students at work in the laboratory—an exacting and challenging activity. Indeed, the University is putting the Sloan grant to exacting and challenging use. Articles about the Sloan grant and the status of science instruction at Washington and Lee begin on Page 8 and 14.

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Participants in the 1966 Geology Institute at Washington and Lee examine a fossil discovered on a field trip near the Lexington campus. Such activities as this and those of a separate French Institute have changed the once-tranquil setting of Washington and Lee in summer into a center of busy academic projects.

The Campus Is Busy In Summer Now

High School Teachers of French And Geology Increase Knowledge And Teaching Skills Under New Summer Programs at the University

Story by JOHN E. HUGHES
Assistant Director of
Information Services

Photographed by
JOHN E. HUGHES

ALONG A BUSY VIRGINIA HIGHWAY, a group of people are chipping away at roadside rock with small pickaxes.

Ignoring the traffic rushing behind them, each person pounds at the rock walls, and then one picks up a fragment and calls the others over. "Ooos" and "aahs" are heard as the rock is examined.

A passing motorist screeches his car to a halt and inquires:

"What are you looking for?"

"Rocks," is the answer.

Unbelieving, the motorist drives a few feet farther and asks another rock-chipper the same question.

"Fossils," is the reply this time.

The motorist scratches his head and drives on.

Forty miles away, a group of students sits in a college classroom, methodically reciting the French alphabet.

"Aah, bay say . . ."

Typical scenes at a university? Yes and no.

They are not typical at Washington and Lee University for several reasons. First, the rock-hunters are a mixed group of men and women. Two are Catholic nuns.

The youngsters studying French are not college students but grade schoolers. And seated behind them in the classroom, observing their every lip movement and sound, is another mixed group of adults.

But the two scenes were typical last summer on the Washington and Lee campus and in the surrounding mountains. The University was host to two federally-sponsored summer institutes, one in French and the other in geology.

And they will be typical again this summer, when the University once more is the site of summer institutes in French and geology.

Both groups, made up of secondary school teachers from many states, lived in university dormitories, ate in the school's dining hall, and attended classes and laboratory sessions in Washington and Lee facilities which are usually vacant during the summer.

In the French institute, the participants not only became more proficient in the language, but learned something of the French people, their country, and their culture through lectures, slides, and reading.

The French participants also were observers while others learned. Each week day a group of approximately 25 Lexington school children in grades 7-12 who had never had any previous French instruction attended a "demonstration class."

During the hour-long session, the students were taught by James P. Ward, a Falls Church, Va., teacher and a member of the institute staff. He employed the latest teaching methods and techniques.

After the grade schoolers ended their session with Ward, it was the institute participants' turn. Consulting notes they had taken during the demonstration class, they discussed with Ward the methods he used. He explained why he used them and the participants "critiqued" them.

Participants in such institutes are almost bombarded with French. "They listen to French spoken in person and on records, they speak French (dinner conversation in the language is required at mealtime), they read French and they write French," noted Dr. G. Francis Drake, the Washington and Lee professor who was institute director.

While the emphasis in the French institute was on teaching the teachers the latest in techniques and methods, the objective in the geology institute was to increase the participants' knowledge of geology.

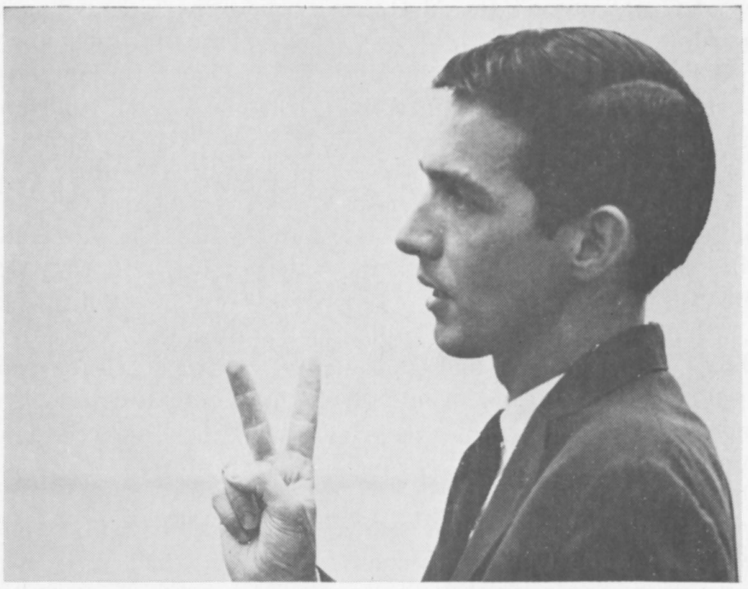
As one participant described it, "It's like taking a complete introductory geology course in six weeks."

Besides classroom instruction and lab work with Dr. Odell C. McGuire, institute director, and his staff, the geology participants took several field trips to study geological formations in the Virginia countryside.

Not only did they chip at roadside rocks, but they were able to combine field trips with visits to tourist attractions such as Natural Bridge, Luray Caverns and Appomattox.

"These phenomena are of interest geologically as well as being

Washington and Lee's summer institutes in French and Geology are designed to fulfill different purposes. The French institute's goal is to insturct high school teachers in the latest, most effective teaching techniques, as well as to increase their competency in the language. The demonstration class, shown in session above, permits teachers to observe an expert instructor in action with a group of youngsters confronting French for the first time. The geology institute is primarily concerned with instructing high school teachers in basic geologic fundamentals. This involves frequent field trips, conducted by institute director DR. ODELL C. MCGUIRE, *bottom right, and other members of his faculty.*



Institute instructor JAMES P. WARD *leads the demonstration class in a pronunciation practice that comes hard at first for some, but then, progressively easier, and the instructor indicates "By George, she's got it!"*

wonders of nature," Dr. McGuire noted.

Both institutes proved highly successful in achieving their goals, according to the men who direct them.

Dr. McGuire, assistant professor of geology at Washington and Lee, cites two "main reasons" for the success:

"First, we had a good group, thirty-one persons. We had enough applications so that we could be more selective and get the type person who really wanted to get something out of the institute.

"Secondly, this area of Virginia is ideal for the type of geological instruction we wanted to give. There is such a variety of geological formations in the Blue Ridge, the other surrounding mountains and in the valleys."

Dr. Drake's staff included members of the Washington and Lee Department of French, a number of visiting instructors and five French natives who conducted conversation courses.

"The outstanding feature of this institute," says Dr. Drake, "was the excellent group of participants and the excellent staff which cooperated so well with each other."

The forty-nine French teachers who were students last summer believe the institute, and especially the demonstration classes, were most beneficial. Said one:

"Most of us teach a beginner's class such as this demonstration class, and here we can see how the youngsters react to different techniques, and thus we can possibly avoid pitfalls when we are teaching."

Dr. Drake feels the class benefited the grade schoolers as well, even though they received no formal credit.

"The kids get a big kick out of the class," he said. "They must because we had very few dropouts, and attendance is entirely voluntary. Though they get no credit, this instruction will stand them in good stead when they take regular French courses in school."

Federal grants under the National Defense Education Act and National Science Foundation programs financed all expenses of the institutes, including staff salaries and a stipend of $75 a week for the participants.

Those who completed the course successfully are eligible to receive credit toward graduate work; eight semester hours in French, six in geology.

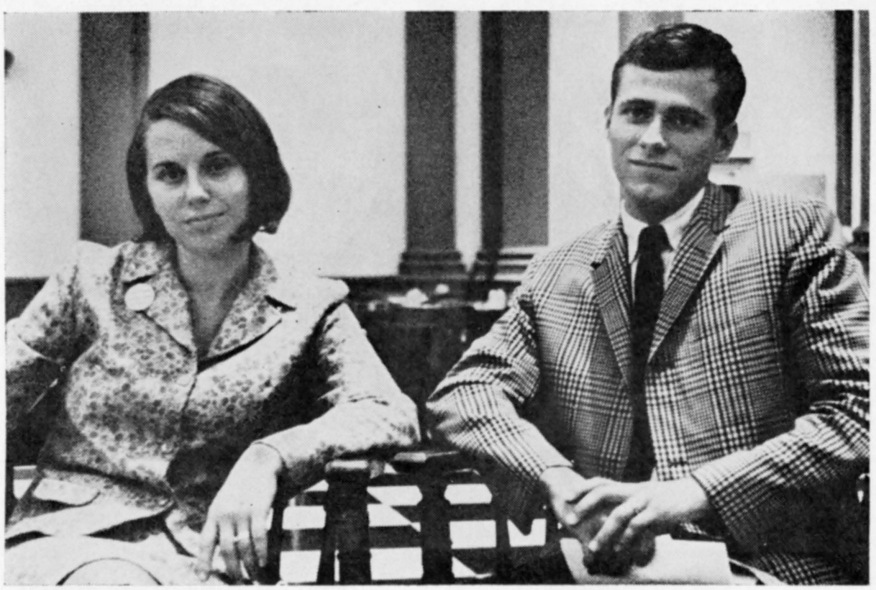
The institutes aren't all work and no play. A varied extra-curricular program included picnics, folk-singing and dancing, skits and weekend excursions. On July 14 the French institute members celebrated the French "Bastille Day"—similar to the United States' Independence Day—with a dinner party and skit.

At least one romance has bloomed from the institute. Instructor Mme. Andree Courrieu and her "pupil," James Underwood of Doylestown, Ohio, met during a similar French institute at Washington and Lee in the summer of 1965.

The couple continued to date and became engaged at Christmas. Mme. Courrieu returned to Washington and Lee last summer, again as an instructor. Although not eligible to attend the institute a second time, Underwood moved to Lexington to be near his fiancee, and one weekend they were married in his hometown, returning to Lexington in time for classes Monday.

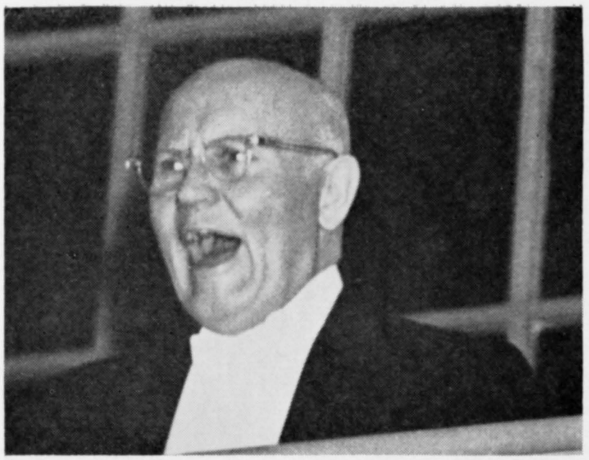
When the institute closed on August 12, they set out on their real honeymoon trip.

To France, of course.



Newlyweds Andree and James Underwood, who found that a French Institute can lead to more than just greater fluency in the French language.

Death Claims Mattingly At Age 78



MR. MATTINGLY at a Fancy Dress Ball several years ago.

EARL STANSBURY MATTINGLY did not like for Washington and Lee people to use thumb tacks on the doors of University buildings. It marred the paint, he said. He liked to keep things straight—the accounts, the records, the grounds, the names of students—everything having to do with Washington and Lee.

Some students, faculty members and administrative associates may have joked occasionally about the finicky "Mr. Matt." But no one scoffed at his devotion to the University. He was universally admired for his efficiency. He had the affection of his colleagues and was popular throughout the University community.

When Mattingly retired in July, 1966, the Board of Trustees, in a resolution, expressed "its deep sense of appreciation for Mr. Mattingly's distinguished record of service and its gratification that his experience, wisdom and friendship will continue to benefit the University, the president, and the members of the board in the years ahead."

Mattingly was made treasurer and secretary, emeritus. He was closing out nearly 50 years of service to the University. He began in 1916 as a student assistant in the treasurer's office. He served in World War I. He returned to Washington and Lee in 1919 and became manager of the dining hall. The next year he was appointed registrar while still working toward his A. B. degree. He earned it in 1925. He remained registrar for 20 years, and in 1940 he became the University's first full-time treasurer and secretary.

Mr. Mattingly had a prodigious memory. He made it a point to memorize the name, face, hometown, local address and grades of every Washington and Lee student, about 600 to 700 yearly, during the 1920's and 1930's. The faculty in a tribute to him upon his retirement said he was "never more effective than when he is presenting and interpreting University purposes and problems . . . a task made easy by his rich background and his extraordinary memory for the names of generations of students, their families and other friends of the University."

He did not make the University a consuming interest. He was a bachelor. He worked in numerous civic affairs and was a leader in the Robert E. Lee Memorial Episcopal Church. He was a Mason and a Shriner. He was a trustee of Randolph-Macon Academy, a director of Lexington's Stonewall Jackson Hospital, a founder and the first president of the Troubadours, the University's drama organization. He was a member of Omicron Delta Kappa, national honorary leadership fraternity, of Beta Gamma Sigma, national society recognizing achievements in business and commerce, of Phi Delta Theta social fraternity.

He was, in his capacity as treasurer and secretary, emeritus, a special assistant to President Fred C. Cole.

His career was long. His retirement was brief. He died December 27, 1966, at the age 78.

Dr. Cole said in announcing Mr. Mattingly's retirement: "I know of no one who has been more loyal, more dedicated to the best interests of this University, and I know of no one who has been a greater friend to generation after generation of Washington and Lee men."

Men like "Mr. Matt" are never forgotten.

"The Sloan Grant is a landmark in the history of science teaching at Washington and Lee. It signalizes the contribution which W. and L. has made and has the capability of continuing to make in educating our finest young minds to an appreciation of the order of our universe, whether of subatomic or intergalactic dimensions. To be cognizant of the current hypothesis about the world is part of the liberal education to which W. and L. students and teachers aspire. Today, in physics, one should know of quarks, quasars and quantum phenomena. Tomorrow's discoveries will bring developments that our staff and students must be able to understand. The Sloan Grant recognizes and encourages our commitment to increase the involvement of both staff and students in scientific research and scholarship to the end that both the teaching and the learning activities will be enhanced. The grant increases the probability that Washington and Lee men will continue to be among those who help shape the theories of the future."

EDWARD F. TURNER, JR.
Head, Department of Physics

The Sloan Grant: Endorsement, Incentive

A BANNER DAY for science instruction at Washington and Lee University came on January 4, 1967. On that day, President Fred C. Cole attended a luncheon in New York and accepted on behalf of the University a grant of $250,000 from the Alfred P. Sloan Foundation.

Washington and Lee was one of 20 private, four-year colleges of arts and sciences chosen to participate in the Foundation's $7,500,000 College Science Program. The participating colleges will use the grants, payable over a five-year period, for two main purposes:

- To strengthen their positions in the sciences—biology, chemistry, geology, mathematics, physics and psychology, in the case of Washington and Lee.
- To demonstrate ways by which other colleges may improve theirs.

Other colleges receiving grants were Antioch College in Ohio, Carleton College in Minnesota, Colgate University in New York, Cornell College in Iowa, Davidson College in North Carolina, Grinnell College in Iowa, Haverford College in Pennsylvania, Hope College in Michigan, Kalamazoo College in Michigan, Knox College in Illinois, Middlebury College in Vermont, Morehouse College in Georgia, Mt. Holyoke College in Massachusetts, Oberlin College in Ohio, Occidental College in California, Reed College in Oregon, Smith College in Massachusetts, Swarthmore College in Pensylvania, and Williams College in Massachusetts.

When Everett Case, president of the Sloan Foundation handed President Cole the award, it betokened more than the mere presentation of money. It was a vote of confidence in what Washington and Lee has done, is doing, and will do in the overall field of undergraduate education. It was endorsement and incentive.

It was not a gratuity. The Foundation considered not only the accomplishments and potential of the sciences at Washington and Lee. It also examined the quality and strength of the University as a whole. And Washington and Lee was found to be a place worthy of investment.

How will the investment be used? The grant is somewhat flexible, enabling the University to shift the funds from year to year if experience shows one

"The Department of Biology anticipates major benefits and improvements as a result of the support provided by the Sloan Foundation Grant. With partial support from this grant we are able to add next year to our staff a fifth full time staff member in the general area of physiology. This will add major strength to our department. During the coming summer two of our staff members will be carrying on summer research, each with two undergraduate student assistants, supported entirely from this grant. We feel that involvement of more students in undergraduate research is highly desirable and welcome the opportunity to train more students in this area. We have long felt the need of having more visits by outstanding scientists to talk and work with our undergraduate majors. Although some support of this sort has existed from other sources, the Sloan grant is particularly advantageous in that it will permit us to select special individuals to talk on special areas. The recent growth of our department in staff, in students and in course offerings results in significant gaps in our library holdings especially in the areas of new courses added to our curriculum. The funds for library will enable us to rapidly achieve at least the minimum holdings in these areas. We also look forward to the opportunity of some of our faculty receiving leave for further study and research supported by the Sloan Foundation Grant. The field of biology is developing so rapidly that it is important for our staff to keep abreast of current developments and this will provide the opportunity."

HENRY S. ROBERTS
Head, Department of Biology

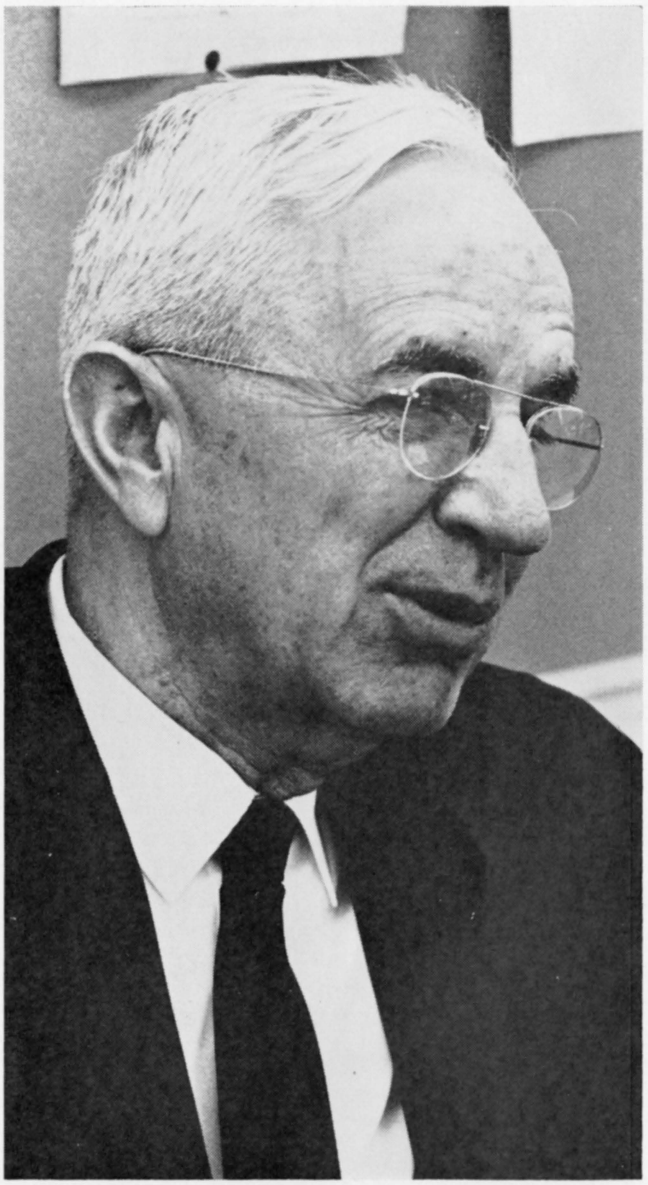
area of work or experiment to be more productive than another. Currently, the main programs being inaugurated are these:

—A Faculty Leave Exchange Program.
—Summer Research Program.
—A Distinguished Visitor Program.
—Additional Faculty Members.
—Technical Assistance.
—Filling Gaps in Library Holdings.

Exchange Program: In each of the five years, two professors from the departments—biology, chemistry, geology, mathematics, physics, and psychology—may apply for a year's leave of absence to carry out research and further study at another college or university. The absent professors will be replaced by a graduate student who has completed his course work for the Ph.D. or by a recent Ph.D. recipient.

This aspect of the program will be similar in some ways to the cooperative program in the humanities sponsored by the Ford Foundation. The humanities program permits one or two Washington and Lee professors in the humanities to spend a year at either Duke University or the University of North Carolina to pursue research and study projects of major proportions. These universities, in turn, send to Washington and Lee terminal graduate students who gain valued experience under the guidance of a trained faculty at a college which emphasizes teaching.

The results in the science exchange program, as in the humanities program, will be twofold: It will aid the professional and scholarly development of the



"Chemistry has been taught at Washington and and Lee since 1812. Although recommended by Robert E. Lee as early as 1869, the Department of Chemistry did not come into existence as a separate department until 1887. However, the outstanding excellence of the Department dates with the appointment of James Lewis Howe as Professor of Chemistry in 1894. Through the efforts of Lucius Junius Desha the quality of the Department was nationally recognized in 1941, when Washington and Lee became one of the first colleges to be placed on the approved list of the Committee on Professional Training of Chemists of the American Chemical Society. The fact that Washington and Lee is independent of church and state has rendered increasingly difficult the task of maintaining high curricular standards. The present strength of the Chemistry Department has not been attained without financial aid from those who have understood its needs. Various individuals and corporations have provided aid during the past, but the rapid progress of chemistry has kept the Department on a treadmill of increasing demands. The grant from the Sloan Foundation recognizes some of the present problems relating to chemistry; however, in our gratefulness to the Sloan Foundation, we are mindful that scientific progress requires equipment and other needs, the costs of which are rising rapidly. We are hopeful that the grant from the Sloan Foundation will be sufficiently contagious to encourage additional aid.

E. S. Gilreath
Head, Department of Chemistry

Washington and Lee professor and enable him to bring back up-to-date ideas. At the same time, it will allow the graduate student in science to sample the pleasures and rewards of college teaching before he makes a final decision on a career that might exclude teaching. He will also bring fresh thought to Washington and Lee. The goal will be to establish in scientific teaching careers men who might otherwise be lost to other professions and to create a system of scientific cross-fertilization on the Washington and Lee campus.

The science exchange program will not necessarily be limited to the university from which the replacement is drawn. And it is assumed that some professors will continue to avail themselves of leave opportunities from other sources.

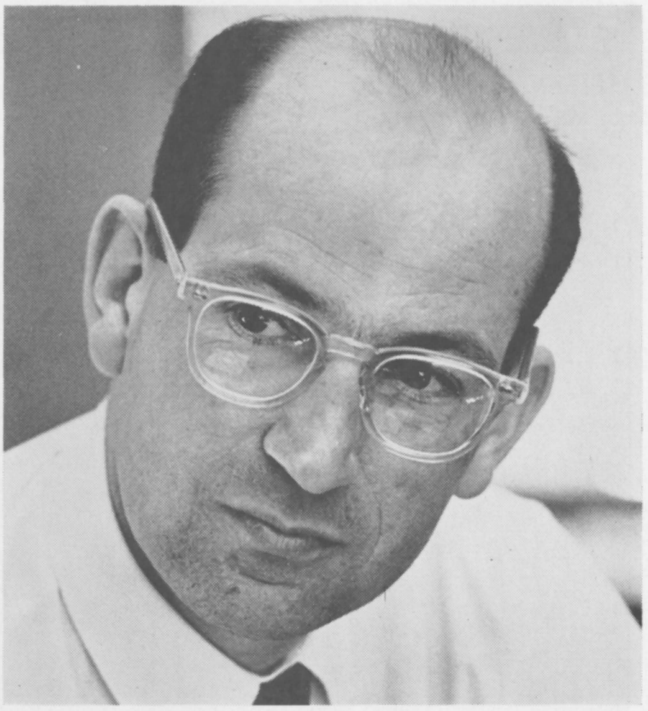
Summer Research Program: A portion of the Sloan funds will be used to support a summer program of research, involving student participation, to meet the needs of Washington and Lee faculty members. This summer, for instance, support will be provided for six professors and 12 students to carry out a wide range of projects.

This program will be designed to fill a need once stated this way by Dr. Leland Haworth, director of the National Science Foundation: "The opportunity to do research is essential in any institution which hopes to retain competent members and to inspire its students to appreciate science."

The summer research program made possible by the Sloan funds will greatly augment faculty and student research projects in many areas already under

"The Sloan Foundation Grant is certainly a milestone in the development of Washington and Lee's science program. I expect the program of leaves to have the most significant long-term impact on W.&L. It will help to keep our faculty in close touch with new developments at leading universities; it will provide the opportunity for up-dating the faculty's educational background; and it will enlarge our contacts throughout the scientific community."

EDGAR SPENCER
Head, Department of Geology



way at the University. Some of this work has been supported by the Robert E. Lee Research Program for Undergraduates, and other work has been supported by the National Science Foundation, National Institutes of Health, Research Corporation, and the U. S. Office of Education.

Demands on the Lee research program have exceeded its resources, and grants from other sources have become increasingly hard to obtain. Consequently, members of the Washington and Lee science faculty frequently have gone elsewhere during the summer to teach and pursue research. The summer program will reduce such departures and give additional faculty members an opportunity to participate in on-campus projects. Once established, the program is expected to generate other support which can be used to maintain the program after the Sloan funds have run out.

The Lee research program is established and proven. A gift from an alumnus, the late Dr. Gustav Capito of Charleston, W. Va., enabled the University to establish the program in 1960. It enriches undergaduate experience by making it possible for students to work closely with professors on significant research projects of broad variety.

Its principal benefits have been to prepare undergraduates for graduate research and to encourage them to continue in graduate school. Simultaneously, it has stimulated professors to continue independent research and study. The Lee program embraces all academic departments, but its greatest activity has been concentrated in the sciences. The program's resources cannot meet demands, and some worthy projects have had to be turned down. Research made possible by the Sloan funds will complement this distinctive and valuable program in the sciences.

A Distinguished Visitor Program: The Sloan grant will allow the science departments to bring to the campus outstanding mathematicians and scientists who will conduct seminars for students and will help keep the faculty informed of developments in their fields. This program of visitations will supplement existing programs which bring speakers to the campus in the sciences and other fields.

The science seminars will help mitigate the feeling of isolation from the mainstream of scientific thought often felt by professors in a four-year college with relatively small science departments. In the past, this has been somewhat of a problem at Washington and Lee.

The distinguished visitor program will permit at least one visit of several days to a week, or perhaps several shorter visits, by an eminent scientist in each of the science departments every year. The visitor would conduct at least one seminar for students, but he would be asked to spend most of his time with members of the faculty, informing them of the developments in the discipline and of his work and thought.

Additional Faculty Members: Each of the participating departments will be able to add a faculty mem-

"The major obstacle to the maintenance and development of a strong Department of Psychology in a liberal arts college is the difficulty in the procurement of well qualified personnel. Even the young Ph.D. who wants to teach at the undergraduate level has active research interests which he wants to continue to pursue after the receipt of his degree. Continuing research profits both the teacher and his students, particularly if it is carried on in a setting where the emphasis is on teachers with research interests and not on researchers who are irked by teaching duties. The award of the grant from the Sloan Foundation has already eased this problem for us. We have just received acceptance to our offer of a position for the next school year in the Department to an exceptionally able and well trained young man. The availability of support for summer research, a strengthened psychology library, the possibility of leaves for instructive purposes, and the possibility of adding additional personnel to the department, all of which are made possible by the Sloan Foundation grant, contributed significantly to his decision to join the Washington and Lee faculty."

William M. Hinton
Head, Department of Psychology

ber over the five-year period to relieve excessive teaching loads. The standard teaching load in the sciences in most universities is six hours. The average load at Washington and Lee, exclusive of research supervision, is 12 hours.

Furthermore, the sciences are rapidly changing disciplines, and science professors often find themselves hard put to incorporate into the undergraduate curriculum the essentials of recent developments. Scientific courses are rigorous, and students require as much individual attention as the professor can give them.

Additional faculty members in the sciences will permit professors to give students more personal attention without sacrificing rigor or course content. The new teachers will also make it easier for the departments to adjust to more frequent leaves of absence.

Technical Assistance: A competent electronics technician will be employed to assist all departments. This will further free professors for teaching, course preparation, and research supervision. As much time is often required to set up a three-hour laboratory as is needed to prepare three hours of class work.

The technician will set up complicated experiments in advance of laboratory sections under the general direction of the teaching faculty. He will keep laboratory and electronic equipment in good repair. He will construct, when feasible, various pieces of apparatus for scientfic research, making use of the University's shop facilities.

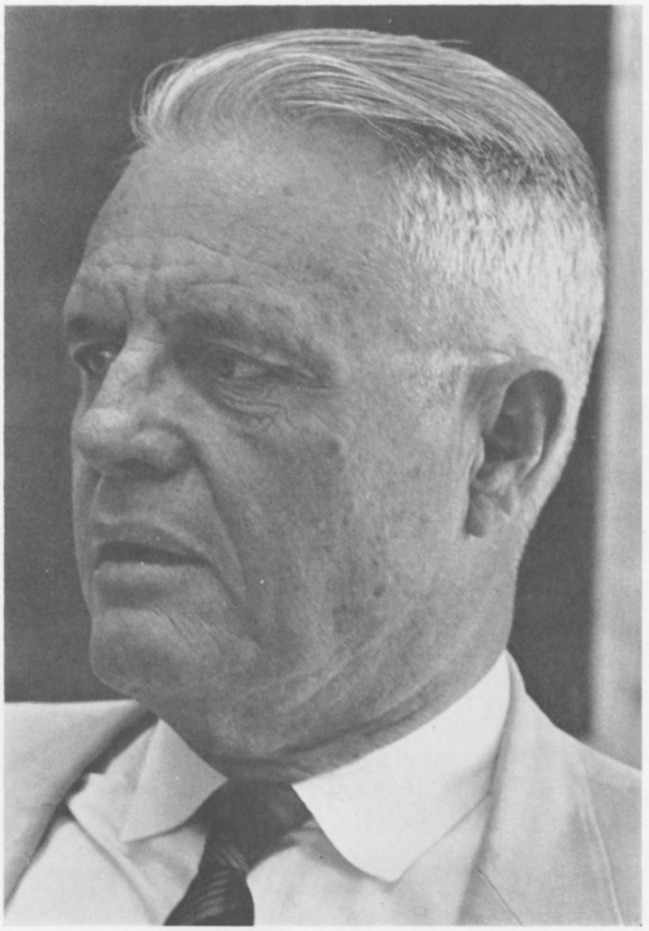
Closing Gaps in Library Holdings: Each science department has a departmental library housed convenient to its classes and laboratories. The University now provides adequate support to maintain good libraries in scientific fields. But gaps exist in most of the departmental collections. A portion of the Sloan funds will be used to close these gaps so that all needs for research and instruction will be met.

The University will continue to seek support from other sources and will intensify its appeals to alumni, parents, friends and others. Indeed, this is one of the tacit conditions under which the University accepted the grant.

To a marked degree, past outside support of the

"The Sloan Foundation grant will be of benefit to mathematics at Washington and Lee in several ways. First, it will make possible the procurement of additional personnel to reduce class size or reduce teaching loads or both. Second, it is hoped that it will make possible visits of eminent mathematicians to the campus. Third, it provides for temporary employment of young mathematicians who are presently in graduate school but who contemplate careers in college teaching. Fourth, there is some provision for further study by those now on the faculty. The last three of these items should make it possible for the department to keep in constant contact with development in undergraduate mathematics at other institutions."

FELIX P. WELCH
Head, Department of Mathematics



University provided a basis for the Sloan grant. The University's application may well have been set aside if the University had not demonstrated its ability to win support for its programs from within and without its immediate family. For instance, a fund campaign begun in 1958 provided for a new four-story science building and the enlargement and renovation of the old science building.

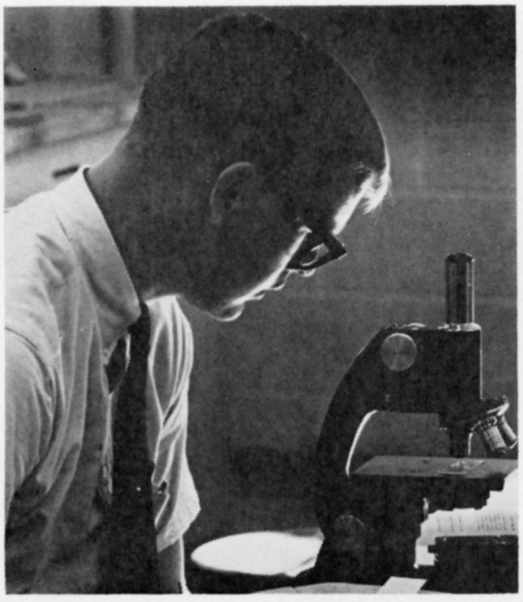
Now the Sloan grant put Washington and Lee on the threshold of a new era of leadership in undergraduate scientific studies, for in the years ahead it will share the benefits and experience derived from the Sloan program with other colleges and universities.

The 20 colleges chosen by the Foundation to participate in the College Science Program—the largest appropriation for a single program in the Foundation's 32-year history—were cited for their ability to conceive original solutions to their own problems and to those in similar circumstances, their commitment to improve science education, their capacity to carry through their plans, and their ability to sustain the added effort after the Sloan support expires.

Mr. Case, the Foundation president, said in announcing the awards that liberal arts colleges—traditionally the training ground for many high school science teachers and for a larger proportion of future scientists—have recently been in danger of falling behind in the competition with large universities, government, and industry for top faculty and students. He added:

"We are very much aware that this College Science Program, sizable as it is for the Sloan Foundation, will be useful primarily in dramatizing the total problem and in pointing to ways of solving it. For this reason, the Foundation has taken care to select, as 'demonstration' centers, colleges representing a wide range of achievement and potential in the sciences and proposing a correspondingly wide variety of solutions. We hope, of course, that the example of these colleges thinking and acting to improve their science programs will be useful to other colleges in analogous situations. Above all, we hope that our grants will serve to release an increasing stream of supporting funds from private and public sources."

This is the challenge of the Sloan Foundation grant to Washington and Lee University and its friends.



The Upward Pull in Science Teaching

WHY THE SLOAN FOUNDATION grants to strengthen science education in private, four-year liberal arts colleges like Washington and Lee?

After all, great things in the sciences are being done at big graduate universities—MIT, Cal Tech and the like. Why not put the money where the action is?

The trustees of the Sloan Foundation, examining the situation, saw it another way. They saw small independent colleges having trouble keeping abreast of rapid advance in the sciences at a time when such institutions are still very much the places where a large percentage of future scientists receive their first training. The Foundation's response was its College Science Program, which in its broadest aspect seeks to preserve and strengthen the ideal of liberal education at the undergraduate level which, educators agree, cannot continue to be effective if it lacks a strong science component.

The choice of Washington and Lee to participate in the program was a tribute to the University's determination to avoid the ills the Sloan program is designed to relieve.

At one time the University was beset by many of the widely discussed problems surrounding undergraduate science education at small private colleges in the post-Sputnik era. Chief among these problems were inadequate facilities and equipment, the need to enlarge and retain Washington and Lee's outstanding faculty of scientists, to attract more top-flight students in the sciences, and to bridge a gulf between the humanities and the sciences.

The merit of Washington and Lee's offerings in the humanities and social sciences has always been recognized and respected. But its strength in the sciences and mathematics has not always enjoyed the same reputation despite the presence of an excellent and devoted science faculty.

For a long period, teaching and laboratory facilities for biology, chemistry, geology and physics were woefully crowded and antiquated. B.S. graduates were generally well prepared, but relatively few future scientists were attracted to Washington and Lee. A majority of science graduates were pre-medical—104 in the past five years—who entered good medical schools. This was ample evidence of the effectiveness and potential of science education at Washington and Lee. But more, much more, was needed.

In 1953, the University undertook a general development program that gave high priority to correcting the imbalance between emphasis on scientific instruction and the emphasis on other curricula. The results were revolutionary.

A Successful Campaign

In 1958, a capital campaign among alumni and others raised sufficient funds in two years to give the sciences the facilities so long overdue. In 1962, a new four-story building was placed in use by the departments of biology and physics. The old science building was enlarged and completely renovated to provide vastly improved accommodations for the departments of chemistry and geology. The over-all result was that Washington and Lee's physical quarters became as good as those on the best American undergraduate campuses.

When President Fred C. Cole took the helm of Washington and Lee, he took additional steps to build up science education as well as other areas of the college. Faculty salaries were raised; teaching positions in the sciences were made compatible with research interests; a council on leaves and research was established; professors were encouraged to seek outside support for their individual research activities; and as much as possible, the university itself assisted directly with faculty research and study grants.

When the Robert E. Lee Research Program for Undergraduates came along, the new science facilities being built were redesigned in part to provide each professor with a small private research laboratory,

and special rooms were set aside for professors and students engaged in Lee research programs.

An IBM 1620 computer was acquired for faculty and student research and instruction. This computer soon became a great stimulus to mathematical studies and to scientific studies in general and an important aid in fields of commerce and the social sciences.

Further support of the science program came in the form of grants from the National Science Foundation and the National Institutes of Health. The University willingly matched several significant NSF equipment grants. The Atomic Energy Commission has a been a source of vital support in physics. The program of faculty and student research in psychology has drawn heavily on assistance from the NIH, NSF, and Lee research program.

Increase in Majors

The rigor of courses in mathematics was increased as the need for sound mathematical foundations for scientific studies multiplied. Although B.A. candidates have an option of taking either mathematics or a classical language in fulfilling distribution requirements for graduation, about 75 per cent choose mathematics.

Improvements in facilities, equipment, curricula and instruction have brought about a steady increase in the number of senior students majoring in the sciences—26 in 1963-64; 30 in 1964-65; 38 in 1965-66, and 39 in 1966-67. These are in addition to premedical majors, which average about 18 a year.

The science faculty has grown stronger and will become still stronger under the impetus of the Sloan grant. The University's mathematicians and scientists are well trained and professionally active. Twenty-one of 27 have the Ph.D. degree and three of the other six expect to receive the degree soon. A great majority of them publish, and all are deeply interested in various kinds of research. They are in demand as visiting scientists at other institutions and as judges at science fairs. Many have broadened their teaching experience during the summer at schools throughout the United States and Canada.

Within the past few years the curricula in all of the sciences and mathematics have been modified to take advantage of the better preparation of freshmen and to increase the depth and intensity of courses to meet the demands of graduate schools.

At the same time, the University has endeavored to assure that courses for non-science majors will remain broad enough and unspecialized enough to satisfy the science requirements of the B.A. degree. In fact, professors in the humanities and social sciences have endorsed the University's efforts to bring the scientific program into better relationship with the University's overall educational effort. Thus the place of science in the context of a liberal education is accepted graciously at Washington and Lee—a situation that coincides with one of the purposes of the Sloan program.

All along, science education at Washington and Lee has contributed to and benefited from a systematic sharing of resources with other institutions and organizations. The University, through its membership in the University Center in Virginia, has acquired a number of distinguished speakers in the sciences. Speakers have also come from the national scientific societies such as the American Chemical Society, the American Institute of Physics, the American Geological Institute and the American Geophysical Society.

Many Washngton and Lee professors and some students have participated in programs of the Oak Ridge National Laboratory. The Laboratory's mobile laboratory visited the University not long ago for a two-week course in radiolaboratory techniques.

Each year the University sends large delegations of students and faculty to the Virginia Academy of Science and to regional meetings of various scientific organizations, and some faculty members attend national scientific meetings. Many faculty members hold offices in local sections of national scientific organizations and, of course, participate in their national conferences. Last year the geology department conducted a summer institute for high school geology teachers under the auspices of the National Science Foundation, and will hold another institute this summer.

"Gesture of Faith"

It is clear that Washington and Lee is well prepared to make full and exacting use of the Sloan Foundation support to improve its own position in scientific education and to help similar institutions avoid the perils that just a few years ago confronted the sciences at Washington and Lee.

To quote again Mr. Everett Case, president of the Sloan Foundation:

"With this program the Foundation hopes to test and if possible establish the viability of the four-year liberal arts colleges as places where teaching and research in the sciences can not only occur but can grow in significance. We are predisposed, of course, to hope and believe that this will be so. It is now up to the colleges and all who believe in their future to vindicate this gesture of faith."

The Washington and Lee University family—faculty, students, administrators, alumni, and friends—can only reply in kind to the Foundation: "Yours the faith; ours the duty."

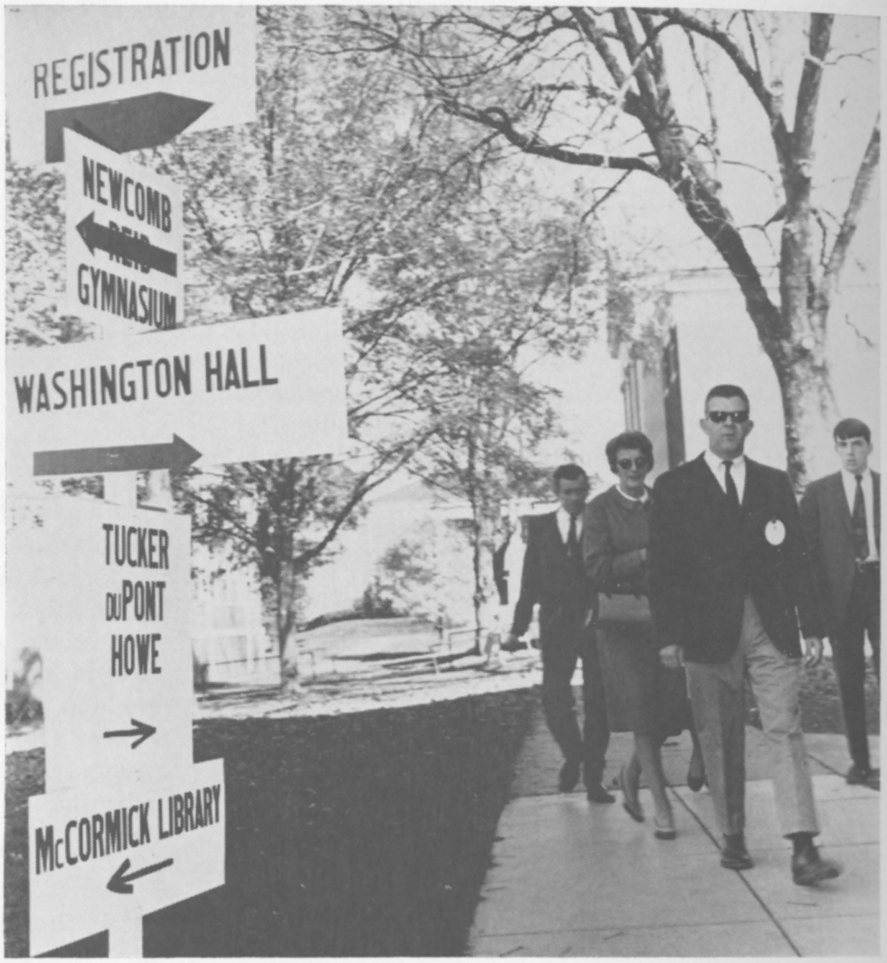
A Campus Gazette . . . .

A Record Enrollment

Washington and Lee enrolled 1,386 students for the 1966-67 school year—the largest number in its 217-year history. The total exceeded by 49 the previous high last year. There are 364 freshmen, 1,182 undergraduates, and 204 law students. The students represent 43 states, the District of Columbia and eight foreign countries. Virginia has the most representatives with 303.

Cohen is Valedictorian

Alan Gary Cohen of Pulaski, Tenn., is valedictorian of the 1967 graduating class. He is a pre-medicine major and was selected by the faculty at its March meeting as the senior degree candidate with the highest cumulative academic average at the end of the first semester of the current session. He had a grade point average of 2.809 on a scale under which 3.0 would be a straight "A" performance. Cohen is a son of Mr. and Mrs. Stanley Cohen of Pulaski.



The signs show the way during Parents' Weekend last October.

A To Equal 4

"3.0" is out; "4.0" is in—beginning with the 1967-68 academic year. Washington and Lee has adopted a new grading system. A "4.0" system will replace the old "3.0" system. Students will continue to receive letter grades, A through F. But grade point ratios assigned to the letters will be 4 for an A, 3 for a B, etc., instead of the present 3 for an A, 2 for a B, etc. Registrar Harold S. Head recommended the change, and it was approved by the faculty. It is a simpler way of recording grades, and it has become standard in a majority of colleges and universities.

Unrestricted Gifts

Washington and Lee University in late 1966 received several unrestricted grants. The American Oil Foundation gave $5,000, which President Fred C. Cole said would be used to increase the resources of McCormick Library and its branches on campus. He said the gift would help the University further its quality of service. The Esso Education Foundation gave $2,500, which President Cole said "is an expression of confidence in our program of quality education." The Sears-Roebuck Foundation gave $1,500, which President Cole said "will sustain us in our effort to perform ever more useful service to the young men who study on our campus."

A Gift of Books

McCormick Library recently received the gift of 4,800 books from the estate of Carter Newman Bealer of Washington, D. C., who was

graduated from Washington and Lee in 1922. Mr. Bealer's wide range of interests is reflected in the collection. The collection includes many biographies of theatrical personalities, histories of the British and American theater and of contemporary plays. Included, too, are volumes on world literature and poetry and art—particularly American painting—and "how-to-draw" books. There are books on American culture, architecture, wildlife and pottery. Mr. Bealer had a keen interest in cats and collected several hundred books on them, many of them children's stories about cats. Included in the collection are several cat "autobiographies." Librarian Henry C. Coleman, Jr. called the collection a welcome addition. He said many of the volumes would fill in works missing from other collections and many would replace worn out or misplaced books in the library.

Phillips Receives Post

Dr. Charles F. Phillips, Jr., professor of economics, has been appointed Southeastern Regional Director of Omicron Delta Epsilon, the national honorary society in economics. He will coordinate the growth and development of chapters in the region including Virginia, Alabama, Florida, Georgia, Mississippi, North and South Carolina, Tennessee and Puerto Rico. There are now 17 chapters in the region.

Illustrations Published

Five illustrations by Ray Prohaska, Washington and Lee's artist-in-residence, appeared in the February issue of *Ford Times*. Three of the illustrations were in color and accompanied an article on sailfish. The article described the sport of sailfishing in the Gulf Stream waters. Prohaska has illustrated many articles in national magazines and books.

LEE WINS A CONVERT

Bad things about Robert E. Lee . . .?

Washington and Lee University officials scratched their heads as they pondered this question from Renee Dygutowicz, a 10-year-old Ohio school girl.

Renee was on U. S. Grant's side in a classroom debate. She wrote the University requesting "any bad things or habits" Lee had.

"I am trying to prove that General Grant was better than Lee," she wrote. "My team is counting on me. We are getting graded for this, and I would like to get a good grade."

Lee scholars at the University came up with an incident early in the Civil War when Lee, ever the gentleman, failed to take stern measures against one of his subordinate generals whose negligence allowed a Union force to escape a trap.

Douglas Southall Freeman told about it in his four-volume biography of Lee: "Of Lee it became necessary to ask . . . whether his judgment as a soldier or his consideration as a gentleman dominated his acts."

Renee informed the University later that the debate was a tie and added plaintively: "I wish I had been on Lee's side."

Lee, we think, would have given her a good grade.

Student Aid Increases

Washington and Lee students are receiving about $345,000 in scholarship and other financial aid this academic year. Farris P. Hotchkiss, Director of Financial Aid, reported that 317 of 1,386 students are receiving financial help from several sources, including two new federally sponsored programs —College Work-Study and the Educational Opportunity Grant program. The total aid figure is about $40,000 higher than last year. Hotchkiss said the University's aid goal is "to make a Washington and Lee education available to every man who has gained admission, regardless of his financial situation."

A New Novel by Davis

Paxton Davis, professor of journalism, will have a new novel published in September—his fourth book. His latest novel is entitled *The Seasons of Heroes* and will be published by William Morrow & Co. Prof. Davis describes the book as a short work of between 75,000 and 80,000 words. It is the story of three generations of a family living in the Shenandoah Valley of Virginia. His previous works include *Two Soldiers* (1956), which contained two short war novels; *The Battle of New Market* (1963), a fictional work for juveniles now in its second printing, and *One of the Dark Places* (1965), a story concerned with a typhus epidemic in Burma and scheduled for release in paperback form soon.

Founders' Day Thoughts

On January 19, 1967—the 160th anniversary of the birth of Robert E. Lee—President Fred C. Cole rose in Doremus Gymnasium and addressed the assembled students and faculty of Washington and Lee University. It was the traditional Lee's

Campus Gazette . . .

Birthday-Founders' Day convocation, and President Cole said in part:

". . . Lee remains a hero in the eyes of millions. He remains a hero of the history of this University. We honor his memory today, not only for what he accomplished when he was this institution's president, but also for what he hoped to accomplish. His aspiration that this school become a great institution is one that we continue to pursue today and will pursue diligently in the future. We honor Lee for his contribution—and for his inspiration.

". . . The professor is the great resource that a college has to offer. Students can get information from a book or journal, read it at home or in a library. They can acquire laboratory skills and learn techniques on the job. Almost anything they derive in the way of extracurricular benefits can be afforded by a variety of private or community clubs and activities. Only in college, however, can be found the guidance, the association, and the inspiration of the wise and sympathetic teacher. The teacher in a great college or university must be an able communicator of knowledge, an enthusiastic scholar, and a patient counselor.

"We have always had such teachers here on this campus. As students in daily contact with our professors you can attest to this at present more effectively than anyone.

"But there are others outside the University who are aware of the excellence of our faculty. They recognize the distinctive services that are being rendered here in undergraduate education."

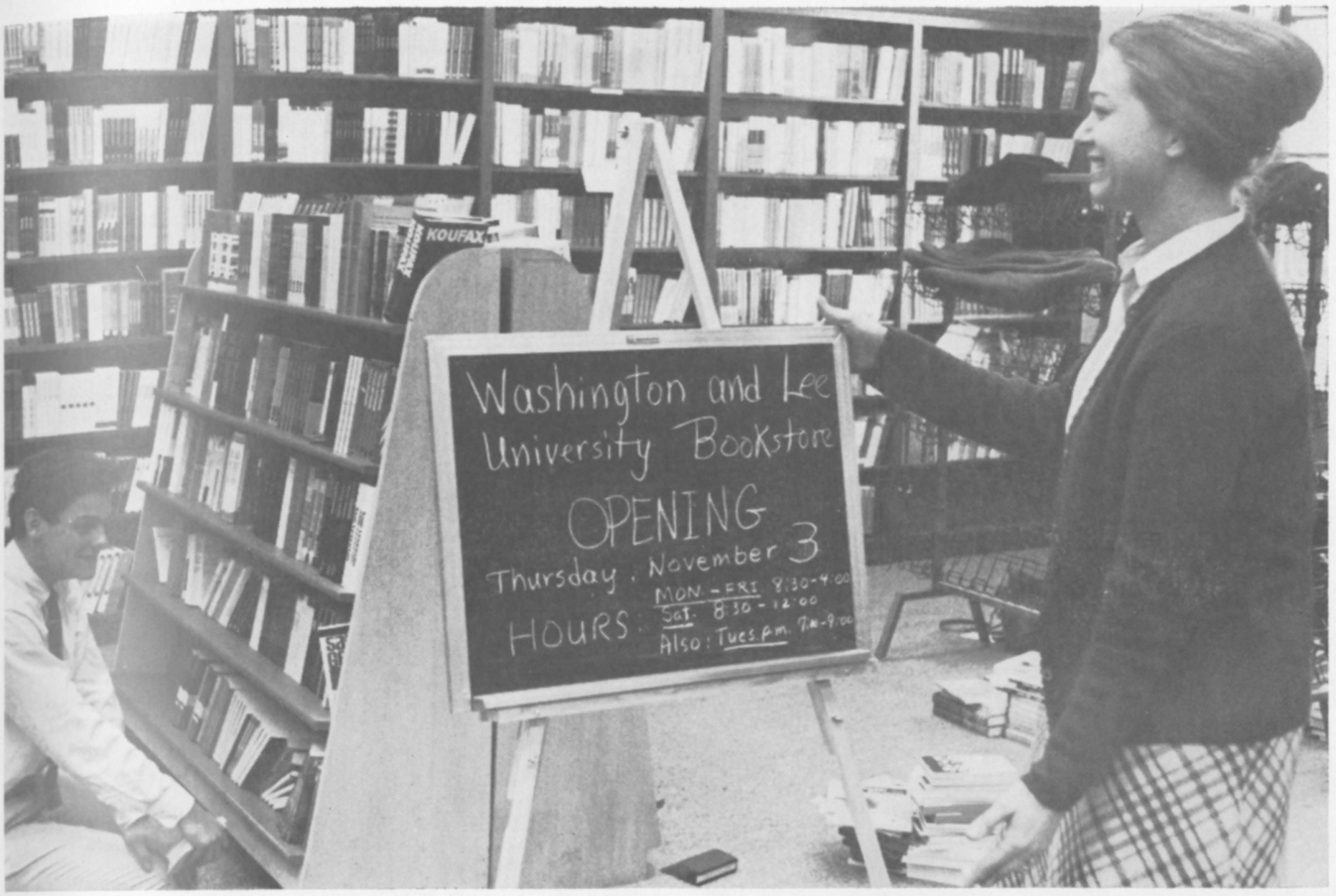
". . . Last Fall the University invited the Board of Directors of the . . . Alumni Association to attend a special three-day conference here on the campus. . . . The Directors agree that the quality of our student body as well as of our faculty meets the criteria that are appropriate for a good college.

"The Visiting Committee of the Southern Association of College and Schools was also on campus in early November for purposes of reviewing the work of our Self-Study. . . While its report contains both general and specific suggestions and recommendations on ways we can become better and stronger, the report generally supports the contention I make here today—that the University, its faculty, students, and its program are good, and with diligence and dedication on everyone's part will grow better in the months and years ahead."

Workmen put the final touches on WLUR-FM's antenna above the roof of Reid Hall.

WLUR-FM on the Air

Washington and Lee's new radio station, WLUR-FM, began its regular schedule of broadcasts on Monday evening, February 27, 1967. The special inaugural program included statements by Governor Mills Godwin, U. S. Senator Harry F. Byrd, Jr., Lexington Mayor D. E. (Pat) Brady, and University President Fred C. Cole. The new 10-watt station is non-commercial and educational. It broadcasts from 7-11 p.m. Monday through Friday at 91.5 megacycles on the FM dial. The new station's signal is received strongly throughout Lexington and Rockbridge County, but one man reported picking up the station in South Dakota. The transmitter, studios and other broadcasting equipment are on the third floor of Reid Hall. The 36-foot antenna is on the roof. The programming includes news, music, public affairs, announcements, general interest programs and experimental programs. Charles E. Winston, instructor in journalism, is station manager. The operation is an integral part of the program of the Department of Journalism and Communications.



MRS. ROBERT K. RUSHING, bookstore manager, uses chalk and blackboard to let everyone know the store is open and doing business.

A NEW BOOKSTORE

It is new, and it is popular. The University's Book and Supply Store opened at the beginning of classes this year. Business has been booming all year. The new store is located in a building between the Freshman Dormitory and McCormick Library. The renovation cost $100,000. The textbook sales area is housed in the basement. A snack bar and supply store are on the first floor of the main building. A paperback bookstore is housed in a new one-story wing. This is a new service, and students and faculty members are taking full advantage of the wide range of books and supplies available. The bookstore and snack bar were previously located in the rear of the Student Union Building. The traffic and browsing and buying are much heavier at the new location.

SPEAKERS AND MORE SPEAKERS

Pick a subject—almost any subject—and if you had been at Washington and Lee in recent months, you would probably have heard someone notable in the field talk about it. Recent visiting speakers included:

Tom C. Clark, Associate Justice of the United States Supreme Court; Fred M. Vinson, Jr., Assistant Attorney General in charge of the United States Justice Department's Criminal Division; Dr. Robert W. Johannsen, chairman of the history department at the University of Illinois; Dr. Edgar P. Richardson, writer in the field of art and retired director of the Henry Francis duPont Winterthur Museum; Dr. Loren C. Eiseley, professor of anthropology and the history of science at the University of Pennsylvania;

John S. Whitehead, first secretary for information of the British Embassy; H. J. C. Hooper, first secretary of the Ministry of Rhodesian Affairs in Washington; Dr. Colin W. Williams, associate secretary of the Division of Christian Life and Mission of the National Council of Churches; Chou Wen-Chung, composer and lecturer and authority on Eastern and Western music; Lord Moran, author and personal physician to Sir Winston Churchill;

H. F. Dunning, president and chief executive officer of the Scott Paper Co.; Dr. Richard J. Caughlin, acting chairman of the department of sociology and anthropology at the University of Virginia and a former American vice consul in Saigon; Dr. Maurice J. Meisner, as-

sociate professor of East Asian history at the University of Virginia; Cranston Williams, Sr., former manager of the American Newspaper Publishers Association; William Hill, managing editor of the Washington *Evening Star*; Dr. Thomas P. Hughes, visiting associate professor of history at Johns Hopkins University and a former member of the faculty of Washington and Lee;

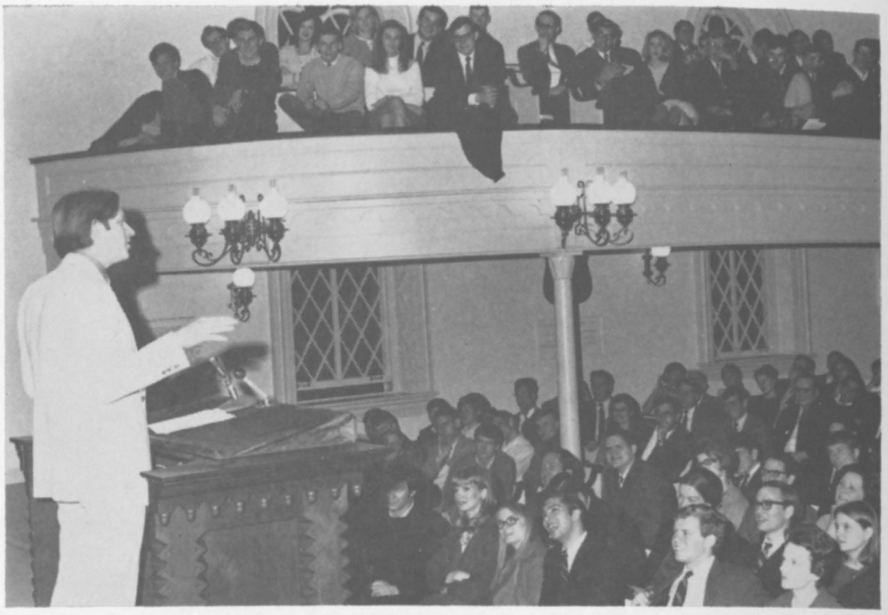
Robert M. White, II, former editor of the New York *Herald Tribune* and now editor and publisher of the Mexico, Mo., *Evening Ledger*; Dr. Wilhelm Pauck, graduate professor of church history at Union Theological Seminary; James Dickey, consultant in poetry to the Library of Congress; Dr. Paul L. MacKendrick, professor of classics and integrated liberal studies at the University of Wisconsin and an archaeologist; W. E. Chilton, III, publisher of the Charleston (W. Va.) *Gazette*; Dr. Robert E. Spiller, professor of English literature at the University of Pennsylvania; former U. S. Representative Charles Weltner of Georgia; Ivan Boldizsar, novelist, playwright and editor of the *The New Hungarian Quarterly*; and Dr. Richard Ellmann, professor of English at Northwestern University and an authority on James Joyce.

CONTACT Symposium

"The quality of the speakers we attracted this year surpassed our own expectations," said Stafford Keegin of Princeton, N. J., a second-year law student and chairman of this year's CONTACT Symposium. He contended the four-day series of speeches, seminars, and public appearances by the participants was the best CONTACT program in its three-year history. It is sponsored by the Interfraternity Council.

The theme was "The Crumbling Establishment." The speakers were James Farmer, former national director of the Congress on Racial Equality; Richmond Flowers, former attorney general of Alabama and an unsuccessful candidate for governor against Mrs. George C. Wallace; Tom Wolfe, an author noted for his "POP-art" style of writing and a 1952 graduate of Washington and Lee; and Frederick Wilhelmsen, author of several conservative books. Saul D. Alinsky, a self-avowed "professional radical," had to cancel his appearance because of snowy weather.

The program also included the showing of a pair of "underground movies" and a concert by Phil Ochs, a protest singer.



Tom Wolfe, '52, evokes amusement during CONTACT speech in Lee Chapel.

Fancy Dress 1967

Fancy dress 1967 was all of that. The theme was "Opening Night." The men wore tails or dinner jackets and the women long gowns. It was like the premiere of a new Broadway play or the opening of the Met.

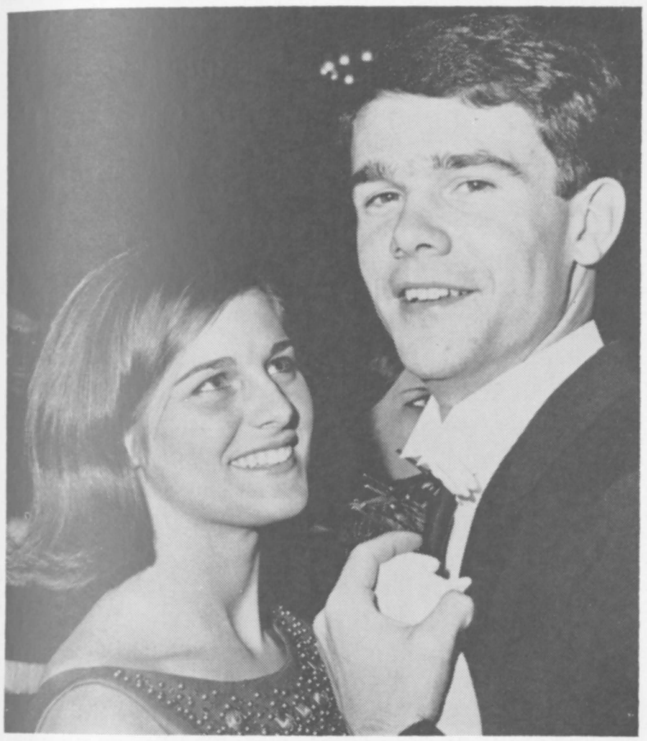
Peter Duchin and his Orchestra played from an 18 by 24-foot stage —some oldies, some swing, and some rock-'n-roll. Rich blue curtains and white draperies formed the backdrop, and during intermissions the curtains were drawn and old silent movies were shown. Evans Dining Hall was seldom gayer the evening of Friday, January 27.

A 35-couple figure opened the ball at 8 p.m. and the dancing continued until 1 a.m. Members of the figure included Fancy Dress President Ed Allen of New York City, the ball vice-presidents, representatives of the 18 social fraternities, the Independent Union, and their dates. The next day the Serendipity Singers performed in Doremus Gymnasium.

When it was all over, there was general agreement that Fancy Dress at Washington and Lee is still "the oustanding collegiate social event in the South."

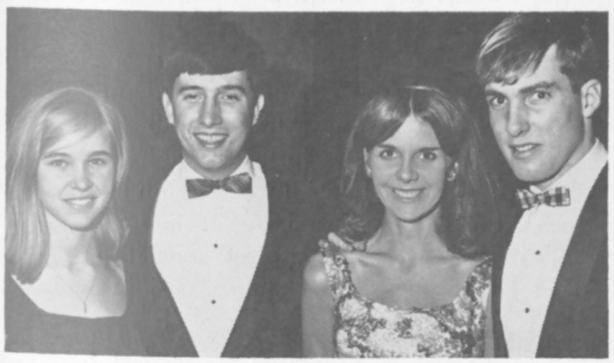
See Opposite Page ►

More than 600 couples somehow found space to dance in Evans Dining Hall

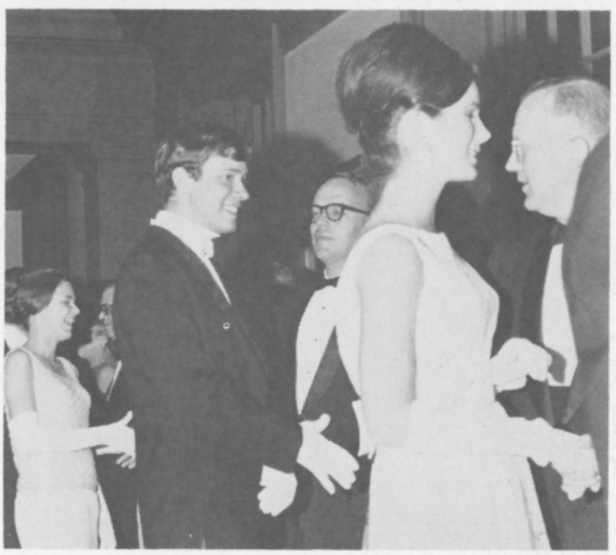


At left Tom Cox, senior of Richmond, president of the University Dance Board, dances with Miss Ginny Kay Baldwin of Whiteville, N. C., a sophomore at Sweet Briar.

Clowning with the props used by Peter Duchin (below) are (left to right) Steve Helm with Miss Diane Davis, Robin Tyler with Miss Kitty Van Winkle, and Miss Sherry Hayes, escorted by Bill Tyler. Helm and Robin Tyler were visiting Robin's brother Bill, a sophomore at W&L.

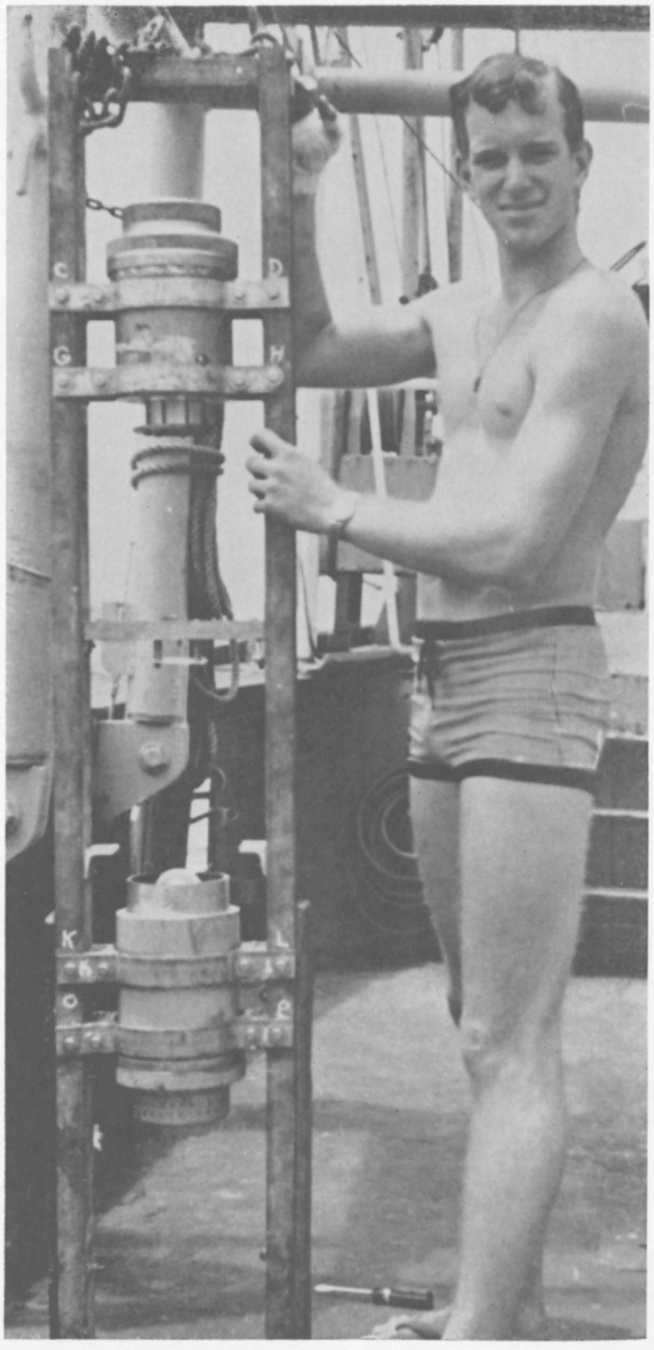


Happy about it all are Miss Melissa Stewart and Alan Lee, both of Charlotte, N. C., and Miss Sally Cruikshank of Charlotte and Edward B. Vaden, Jr. of Lynchburg, Va.



It was a long receiving line as everyone shook hands with the faculty and staff.

Ten Months at Sea For Two W&L Men



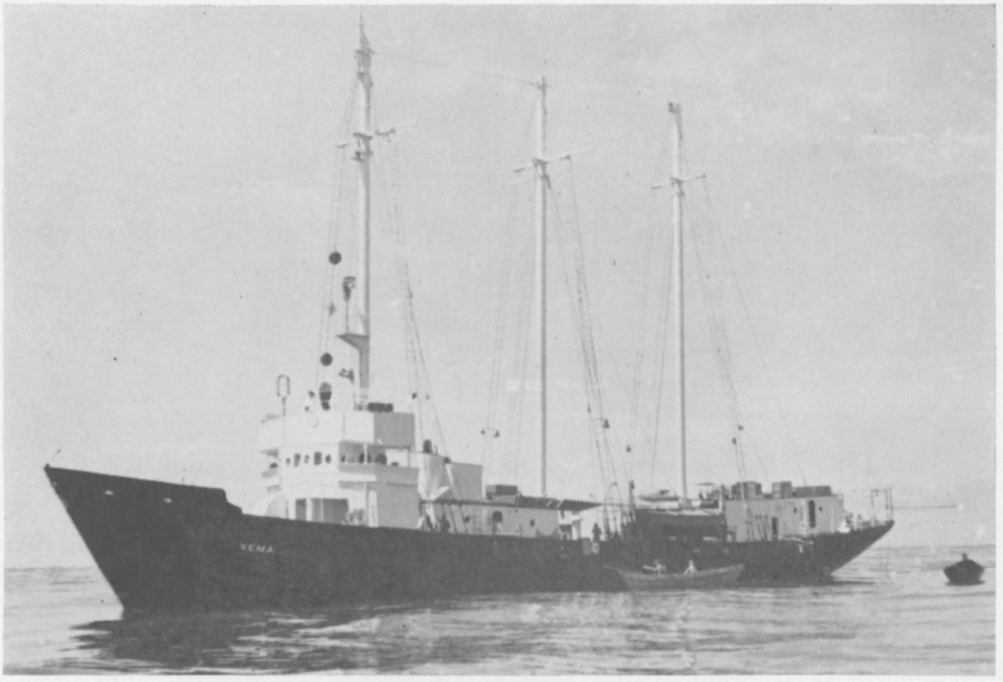
Warren Montgomery, '67, Describes Life Aboard an Oceanographic Research Ship for Him and Another Student who Interrupted Their Academic Careers To Join an Important Scientific Team

As THE SHIP rolled sickeningly to starboard and then lurched forward through heavy seas off the coast of New Jersey, I thought, "What have I gotten into? I should be back at W&L right now." For the tenth time that night I staggered out onto the deck and over to the rail, to keep from being sick in the afterlab. Two months later, watching sunrise over the cloud-shrouded peaks of Tahiti, I was again incredulous at being aboard an oceanographic research ship rather than at the usual academic labors of Washington and Lee's junior year.

The oceanographic adventure started in the late fall of 1965, when I and other students taking courses in geology at Washington and Lee heard visiting oceanographer Richard Pratt speak on modern exploration of the sea and the earth beneath it. The idea of sea-going research was intriguing, and after one of his lectures, I asked Dr. Pratt if students were ever taken aboard research ships. He encouraged me to write to several oceanographic research organizations. With the attitude that there was nothing to lose in doing so, I wrote three and then quickly forgot about the fanciful notion of going to sea instead of going to college.

But when I arrived back in Lexington after Christmas vacation, there was a letter from Lamont Geological Observatory of Columbia University informing me that I had a very good chance of joining in the

Author WARREN MONTGOMERY *proudly exhibits the nepholometer, an underwater camera and light unit, which he made himself in the Vema's machine shop, after the ship's regular unit was lost on the ocean bottom.* MONTGOMERY *is currently a senior majoring in geology, with plans for graduate study in his field. His home is in Memphis, Tenn.*



The author took this photograph of the Vema from a small boat during an anchorage in the South Pacific. The Vema was built in the 1920's and was once used by heiress Barbara Hutton as a pleasure schooner. During World War II and immediately afterward, it was employed by the Navy as a cargo vessel. The Lamont Observatory purchased the ship and completely remodeled it to conform to its special research requirements.

forthcoming cruise of the research vessel *Vema* into the Pacific ocean. It turned out that Lamont would take two students, and after interviews in New York, my fellow geology major Chip Roadman and I were signed up as scientific personnel of the *Vema's* crew. Washington and Lee obliged us with leaves-of-absence for one year.

So, on February 11, 1965, Chip and I were aboard the 200-foot long, ex-schooner *Vema* as she put out of New York and into the Atlantic, en route to the Panama Canal and the Pacific. The cruise was to last just ten months and cover over 46,000 nautical miles before the ship returned to New York the following December.

After a few days of sea sickness, we settled down to the routine of research. The ship's complement consisted of a Nova Scotian sailing crew of nineteen, including captain and officers, and twelve scientists, mostly American but including German, Chinese, and Japanese members. Each of us had a specific research job to perform under the supervision of a chief scientist, and we each had to stand eight hours of watch a day as well. "Watch" entailed monitoring the complex oceanographic electronic equipment and periodically marking the time on data records.

The ship performed a number of research operations at once. While under way, customarily at around 10 knots under deisel power, instruments towed behind the ship and mounted on the hull collected data, which were electronically processed and printed as graphs in the electronics lab, or afterlab. In this manner, we made continuous measurements of the earth's magnetic and gravity fields, water temperature, depth to the bottom, and the configuration of the layered sediments beneath the bottom.

At least once a day the ship would heave-to to make stationary measurements. At these daily stations, 20 to 60-foot cores of the bottom sediments would be brought up, microscopic plant and animal life (plankton) would be sampled with nets, photographs would be made of the bottom, water samples would be taken, and the bottom temperature would be measured for evidence of heat flowing up from the earth's interior.

Chip's job was to analyze the bottom cores; my assignment was to operate the bottom cameras and develop the films. Over most of the ocean, the water is two to three miles deep, and all station instruments were lowered from the deck. No one ever went over the side into the water to take measurements. (In fact, the captain had an iron-clad rule against swimming in the sea while on station—there was too much danger from sharks.)

The *Vema* remained at sea up to a month between ports, rarely sighting land or other shipping during these times. For such long periods at sea, the *Vema* carried great quantities of fuel and stores. Fresh water was plentiful enough to shower and wash clothes, thanks to condensers which converted salt sea water to fresh. The research equipment was maintained by large stores of electronic components and replacement parts for other gear. A machine shop occupied almost a fourth of the space below deck.

For the scientists, the day-to-day routine of research was rigorous. For a man on the 8 to 12 watch, a typical day might go as follows: Out of the bunk at 0730 and on watch at 0800. Monitor instruments

CHIP ROADMAN, *Washington and Lee senior who accompanied the author on the oceanographic voyage, is shown lighting fuses for depth charges in the Vema's seismic refraction research program.*

This photograph of the author on watch suggests the climatic extremes encountered by the Vema and its crew during the 46,000-mile voyage. This shot was made while near the Aleutian Island of Adak.

and mark data records from 0800 to 1200. Dinner at 1200 followed by work on individual research project—analyzing cores, developing film, maintaining electronics equipment, etc. Ship heaves-to for station at 1400 (2:00 p.m.); assist with station instruments—core, cameras, nets, or water barrels. Ship under way again at 1700 (5:00 p.m.); help put out towed gear and then go to supper. Go on watch again at 2000 (8:00 p.m.) untill 0000 (midnight), then turn in.

Such a schedule left little time for leisure, and when intensive station work (two or three stops a day) occurred, we missed sleep as well. The work week lasted all seven days; we were much too busy ever to be bored.

No matter how exotic its itinerary, a research vessel does not resemble a cruise ship, although the *Vema* once was one. All available space is occupied by instruments and equipment; and living quarters are small and crowded. On the *Vema,* the scientists were bunked in four two-man cabins and a four-man cabin, in the aft part of the ship. The cabin that Chip and I shared measured six feet by eight. The cabins of the officers and chief scientist were not much larger, and the crew occupied bunks in the forecastle. Except for the cabins and the small dining room, there was no place to relax, the rest of the ship being working space.

But the discomforts of hard work, long hours, and cramped quarters were more than offset for Chip and me by the stimulating experience of participating in important scientific research while working with some of the world's most outstanding oceanographic scientists. Equally rewarding was the experience of calling at ports that most Americans seldom see. Though fast being exposed to the so-called benefits of western civilization by its French owners, Tahiti is still a tropical paradise of grandiose scenery and friendly people. Hawaii matches the volcano, reef, and beach vistas of Polynesia with a vigorous, transplanted culture of American, Chinese, Japanese, Filipino, and native peoples.

Tokyo was perhaps the most interesting place we visited. Here, western architecture, dress, and commerce blend and sometimes conflict with traditional Japanese values and customs. While we were always treated with the famous Japanese politeness and consideration, we were also aware of the almost daily anti-American demonstrations (one of which Chip and I witnessed) against the war in Vietnam.

In Manila, we saw both the friendship which the Filipinos still have for America and the poverty and corruption which plague this archipelago republic. Panama seemed an even worse case of an impoverished economy and dissatisfied people. Here, Americans are not so highly regarded, mutely underscored by the gutted shell of the Pan-Am Building, burned in Panama City during the anti-American riots over the Canal.

Our less interesting ports at least provided much-needed rests from our research work. Okinawa was an Oriental rurality, Bermuda was quaintly British-colonial, and Adak in the Aleutians was cold and rainy—but restful.

When we finally steamed back through Verrazano Narrows and into New York Harbor in December, we were almost as excited to be home as we had been at the prospect of sailing ten months before. However, when Chip and I returned to Washington and Lee to take up where we had left off, we realized that we had had an experience in travel and training for our future professions that is of inestimable value to us. We have enjoyed a unique interlude to our studies at Washington and Lee.

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