

WILLIAM & MARY



Vol. 57, No. 5 Winter 1990

The Clays of Kentucky
The Curriculum of the Future
The Progressive President
Winning Big, Losing Big
The Pursuit of Longevity



WILLIAMSBURG LANDING AND THE COLLEGE OF WILLIAM AND MARY

*Both an education in living . . .
both an experience to remember.*

Williamsburg Landing offers pleasant retirement living with amenities to match. Cluster homes, spacious apartments, and distinctive dining facilities are only a few of the many features that make lifestyle at Williamsburg Landing luxurious, including peace of mind knowing long term care is available. A health spa, swimming pool, whirlpool, tennis court and biking trails add to an active lifestyle. Cultural and social activities at Williamsburg Landing keep the residents in the know and on the go.



Williamsburg Landing offers educational events through your alma mater. Who says "You can't go home again!" At Williamsburg Landing, you can go home again and even live there in style!

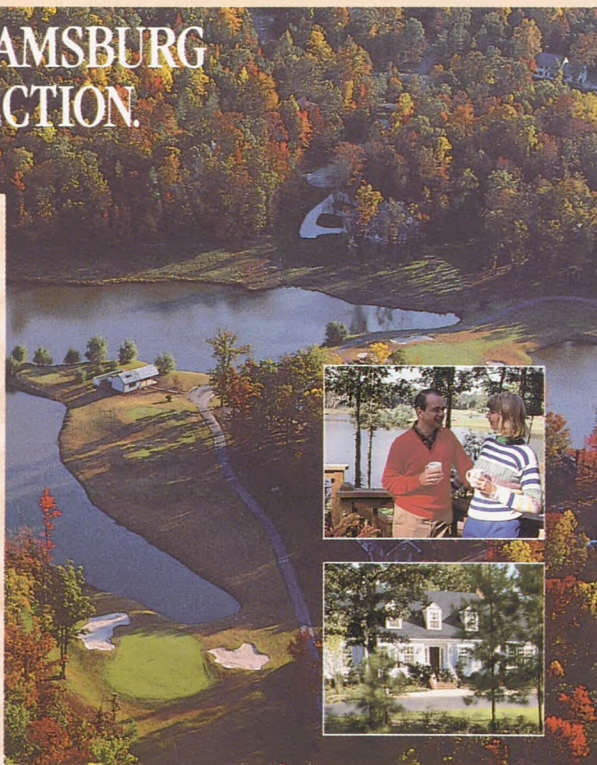
**WILLIAMSBURG
LANDING**

5700 Williamsburg Landing Drive
Williamsburg, Virginia 23185
804-253-0303

Located just 3 miles from William and Mary

WILLIAMSBURG PERFECTION.

In Williamsburg, there's a place where the living is nearly perfect. A private master-planned residential community surrounded by championship golf, tennis and a world-class country club. The place is Ford's Colony just outside Colonial Williamsburg. Here, exceptional homesites and classically elegant traditional homes are close to the heart of America's history, yet worlds apart from the ordinary. For a personal tour or more information on the outstanding lifestyle opportunities at Ford's Colony call: 1-800-334-6033.



Please send me my free, no obligation, Ford's Colony - Williamsburg Discovery Packet.

Name _____
Address _____
City _____ State _____ Zip _____
Phone _____

Ford's Colony • Dept. CW • One Ford's Colony Drive • Williamsburg, VA 23185

WILLIAM & MARY

Vol. 57, No. 5 Winter 1990

2 NEH Grant May Mean \$2.5 Million

College Must Match \$500,000 Grant with \$2 Million

7 Looking to the Past

The College Archives Preserves William and Mary's Past

11 Bluegrass and Bluebloods

The Clays of Kentucky Are Among World's Top Thoroughbred Breeders

16 Creating the Curriculum of the Future

New Programs on Campus Cross Traditional Disciplines

20 Pomfret — The Scholar-President

John Pomfret Led William and Mary During Turbulent '40s

24 Winning Big, Losing Big

Professors Explore Confusing Condition of Big-Time Sports

28 Anthropology — A Two-Way Mirror

Study Goes International in One of College's Popular Departments

32 Chaos at William and Mary

Physics Scholars Help Solve Mystery of Chaos

36 Financial Aid — An Unmet Need

Some Students Struggle to Pay College Bills

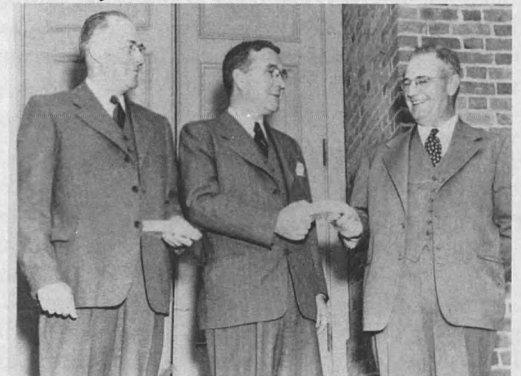
39 The Pursuit of Longevity

Ken Kambis Wants You to Get Addicted to Good Health



Kentucky Class

11



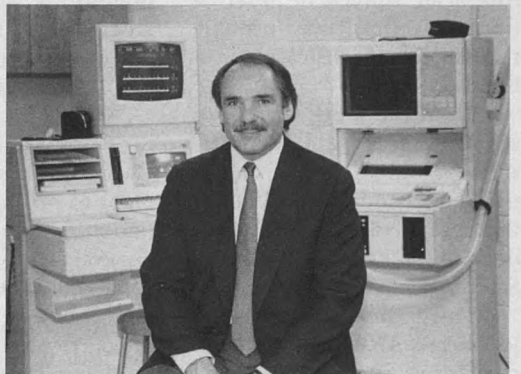
Progressive President

20



Studying the Human Condition and Past

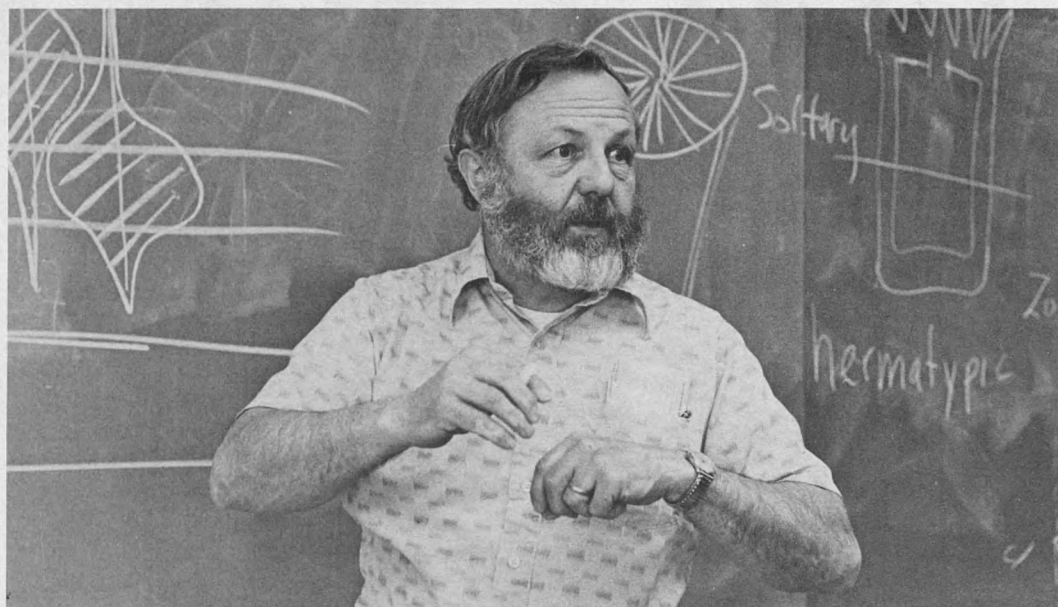
28



Living Longer and Happier

39

Executive Publisher: W. Barry Adams; **Editor:** S. Dean Olson; **Associate Editor:** Virginia C. Collins '77; **Editorial Assistants:** Mary Ann Williamson, James B. Hatcher; **Design:** June Skalak; **Director of Administration and Records:** Ben F. Kellam III '78; **Assistant Director (Society Services):** Charles L. Kendrick III '82; **Director of Alumni Affairs:** Lee Johnston Foster; **Assistant Director (Chapters):** Richard D. T. Overy '88; **Assistant Director (Reunions and Campus Activities):** Elizabeth S. Littlefield '86. **Board of the Society of the Alumni:** A. Marshall Acuff, Jr. '62, *President*, Riverside, Conn.; Harriett L. Stanley '72, *Vice President*, New York, N.Y.; Carolyn Todd Schaubach '59, *Secretary*, Norfolk, Va.; John S. Entwisle '44, *Treasurer*, Williamsburg, Va.; Vincent T. DeVita, Jr. '57, New York, N.Y.; Jane Ottaway Dow '55, Grosse Point Farms, Mich.; Joseph J. Ellis '65, South Hadley, Mass.; J. Edward Grimsley '51, Richmond, Va.; Anne Nenzel Lambert '35, Williamsburg, Va.; Joseph W. Montgomery '74, Williamsburg, Va.; Lucy Jones Murphy '48, Merry Point, Va.; Charles L. Quittmeyer '40, Williamsburg, Va.; Ann-Meade Baskervill Simpson '65, Virginia Beach, Va.; Helen Thomson Stafford '48, Princeton, N.J.; Jerry Van Voorhis '63, Chatham, Va.



A \$500,000 NEH challenge grant, which must be matched with at least \$2 million in private funds, will be used to endow at least four new senior positions in the humanities, strengthen interdisciplinary programs in American studies and international studies and initiate a program of freshman seminars.

NEH Grant Could Mean \$2.5 Million to College

The National Endowment for the Humanities has awarded the College a challenge grant of \$500,000 to fund professorships in the humanities and at the same time strengthen freshman education.

The challenge grant, which must be matched with at least \$2 million in private funds, will be used to endow at least four new senior positions in the humanities, strengthen interdisciplinary programs in American studies and international studies and initiate a program of freshman seminars.

The new faculty, although based in academic departments, will have expertise in either American studies or international studies, two primary thrusts of the College's curriculum.

"From the point of view of scholarship, these new professorships will strengthen in a very marked way our efforts in both these areas," said David J. Lutzer, dean of the Faculty of Arts and Sciences.

"This grant will allow the College to take a balanced and comprehensive approach to estab-

lishing a new level of excellence in the humanities scholarship and education at a time when circumstances are more favorable to achieving this goal than at any previous time in the history of the institution," Lutzer said.

"The NEH challenge grant will accomplish three things," said Lutzer. "It will provide for increased faculty scholarship; it will strengthen our educational programs in American studies and international studies; and it will supply a unique learning experience for freshmen."

The proposed faculty positions include seven areas: American literature; American political thought; American philosophy; Japanese history; East Asian religion; non-Western music; and Hispanic studies. At least four will be funded.

Adding faculty is a critical need, say administrators, if the College is to move forward with plans to provide a seminar experience for entering students. For every senior faculty position created, four new freshman seminar courses can be added to the curriculum.

"Ultimately, our goal is to

offer a reading, writing, discussion-intensive seminar for every freshman," said Clyde Haulman, dean of undergraduate studies. "This grant is a remarkable step toward that goal.

"We need this kind of approach," said Haulman, "to create a more active learning environment, to foster a closer faculty/student relationship, and to explore the possibilities of further strengthening the undergraduate advising system." Each faculty member who teaches a freshman seminar would also be the academic advisor for the 15 or so freshmen enrolled.

Joel Schwartz, director of the Charles Center for Honors and Interdisciplinary Studies, led a yearlong process of faculty planning which gave birth to the NEH proposal. The College titled the proposal "Endowing the Freshman Year" because it uses endowed professorships to enhance freshman education.

But adding these faculty members will do much more, said Lutzer. "We are proposing a broad and coordinated approach to improving the humanities at William and Mary.

The aim of our plan to endow the freshman year is to create a lively and challenging educational environment that will contribute to sustaining lifelong intellectual habits and commitments in our faculty and to awakening them in our students."

This is the second NEH challenge grant to be awarded to the College. The first challenge grant, awarded in 1980, was for faculty development and support. The \$500,000 awarded from NEH required the college to raise \$1.5 million in private funds. William and Mary met the first challenge, raising \$1.8 million by 1983.

Lutzer and others are confident that the second challenge will also be met. "Among the qualities that made William and Mary attractive to NEH were our capital campaign, and the state's Eminent Scholars Program, which matches the income from every private dollar raised for faculty endowment," he said.

William and Mary was one of 41 NEH challenge grant recipients nationwide and the only one from Virginia.

The biggest challenge in initiating a program of freshman seminars is to avoid displacing students from courses. "If a professor who teaches a class of 40 freshmen were assigned to a 15-student seminar, what happens to the other 25 students?" said Lutzer. "You cannot just shuffle existing resources and get this idea to work.

The proposal's central theme is that adding senior positions in some departments will enable the College to create small seminar classes for freshmen. Seven departments agreed that in return for a new senior faculty position, each would add four freshman seminars per year to the College's course offerings.

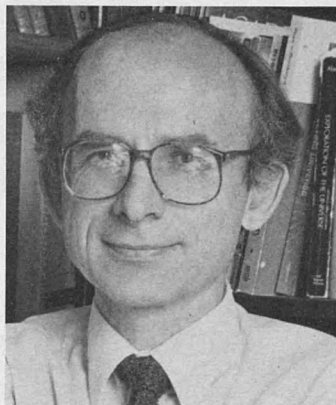
The College already offers freshman seminars in geology, biology, fine arts, history as well as through the Charles Center for Honors and Interdisciplinary Studies.

Professor Wins Writing Award

Hans vonBaeyer, professor of physics at William and Mary, has won a \$2,500 journalism award from the American Association for the Advancement of Science (AAAS)-Westinghouse for three articles, "How Fermi Would have Fixed It," "A Dream Come True" and "Creatures of the Deep," which were published in issues of *The Sciences*, the publication of the New York Academy of Science.

Awards of \$2,500 each are given in recognition of outstanding reporting on the natural sciences and their application, excluding health and clinical medicine, in large and small newspapers, general circulation magazines, radio and television.

A regular columnist for *Sciences*, vonBaeyer said that his three prizewinning entries all have the common thread of going beyond the "Gee whiz, look what scientists have discov-



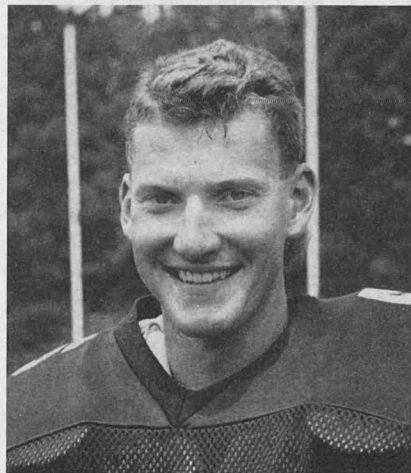
Professor vonBaeyer

ered!" approach to explain what their discoveries mean to the general public.

Earlier this year vonBaeyer won first place in the category "Editorial or Column" in the ninth educational graphic awards competition of the Society of National Association Publications. An article he wrote on Einstein for the *William and Mary Magazine* several years ago won a \$2,500 United States Steel award for excellence in writing.

Christie Named 1-AA All-American

Senior Steve Christie, who holds the William and Mary career football scoring record, has been selected as the first-team punter on the Kodak 1-AA



Christie

All-American team.

In addition to being William and Mary's all-time scorer with 279 points, Christie holds school records for most field goals in a single game (3), season field goals (21), career field goals (57) and career points after touchdown (108). He finished his senior year with the most field goals by any player in Division I-AA, was 10th in the nation in punting with a 40.0 average and 12th in scoring with 90 points for a 7.5 points per game average.

A native of Oakville, Canada, Christie said his top thrill of the season was kicking a last second 53-yard field goal that defeated Delaware in Cary Field in October. Because of his dual talents as both a top punter and place-kicker, Christie is expected to be a prime prospect in both the National Football League and Canadian Football League drafts.

duPont Fund Gives W&M \$100,000 for Minority Leadership

The Jessie Ball duPont Religious, Charitable and Education Fund has made a grant of \$100,000 to William and Mary to support a summer institute for black student leaders from colleges and universities across the country.

The institute, which is an outgrowth of a conference sponsored annually by William and Mary for the past three years, is designed to increase the leadership role, visibility and influence of black college students both on their campuses and in the broader community.

"Although a few seminars on leadership development exist, there currently are no programs aimed specifically at helping black students learn the skills needed to become effective campus leaders," says Carroll Hardy, associate dean of student affairs and institute director. "The overwhelming response we've received from previous conferences has demonstrated the need for a more intensive and focused approach to this vital issue in our culture."

The duPont grant will provide full funding for the first summer institute, and partial funding in the form of a challenge grant for the program's second year. The two-week program, tentatively scheduled for June 1990, will bring together leaders in education, government and business with approximately 50 students from across the country. Sessions will include but not be limited to: interpersonal relations, leadership styles, forming coalitions, organizing around issues, and dealing with racism and sexism.

For the past three years, William and Mary has been sponsoring a three-day student leadership conference for black students on predominantly white campuses. Called the National Black Student Leadership Development Conference, the event has brought together hundreds of black college students with nationally recognized leaders in business, education and the arts for an intensive three-day program of lectures, workshops and cultural events.

While Hardy regards the three-day conferences as valuable, she points out that "the number of topics we want to deal with makes three days too short a time to cover everything adequately. Based upon the successes we've had with the conferences, we want to offer the summer institute as a way of providing more extensive training."

Student Law Group Honored Nationally

The Marshall-Wythe School of Law has been honored by the National Association for Public Interest Law (NAPIL) for the work of the William and Mary Public Service Fund (PSF), a student-run scholarship program.

The award honors PSF for showing the most growth of public interest scholarship pro-

grams with resources under \$25,000. The William and Mary program was chosen from a group of similar student organizations representing 60 law schools across the country.

PSF was founded three years ago to address the increasing legal problems among indigents and the traditionally under-represented. The organization is operated by a board consisting of eight law students: Ingrid Olson, Catherine Lee, Garet Binzer, Robert Chappell, Alice Twiford, Littleton Tazewell, Stephanie Burks and Beverly McLean.

Students Get Their Writing Published

Ten students who took a non-fiction writing course from Prof. Scott Donaldson at William and Mary have had their works published in a Christmas supplement that has a circulation of 72,000 readers in several military newspapers throughout the Hampton Roads (Va.) area.

Donaldson, a successful author who has written biographies on F. Scott Fitzgerald, Ernest Hemingway and John Cheever, said he was delighted at the opportunity to introduce his students to the realities of publishing.

The project originated with a request from Kathleen Johnson Anderson '80, who supervises production of the Christmas supplement. Needing some fresh ideas, she called Donaldson and proposed a writing assignment that would give the students an opportunity to write under the pressures and



Student writers who published for pay (l. to r.) are Carrie Hendrickson, Cristen Kimball, Judy Nordstrom, Christy Less, David Masri, Patty Latimer, Ted Lynch, William Nagel, Andy Wells and Kimberly Wells. They are shown with Professor Donaldson.

demands of editors, a byline to add to their portfolio and a check for their efforts.

The stories appeared in two issues of the supplements in *Navy Soundings*, which goes to naval and marine installations; *AirForce Flyer*, distributed at Langley Air Force Base; *The Army Wheel* at Fort Eustis and Fort Story; and *Army Casemate*, designed for Fort Monroe personnel.

Commented Anderson on

the results: "The ideas the students came up with were fresh, nothing we had done before. And I have been incredibly impressed with the quality of writing."

The successful writers are Carrie Hendrickson, Cristen Kimball, Judy Nordstrom, Christy Less, David Masri, Patty Latimer, Ted Lynch, William Nagel, Andy Wells and Kimberly Wells.

Sadler Honored By VASPA Colleagues

W. Samuel Sadler '64, vice president for student affairs, has won the 1989 Outstanding Professional Award by the Virginia Association of Student Personnel Administrators (VASPA).

Sadler was cited for his exceptional judgment and creativity in addressing current issues and problems. "He is vitally concerned with the students, relates well to them and has their respect and confidence," said the citation. Sadler was also cited as an active leader and effective administrator, who is also an active and concerned participant in professional associations.

Sadler, who joined the staff at William and Mary in 1967 as assistant dean of admissions, has served as dean of men, dean of students and vice president for student affairs during his 22 years at William and Mary.

Alumnus Gives College Painting of Invasion

Douglas Morton '62 and his wife Marilyn have donated to the College a large oil painting of the invasion of England on Nov. 15, 1688, by William III, then Prince of Orange. The "Glorious Revolution," which ultimately led to the exile of James II and the coronation of the College's patrons, William and his wife Mary as joint monarchs of England, has been celebrated by the College by a number of Tercentenary events during the past year.

Morton, a history major, commissioned the painting by Peter Peterson of Columbia, Mo., who specializes in historical subjects.

The painting, which hangs in the office of Provost Melvyn D. Schiavelli on the first floor of

the Brafferton, was presented at Homecoming in November during the meeting of the Endowment Association, of which Morton is a board member.

Morton is owner and president of the Morton Publishing Co. of Englewood, Colo., which he established in 1978. Morton Publishing specializes in college textbooks.

An active supporter of his alma mater, Morton is in charge of major gifts for the Athletic Educational Fund and serves as a member of the nominating and development committees of the Endowment Board. He was also chairman of the reunion gift committee for his class. In 1988 Morton endowed the Duane A. and Virginia S. Dittman Professorship in American

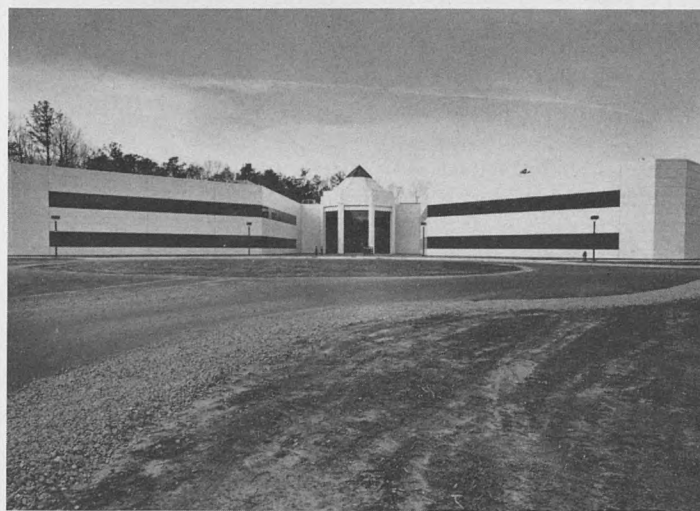


Doug and Marilyn Morton are shown in front of the painting of the landing at Torbay with artist Peter Peterson and President Paul Verkuil.

Studies to honor the former vice president for university advancement and his wife for their contributions to the College and their community. His daughter, Christine Morton, is in the class of 1990.

There are over 200 ships included in the scene of the Torbay landing with Prince William coming ashore in a small boat to be greeted by a friendly group of English citizens.

CEBAF Involves W&M In Futuristic Studies



A \$265 million nuclear physics experimental center is now being developed in Newport News by the U.S. Department of Energy and a consortium of 39 institutions in the southeast United States including William and Mary.

Future benefits to mankind in harnessing the atom will be probed by physicists from William and Mary and other universities in a \$265 million nuclear physics experimental center now being developed in Newport News by the U.S. Department of Energy and a consortium of 39 institutions in the southeast United States.

The center is called "CEBAF" — Continuous Electron Beam Accelerator Facility — and will go into full operation in 1994. It occupies a wooded 210-acre site on Jefferson Avenue in Newport News, close to Patrick Henry Airport and 20 miles from the William and Mary campus. The College is closely involved in the project as a member of the Southeastern Universities Research Association, called "SURA," which controls the center.

Physics professors and students from William and Mary are working closely with Hermann Grunder, 57, a Swiss-born physicist who directs CEBAF and reports to Energy Department executive William Wallenmeyer in Washington, D.C. "About a dozen physicists at William and Mary and several graduate and undergraduate physics students

are involved in plans related to CEBAF," says W&M president Paul Verkuil '61. "Later, CEBAF will contribute by giving students hands-on training in the technologies of experimental science — and by giving new insight into the nature of matter."

The state of Virginia has funded nine tenured academic positions — five "Governor's Distinguished CEBAF Professors" and four "Governor's CEBAF Scientists" — to attract top talent to the laboratory. It is also funding 17 administrative jobs and "lending" the 210-acre site, formerly occupied by the Virginia Associated Research Center, called VARC, and earlier by the Space Radiation Effects Laboratory, called SREL. The College was closely involved in both projects.

The city of Newport News is currently building a \$691,000 dormitory to house researchers on the CEBAF site.

CEBAF will give scientists "a prospect of deeper knowledge of the nature of matter," explains Grunder. "CEBAF's job is to provide mankind's first unblurred glimpses of just how these quarks comprise the protons and neutrons that make up the nucleus." He believes its re-

search will help geologists, physicians and semiconductor manufacturers.

Besides William and Mary, the 39 southeastern institutions that form CEBAF's governing board include the universities of Virginia, Richmond, George Mason, James Madison, Virginia Commonwealth, Virginia Tech and Virginia State. The project was born in 1985 from a concept by Prof. James McCarthy of the University of Virginia.

William and Mary physics professors Robert Welsh, Robert Siegel, Herbert Funsten and others are involved in the project. "The College has long had a strong interest in the success of CEBAF," says President Verkuil. "The physics department has already benefited considerably from this relationship, and we anticipate a long and productive future of collaborative work with CEBAF scientists. This relationship should grow as the college moves forward with its plans for a new Ph.D. program in applied science."

CEBAF will give scientists "a prospect of deeper knowledge of the nature of matter," says Director Grunder, who has been on the job in Newport News since 1985. He also believes it will benefit the Virginia Peninsula and the nation. "Industry will develop new capabilities and products by building state-of-the-art components for the facility," he believes.

The facility is working with the National Aviation and Space Administration, the Newport News Shipyard, and especially with the 39 institutions which

make up SURA. "SURA was a driving force in the establishment of CEBAF in this area," President Verkuil points out. "The College is an active member in this consortium, dedicated to the management of large facilities and projects for science, engineering and medicine."

Scientists expect CEBAF to have a productive life of 10 to 15 years. At that point, an upgrade will probably be needed to keep the facilities "at the frontier of physics for another 10 to 15 years," Dr. Grunder believes. The staff, already at 260, will grow to 350 at the project's height. Grunder says it will bring in "a high concentration of scientists that will affect our schools, social and cultural environment."

Participation by qualified scientists throughout the world is invited by CEBAF. "Our only criterion for accepting researchers is excellence," Grunder observes. "If you think you can compete, you simply apply to the CEBAF Program Advisory Committee. It will judge if your ideas have merit and what the research would cost. If you're accepted, CEBAF will help with your experiments."

Already the project has attracted American scientists plus others from France, the Netherlands, Italy, China and Korea. "We're literally an international community," Dr. Grunder says, "mostly in their 30s and 40s." He appreciates the opportunity to work with William and Mary. "We have a plan to work with SURA universities to have an applied science department at William and Mary," he adds.

—Parke Rouse

Boge Wins Rhodes Scholarship

Georgie H. Boge, who attended William and Mary for two years, is one of 34 1989 recipients of a Rhodes Scholarship.

Now a student at Princeton University, Boge served as a President's Aide, vice president of the Student Association, student liaison to the Board of Visitors and won the prestigious Truman Scholarship before

transferring to Princeton in 1987 after her sophomore year. In addition, she ran the Congressional election campaign of Linda Arey '66 last fall in the Danville, Va., area.

George M. DeShazo Jr. '89 was named William and Mary's first Rhodes Scholar last year. He is now studying at Oxford University in England.

Picking the President: Is There a Better Way?

Some of the most influential people in the worlds of politics and campaigning came to the College in November to discuss "Picking the President: Is There a Better Way?" The three-day conference was sponsored by the Public Policy Program and the Department of Government.

The conference offered a rare view into the frequently complicated process of nominating and selecting candidates by featuring party insiders such as Paul G. Kirk Jr., former chair of the Democratic National Committee; Frank Fahrenkopf, former chair of the Republican National Committee, and Sen. Charles S. Robb, former Democratic Leadership Council chairman, as well as media figures like David S. Broder, columnist for *The Washington Post*; Ken Bode, former NBC News national political correspondent, and Kevin Phillips, whose work includes commentary for the *Christian Science Monitor* and *The Los Angeles Times*.

In addition to a number of respected analysts from universities around the country, experts from the front lines of presidential politics were represented through John Sears, former campaign manager for Ronald Reagan, and David R. Gergen, who worked in the White House for three presidents and is now editor-at-large at *U.S. News and World Report*.

The College was represented by government professors John J. McGlennon and Ronald B. Rapoport. McGlennon and Rapoport conducted a comprehensive survey earlier in 1989 of the Democratic and Republican national committees and county chairs. The party officials were asked about their views on a variety of subjects dealing with primaries and the candidates

which are produced through the selection process.

For those with strong political ties, the views on the presidential selection process split along party lines, with Democrats pushing for changes while Republicans said they planned to stay the current course. Sen. Robb, who helped oversee the Super Tuesday primary for Democrats in 1988, called for more changes in his keynote address. "Our current caucus and primary system gives the illusion of democracy without the reality," said Robb, because the early primaries and caucuses are given too much political weight; because the system divides political parties by allowing same-party candidates to publicly fight among themselves, and because waging a presidential campaign is so expensive that candidates cater to wealthy campaign contributors and ignore voters.

On the other side were Republicans like Fahrenkopf, who advocated retaining the current structure. While he also decried the high cost of campaigning and the growth of negative advertising, Fahrenkopf said Republicans have recognized that the Electoral College method of choosing a president allows them to focus on a comparatively small group of undecided voters. "You don't run a 50-state campaign for president of the United States," said Fahrenkopf. "Anybody who does will lose."

Fahrenkopf, Kirk and others said they are concerned about the increasingly large role of television both in its news coverage and in advertising. "Television has had a greater impact on the political process than any elected politician in American history," said Kirk. The desire to reduce a candidate's message to a few phrases delivered with a picturesque background to ensure network television coverage is becoming increasingly hard to fight, added Fahrenkopf.

The manipulation of television news reporters is not only more common, but "worse than you think," said Bode, because members of the media know they are being used. The former net-

work correspondent said news producers are "nymphomaniacs for good pictures," and too often let the candidate's public relations people dictate the focus of nightly news reports. What's worse, complained some analysts, is that television news has increasingly shifted its focus away from the issues and towards the advertisements of the candidates themselves, so that the news is



U.S. News and World Report editor David Gergen speaks at conference on presidential elections.

becoming more ad-like. Broder said television and print reporters should force candidates to take responsibility for their advertisements, while keeping the attention of the public on the candidates, their history and their discussion of the issues. "The campaign is the voters' property, not the candidates' property," said Broder.

Phillips, who prefers a broader, more historical view of presidential politics, said changes in the process will not have a dramatic impact on the outcome. Instead, he believes the results of campaigns are more influenced by cycles of dissatisfaction among voters. Citing cyclical movements since the latter part of the 19th century, coupled with statistics showing Republican presidential candidates getting lower rates of support among the American public, Phillips predicted that a Democratic presidential candidate will likely be elected to the White House in the near future.

The McGlennon-Rapoport survey found that Democrats are very worried about their inabil-

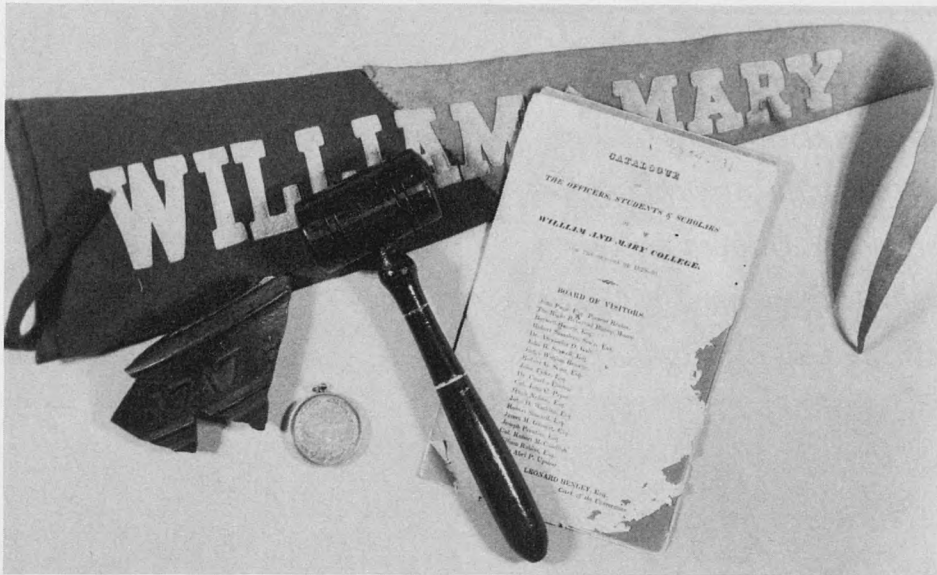
ity to capture the White House during the almost uninterrupted Nixon-Reagan-Bush years. (Most analysts at the conference agreed that Democrat Jimmy Carter's election was a reaction against Watergate and not an endorsement of the party's policies.) Democrats are also cognizant of television's influence. "More than three times as many Democrats see television per-

formance as crucial to winning as see substantive concerns as crucial," the two said in their report. Reforms in the nominating process are popular with Democrats, who favor proportional allocation of convention delegates and the use of super delegates. Republicans are strongly against the use of super delegates,

and also oppose using regional primaries like the Super Tuesday Democratic primary. The two warned that while Democrats focus on winning, "a string of successes like the Republicans have enjoyed might lead to a self-congratulatory attitude, even a perception of invincibility."

Throughout the conference, participants mentioned the need to get more people excited about the process and its potential for changing American history. And no matter how well-qualified the analyst, they agreed it's still easier to predict the electability of a candidate than to predict his ability to be president. Charles O. Jones, a political scientist from the University of Wisconsin-Madison summed it up best when he said that "I can't tell you how to pick great candidates. I can tell you that great men don't always make great candidates, that great candidates don't always win, and if they do, they don't always make great presidents."

—Ray Betzner



Examples of materials in the Archives: (l. to r.) pennant from Martha Virginia Sleet '28 Papers; fragment of 1717 bell which hung in the Wren Building and was rescued from debris of the 1859 fire; Best Essay Medal awarded to Arthur Wilson James '13 by the Phoenix and Philomathean Literary Societies; gavel made from wood taken from the Wren Building during the restoration, and earliest extant W&M catalog, 1829-30.

Looking to the Past: The University Archives

by Kay J. Domine

Only one office at William and Mary is more concerned with the past than the present or future: the University Archives on the ground floor of Earl Gregg Swem Library. The University Archives is the memory of the College, documenting its history from before its founding in 1693 to the present. In the same area of Swem Library, and closely associated with the Archives, is the Manuscripts and Rare Books Department.

The Archives has papers and bound volumes, photographs, publications, video and audio tape recordings and artifacts, all relating to the College and its people. It retains both official and unofficial College records. Official materials were created in College daily operations; they include office files, publications (such as the *Flat Hat*, *Colonial Echo*, catalogs, student handbooks and literary magazines), reports, minutes of meetings and financial records. Unofficial records relating to William and Mary or people associated with the College include personal papers, books and articles, newspaper clippings, photographs, scrapbooks and artifacts.

The University Archives also keeps William and Mary treasures such as the College Mace, which leads all formal convocations including Charter Day and Commencement; the rector's badge and chain of office, and two of the original College boundary stones. Although the original charter given to William and Mary in 1693 was lost sometime in the past, we have the copy sent to Edmund Andros, who was Royal Governor of the colony of Virginia in 1693. The archives also houses the first book of minutes of the meetings of the faculty, beginning in 1729, and the 18th-century dies created to strike Botetourt Medals.

Artifacts are an exciting part of the Archives. Our collection includes eyeglasses, clothing, pieces of the old Live Oak,

fraternity pins, literary society badges, bells, wine bottles, flags, bits of buildings, trophies, a sundial, plaques, commemorative medals and ribbons, watches, a frisbee, William and Mary T-shirts and sweatshirts, a mourning brooch containing a lock of hair and even a stuffed frog.

The bulk of the Archives collection is composed of late 19th- and early 20th-century materials. While some documents relating to the period prior to 1888 still exist, wars, fires and the passage of time took their toll on many of the original records.

Items come to the Archives from a variety of sources. Office files are transferred when they are no longer actively used, and current publications and reports are sent to us as they are produced. A few items are purchased with private funds from rare book and antique dealers or individuals. For the most part, however, we rely on alumni and their families to help preserve the College's history by giving us interesting memorabilia, photographs and publications.

Materials do not have to be in the best of shape, or even whole, to be considered for the Archives. We have broken pieces of crockery used in the College dining halls at various periods, a chipped crystal goblet taken from the College dining hall during the Civil War and later returned, and a small piece of the bell from 1717 which hung in the Wren Building. There are many torn and/or stained photographs, pieces of letters and books, articles of clothing with moth holes and scrapbooks which are fading rapidly. We even have a nearly shredded flag which flew over the World War II victory ship, the S.S. *William and Mary*. Preserving a portion of a piece of memorabilia is better than not having it at all.

Once in the Archives, all materials are given special care and handling to preserve



The 1916 championship William and Mary baseball team, from the John M. Presson ('16) Scrapbook.

Around The Wren

them for as long as possible — forever, it is to be hoped. Temperature and relative humidity are constantly monitored in the Archives; light is kept to a minimum; and special, relatively expensive supplies are used in storage. Framed materials are removed from the frames whenever possible to allow free circulation of air, as framing can increase the chance of mold and mildew growth and speed up the deterioration process.

We use rust-proof staples, plastic paper-clips, and acid-free paper and boxes, and never use adhesive tape or rubber bands. Acid added during the production process eats away at the paper from inside, and acids migrate from one piece of paper to another. Acid is what causes newspaper clippings to turn brown or yellow, ink to either fade or bleed through to the other side of the paper, and paper to become brittle and break apart in little pieces.

Light is very damaging to paper, photographic images, books, leather, fabric and inks. The ultraviolet rays fade colors and printing on paper, and make paper, fabric and leather brittle and fragile. Because of this damage potential, we do not place materials on permanent display. Anything of value should never be exposed to light for long periods of time.

Security is very important. All materials may be used only in our Thomas G. Pullen Jr. ('17) Reading Room; all photocopying is done for researchers by our staff; and we try to educate researchers about proper, gentle handling of the collection.

Materials needing preservation, conservation or restoration work are sometimes sent to special conservation laboratories. This is very expensive and cannot be done for most of the collection. State money is not available for this sort of work. Private donations pay for all expenditures.

Minor repair work can be done by the University Archives staff, but we cannot attempt the more complicated procedures since it is easy to cause irreparable damage.

In order to allow people to view the Archives collection, we regularly mount rotating exhibits of materials from the University Archives. This not only allows alumni the opportunity to view remembered times, but also exposes current students to the College's rich heritage. We have one large exhibit area, the John Edward Zollinger ('27) Museum, also on the ground floor of Swem Library, as well as several small free-standing exhibit cases within the library.

Special small exhibits are prepared each year for Olde Guard Day, the 50th reunion class at Commencement and the 45th reunion class at Homecoming. Since exhibit space is limited, we are unable to accept any

We have broken pieces of crockery used in the College dining halls at various periods, a chipped crystal goblet taken from the College dining hall during the Civil War and later returned, and a small piece of the bell from 1717 which hung in the Wren Building.



gifts when the donor stipulates that they must be kept on permanent display. This policy also safeguards vulnerable materials.

We encourage everyone to use the many resources in the University Archives. Through our tight security measures and care in handling and storage, we are preserving these valuable materials for generations to come. All are welcome to stop by and view as much of the collection as they want.

The University Archives is always eager to receive gifts at anytime. The smallest bit of the College's history can be useful. Duplicates of publications and items already in the Archives are welcome, since our goal is to have at least two copies of everything. Memorabilia and materials from recent years are also desired.

Some items of particular interest to us are Duc Caps; copies of the *Colonial Echo* from 1918, 1935 and 1974; photographs; scrapbooks; fraternity and sorority materials and pins; class rings; and memorabilia illustrating student life, such as buttons, belt buckles and letter sweaters.

Documenting the activities of the College of William and Mary—past, present and future—cannot be done without the help of alumni. Preserving the past is not an attempt to go backwards. Rather, it allows us to see where we have been. It allows current



From the Martha Barksdale ('22) Papers come these two early examples of women's sports at William and Mary. Top photo shows a member of the 1921 women's basketball team while photo above shows an early women's field hockey team.

and future students, faculty and administrators to know and retain the best of the past while moving forward.

(University Archives hours are Monday through Friday, 9 a.m. to 5 p.m. and Saturdays from 9 a.m. to 1 p.m. Saturday hours may vary when classes are not in session during the summer. The Archives telephone number is 804/221-3090.)

Kay Domine is the University Archivist at William and Mary.

THE RATINGS GAME

by Bill Walker

Certain annual rituals are firmly established in the lives of colleges and universities. We all look forward to opening day, commencement and the other ceremonial events that surround the academy. In recent years a new ritual has evolved: the annual release of rankings of colleges and universities by some of the nation's major news organizations.

Those of us who have been in higher education administration for a few years can remember the days when college listings were simpler, and hardly the subject of great anticipation by the American public. They were researched through surveys distributed on campus, and written with objective descriptions based on data supplied by the institutions. The order in which they appeared was alphabetical.

It is difficult to pinpoint exactly when all this changed. Some say it was back in the early 1980s, when *The New York Times* first issued a book listing the 200 "best and most interesting" colleges, using subjective descriptions to highlight the attributes of a small fraction of this nation's institutions.

We should have known what was to come when we saw the first reactions to that book. With very few exceptions, the institutions near the top — ranked with four and five stars for their academic quality, social atmosphere, and quality of life, like so many restaurants being rated on their food, service and ambiance — jockeyed furiously for an advantage. They added up ratings points in illogical ways, and they manufactured highly creative rationalizations to account for areas in which they had been judged to have three or — perish the thought — two stars.

A small number at the top responded by



The first time the U.S. News and World Report list was published, it was done on the basis of a subjective survey of college presidents, and William and Mary was listed quite high — number 22 on a list of 25.

dismissing this new ratings phenomenon as meaningless puffery. What mattered to them, they said, was the judgment of their peers in higher education and the opinions students expressed by choosing where to enroll.

Something interesting occurred among those at the other end of that spectrum of 200. A spokeswoman for the 200th ranked college on the list was quoted in the news media about how wonderful it was to be on the list. That college, on that list, was dead last, but proud to be there. It proved the old politicians' adage that says you may say anything you want about me in the newspaper, but just make sure you spell my name right.

With that as background, most William and Mary followers are keenly aware of some of the rankings that have appeared in the media as annual rituals in the last few years. One that generates more questions than any other is the annual listing by *U.S. News and World Report*, which got into the business four years ago. For most institutions, that listing is either good news or no news; for a few, most notably William and Mary, it has created the perception of bad news. The perception, however, is much different from the reality.

U.S. News, in all its efforts to make valid comparisons among institutions and contribute to the knowledge of its readers about higher education, has yet to find a formula for doing so. Despite its detailed descriptions of its methodology, the fact remains that its categorical listings do not reflect the realities of institutional comparisons and fail to take into account the unusual nature of a small number of colleges, such as William and Mary.

The formula the magazine uses has changed with every survey. The first time the list was published, it was done on the basis of a subjective survey of college presidents, and William and Mary, as you might expect, was listed quite high — number 22 on a list of 25. On campus, the phone rang with congratulatory calls from deeply satisfied alumni and friends.

The next survey, two years later, was when the trouble began. An attempt was made to include financial information and combine it with the presidential survey. That formula was later found to discriminate, albeit inadvertently, against public institutions. William and Mary and its academic peers — Berkeley, Virginia, UNC-Chapel Hill, Michigan — dropped about five spots apiece on the list. In William and Mary's case, the drop was from 22 to 27, crossing the magic threshold from highly visible to totally invisible.

Around The Wren

The phone rang again, this time with calls from justifiably bewildered people.

In 1989, further refinements were made in the methodology. The subjective category — academic reputation — was combined with objective data on student selectivity, retention, faculty quality and financial resources. When the list was published, William and Mary was nowhere to be found in the top 25. The ringing phone this time signaled calls from people who were both bewildered and incensed.

Subsequent research through sources at *U.S. News* produced a bit more information, with two points emerging as most significant:

1. William and Mary finished somewhere in the top quintile, meaning that its rank, based on this survey, was somewhere between 26 and 41 out of 204 national universities.

2. This year's methodology apparently failed to take into account all of the college's financial resources, and may have underestimated its faculty resources. Back to the survey drawing board for *U.S. News*.

Even with the flawed methodology, we can accept the conclusion that William and Mary falls into the top quintile in this survey. In terms of comparisons with other institutions, what does that really mean?

Human nature being what it is, many of the letters and phone calls that came in immediately after *U.S. News* hit the street were of the same ilk. "How can it possibly be that East Overshoe State (or any college of your choice) is listed as fifth and William and Mary isn't listed at all?"

The answer is that misunderstanding of the *U.S. News* lists is rampant. The basis for grouping schools is questionable, and the magazine's explanation of its categories creates more confusion than it corrects. If there ever was a comparison of apples and oranges, this is it. The National Universities list — the 204 top schools including William and Mary — and perhaps the National Liberal Arts Colleges — 141 colleges in the Williams, Amherst, Swarthmore category — are on one level. They are decidedly different from one another, since one category implies doctoral programs and research and the other implies undergraduate study and small size.

But they are also decidedly different from all the other categories on a qualitative level. The other categories are Regional Colleges and Universities, in which 60 institutions in four regions are listed, and Regional Liberal Arts Colleges, highlighting another 40 on a regional basis. A strong argument that can be made, however, that many of the institutions on the National University list — well below the magazine's

25-place published list point — are generally more highly regarded than the institutions listed at the very top of the regional lists.

Beyond this, by manipulating the categories "in an effort to simplify groupings," *U.S. News* has created a situation in which it is impossible even to compare apples with apples. The categories are based on guidelines used by the Carnegie Foundation for the Advancement of Teaching to measure financial resources. *U.S. News* "combined some categories and subdivided others," according to its statement on methodology. The result, in the judgment of some observers, is a distortion of the data and characterizations of institutions that border on the inaccurate.

... by manipulating the categories "in an effort to simplify groupings," U.S. News has created a situation in which it is impossible even to compare apples with apples.

The magazine's first sentence describing the group that includes William and Mary is enough to make you wonder who ended up in what category. "They are true educational conglomerates, 'multiversities' that school more students, house more books, perform more research, grant more degrees, and influence the thinking of more people in more ways than virtually any of the nation's other institutions."

Wow! While we certainly seek to influence people's thinking and perform those valuable schooling and research duties, those of us back on the campus of Dear Old Multiversity have to take a momentary break from conglomerating education to consider a question: Could it be that large institutions might have an advantage in this category?

Being absent from the published list, even accompanied by that description, creates a creeping fear among William and Mary alumni and students that the quality of the college might be slipping. The fact is that the opposite is true. William and Mary

has reached new heights in its academic stature, and has in fact become the most selective public university in the nation.

Virtually lost in the furor over the *U.S. News* list was the release shortly thereafter of the annual *USA Today* listing of the most selective colleges and universities. The criteria used by this newspaper are mercifully simple: to be listed in rank order, a college must offer admission to less than half of its applicants and have freshman class median Scholastic Aptitude Test scores of 1,200 or higher. There are 53 colleges on the list. Two are state-supported. William and Mary is 19th on the overall list and first on the public list.

Now that the college ratings game has become so firmly established, there are a few points to keep in mind as we play it next year:

1. It is all part of the consumerism wave that has swept over higher education in the last decade. Students and their families have a more insatiable craving for information — valid and otherwise — about the institutions to which they might apply. This relates directly to point two.

2. Meeting that demand for information has become a highly profitable business. Virtually every college guidebook that has hit the market in the last 10 years has sold thousands, if not millions, of copies.

3. In terms of the serious impact on high-quality, stable institutions, the only serious loss a college incurs by omission from a list is a substantial loss in national public relations opportunities. Adverse or nonexistent rankings are a serious threat only to institutions of marginal quality and shaky financial stability.

4. Subjective rankings are one of many measures used by prospective students and their parents. While they may have some impact on the opinions of those groups, most dig below superficial sources in their search for the right college.

5. William and Mary, as it plays the ratings game, is the victim of its own uniqueness. There is simply no grouping of small, public, highly selective universities that adequately describes their attributes, tangible and intangible.

6. The reason the subjective ranking of colleges has become such a popular sport is the public reaction to it. For some reason — maybe a long tradition of competitive spirit — Americans love to see things rated, and they rush to buy books and magazines that do so. To paraphrase Pogo, we have discovered the perpetrator of this, and he is us.

Bill Walker is director of university relations at William and Mary.

Bluegrass and Bluebloods

By Charles M. Holloway



Case, Blythe '68, Robert '68 and Heather Clay at their 827-acre Three Chimney Farms, home of some of the finest thoroughbred racing horses in the world, including Triple Crown winner Seattle Slew.

Photos by Brant Gamma

There's a comfortable, circadian rhythm to life in the gently rolling horse country just outside Lexington, Ky. On a glorious morning in late October, summer blends into fall with a blaze of flame and gold leaves among the ancient oaks that dot the blue-green pastureland. A mild breeze mingles the scent of newly mowed grass with the tangy odors of rich loam and manure. Inside the black board fences that

neatly subdivide Three Chimneys Farm, five sleek and muscular stallions prowl the enclosure, printing their proud hoofs into the receiving earth. In their racing careers, they have won 20 Grade I racing events and amassed earnings of more than \$8 million. Now, at stud, they bring additional fortune and fame to Robert Clay '68, the owner of Three Chimneys.

Clay stands on a rise outside his white board and shingled offices and looks across

the carefully cultivated 827-acre spread. "We breed more horses in the state of Kentucky than anywhere else in the world," he says. "Within a 60 to 80 mile radius of Lexington, 20,000 foals are born each year. That's nearly half the total for the whole country. Our stallions have done their share, though our focus remains on excellence and quality, not quantity."

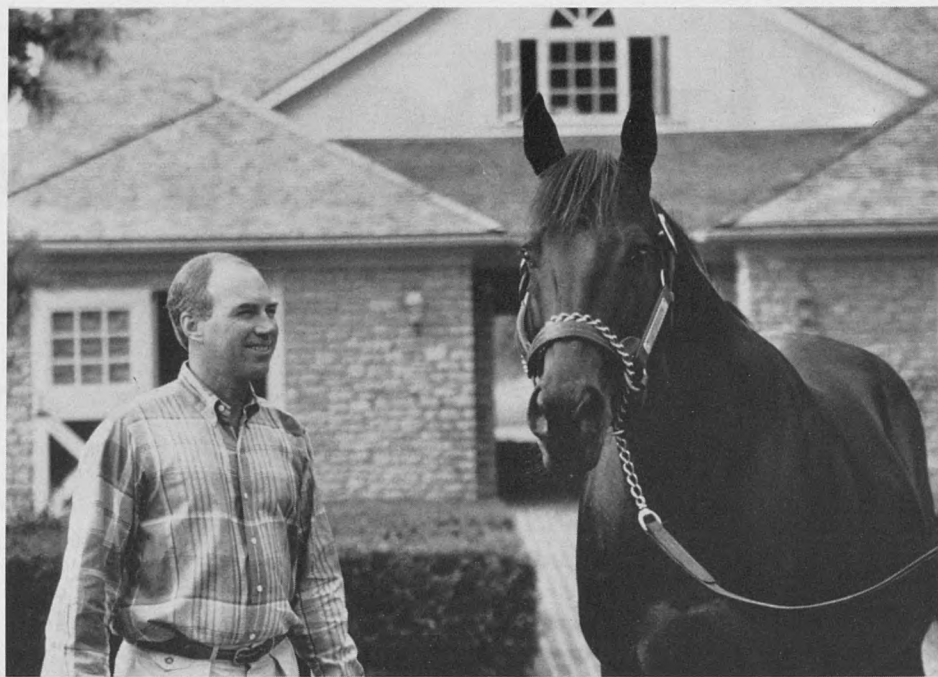
The ruggedly handsome, easy-going squire was born 40 miles away in rural Mt. Sterling and has grown up on the land. In horse parlance, he stands about 17 hands high, with a broad forehead, thick sandy hair, hazel eyes, even white teeth and the ruddy complexion of an outdoorsman. Today, he wears rumpled tan slacks, a gray sweater over a brown checked shirt and scuffed brown shoes touched with dry mud.

In the course of finding his niche in the highly competitive world of horse breeding, Clay has shoveled manure, worked nights in the foaling barns, sold fertilizer and sampled the many risks involved in raising thoroughbreds. By his own admission, he's been lucky. But he has also been shrewd, innovative and exceptionally successful in a mercurial and sometimes precarious business.

Clay met his wife, Blythe Baldwin '68, on campus and they were married in the Wren Chapel. Today, at age 42, Clay maintains an informal demeanor and a relaxed approach to life that partly masks his intense desire to succeed and excel. He often sounds and acts a little like a young Jimmy Stewart when he talks about the job. "I love it...it's not work ... there's a lot of fun, a lot of action ... and many great people involved. It keeps me close to the land. This is a wonderful place to live and raise children. I wouldn't trade it for anything."

As he conducts a brief walking tour of the deluxe stallion barn and adjacent buildings, Clay leads the way past a towering 300-year-old oak that dominates the courtyard, and along a neatly trimmed gravel path. The large and airy barn reflects a modified 18th-century architectural style with its simple frame and stone walls, shingled roof, graceful cupola and skylight windows. Each horse has a 16-x-16-foot oak-paneled stall of his own, opening off a central beamed atrium with windows that look across the meadows. The floor is covered with redolent wood chips.

"These are our prizes," Clay says, pointing out the four famous stallions that form the nucleus for his business: Seattle Slew, Slew o' Gold, Chief's Crown and Shahrastani. The fifth stall is occupied by a pensioner, so to speak, Nodouble, who is now a venerable 24 years old and retired from stud. As Clay notes, "He was a pretty remarkable racehorse in his time, and still holds track records from California to New York. His progeny include some 80 stakes win-



Seattle Slew (above), along with three other prized stallions—Slew o' Gold, Chief's Crown and Shahrastani—form the nucleus for Clay's business. The progeny of another Three Chimneys stallion, Nodouble, who is now 24 years old and retired, have combined earnings of more than \$26 million.

ners, with combined earnings of more than \$26 million. He's just living comfortably on his reputation," Clay says with a smile.

Three Chimneys is, in fact, a sort of equine Camelot where carefully chosen, exceptional stallions have no other goal in life than to service select mares and produce genetically superior foals that will carry on the aristocracy of racing. The stud fees have declined lately but are still princely. Seattle Slew once stood for a fee of \$700,000, but now receives around \$200,000, and Chief's Crown presently draws \$100,000, down from \$150,000 three years ago.

Clay's own deep roots in the bluegrass and his singular commitment to excellence have combined to make Three Chimneys a microcosm of the spirit and style of this small section of central Kentucky that has for generations been the undisputed horse capital of the world.

In a given week—during the auctions at nearby Keeneland, for example—dozens of private jets owned by Texas businessmen, Saudi sheiks and international breeders fly onto the 7,000-foot runway of Blue Grass Airport. Six major airlines also serve the field, and there are regular flights to U.S. destinations, London, Tokyo and the Middle East. Mercedes and Cadillac limousines whisk the owners and investors away down Man o' War Boulevard to their quarters on various farms.

Not infrequently, Queen Elizabeth II flies in from England to inspect yearlings and consider purchases. Clay has a photo of the Queen in his living room. She has spent

time at Three Chimneys as well as at the neighboring farm of William S. Farish from Houston, a fellow breeder, friend and long-time associate of President George Bush. "Will Farish lives about three miles down the road from here," Clay says. "You may remember that the first place Bush visited after the election in 1988 was the Farish home in Del Ray, Fla. And, you may also know that Farish is the executor of Bush's blind trust while he's in the White House."

On completion of the walking tour, Clay wheels his black Mercedes along narrow two-lane blacktop roads on a survey of adjacent Three Chimneys properties and talks about the history and nature of horse breeding. He points out the lush pasturelands and scrupulously kept outbuildings. "With about 320 acres, this farm—Three Chimneys—remains central to our operation," he says. "It includes our own house that we'll visit later, and all the administrative offices, the stallion barn, and so on." Nearby lies the 280-acre Kenirey land, the 92-acre stallion complex and the 135-acre Sheffield spread. The Kenirey component is owned in partnership with Sonja Rogers, widow of Irish breeder Tim Rogers. It is used primarily for the 140 broodmares, about 40 of which are owned by Clay in partnership with others. Sheffield is used for yearlings, and each of the subdivisions has a separate manager.

For more than a century, breeders and investors have flocked by horse and muleback, riverboat and van to attend the Keeneland auctions, settle into the land, raise their yearlings and nourish the evanescent

hope of coming up with a winner. "We're not selling horses," Clay says, "we're selling hope. People go to the track for the atmosphere, the enjoyment, the general excitement, not just the betting."

Overall, the Three Chimneys operation has expanded to about eight times its original size. In 1988, for example, at the Keeneland yearling sale, the farm sold eight yearlings for a gross of just over \$3 million—an average price near \$400,000. At Keeneland in 1989, Three Chimneys was the second-leading consignor, selling 13 yearlings for a gross of \$6,330,000.

As Clay drives slowly around the farm, he speculates on why Kentucky became the horse capital of the nation, instead of Tennessee, Ohio or Illinois, for instance.

"This area of central Kentucky is unique in that it has a limestone base that transmits calcium into the soil and into the horse's bone structure. There's also a lot of phosphorus mixed in, so geologically and weatherwise, it's just an ideal place to raise horses. We have a moderate climate, and nutritionally, things seem just right. That combined with the fact that racing has always been a popular thing in Kentucky.

"Kentuckians just like to gamble on their horses," Clay continues. "Probably the first race was run down the main street of Lexington.

"And there is another interesting aspect that contributes to the centralization of the sport here," he adds. "Thoroughbreds are not allowed to breed by artificial insemination, and so all the mares must be within easy driving distance of the stallions."

Clay reflects on his background and early schooling, and the course of events that led him into horse breeding. "I grew up in a rural area on a tobacco farm in the hills just east of here. My father (Albert G. Clay) is a prominent owner and breeder, and was, in fact, one of the founders of the American Horse Council. But though I was essentially born into the business, I was not necessarily predestined to follow in his footsteps. Actually, I didn't have too solid a basic education. I was in a small public school with a class of only 57 students. So when I found my way to William and Mary, I did not start out as a great student. But I did have good teachers, and I learned all the fundamentals of a liberal arts education during my time on campus."

His selection of W&M followed a familiar pattern. "My parents both went to Duke," he says. "So in the early '60's we went on a campus visit there, and on the way back, we swung through Williamsburg. It happened that I had seen a college catalog at a friend's house, and it intrigued me. We looked around there, I became enchanted with the place, and ended up there. It was a good experience. I became involved in various

activities—fraternity and school government. And I met my wife in the process of working with her to assemble the sophomore class view book.

"My time on campus was not exceptional, I guess. We missed most of the unrest and all that. But we did some of the usual things, and we staged our own breakout one night. But even that seems tame when I look back on it. Large numbers of us rushed across the campus and down Duke of Gloucester Street to the capitol, and then suddenly we all stopped and looked at one another. 'What are we doing here?' we wondered. And just about then, Dean Lambert arrived, having

Three Chimneys is, in fact, a sort of equine Camelot where carefully chosen, exceptional stallions have no other goal in life than to service select mares and produce genetically superior foals that will carry on the aristocracy of racing.

been roused out of his sleep. 'You all go back home to bed,' he said, simply but with authority. We turned around and went home."

In the summer of 1969, Clay went to the naval officer's candidate school in Newport, R.I., and was subsequently assigned to Honolulu, where he spent two years in command of a security group in naval communications. "It was great duty," he recalls. "We enjoyed the whole experience, and our daughter Heather was born in the islands."

After leaving the service in 1971, Clay returned to the Lexington area for a further period of formal and on-the-job education. He took summer courses at Harvard graduate school and the University of Kentucky, worked with his father as a partner in the Burley Belt Fertilizer Co., which became Top Yield Industries, and expanded his interest in horses from dabbling to serious investment. Later in the year, Clay bought an old, run-down house on 100 acres of largely undeveloped farmland on Old Frankfort Pike outside Versailles. After a

period of extensive renovation, the house, Three Chimneys, became not only the fashionable family residence, but also the logo for his business, and the farm became the base for his diversifying activities.

Bob Clay interrupts the tour of horse properties to stop by the house for a quick consultation with Blythe, who is busy preparing for their trip later in the week to Florida for the important Breeder's Cup races at Gulfstream Park.

Three Chimneys lives up to its name, with the tall brick stacks rising distinctively above the roof of the restored frame and brick house. Inside, sunlight floods into the living room, highlighting the Early American decor with colorful chintz fabrics on the sofas and chairs and reflecting from the polished hardwood floors.

Blythe Clay is short and vivacious with close-cropped blond hair, a clear complexion, and the same ebullient personality that no doubt marked her days as a sociology major at William and Mary, where she was active in the Student Association, Panhellenic work, the Tri Deltas, Orchesis and cheerleading. She has participated in a range of community and public service activities in the Lexington area, including the Child Abuse Committee, the Boy's Ranch Board and the Child Development Center. She is also an active partner in many of the farm operations and accompanies Bob on regular trips to England and Ireland.

"We're looking forward to a trip next spring to Australia," she says. "Bob's been invited to make some speeches to horse breeders in Tasmania, and I think New Zealand. Since the kids are both in school, it will be a good break for us, even though a pretty long trip."

"Heather starts Middlebury College in January," Bob adds. "She took a semester off after completing boarding school in Groton. She was accepted at William and Mary but decided to stay in New England. She's had nine years of French, and her main interest right now is writing." He proudly exhibits an article that she had recently written for the school paper.

Their son, Case, is now a 10th grader at Lawrenceville School near Princeton. "He's sports-oriented," Bob says. "We went up a couple of weeks ago to see the William and Mary-Princeton game. He was one of only two 10th graders to make the varsity soccer team at Lawrenceville. Maybe he'll find his way to William and Mary later.

"It's really too soon to know what careers they might follow—or whether they might enter the horse business. Heather is peripherally interested, but I think she'd rather write about it than be involved. Case has worked on the farm summers, and he has assimilated a lot just from living here, talking with our friends and guests."

As he drives back toward the office, Clay recalls buying his first mare for \$26,000 and boarding her in a converted tobacco barn. When he sold the foal for \$35,000, he was on the way to becoming a commercial breeder. In 1973, he made his first yearling consignment at Keeneland, and the dark bay colt named George Novonod sold for \$37,000. As a two-year old, the horse won several stakes events, and at age four was winning at Santa Anita in California. Ultimately, the horse won over \$350,000 and Bob Clay's magic touch had been demonstrated.

Within a decade he had moved into the big time of thoroughbred breeding and racing and had begun carefully to develop the special style and character of Three Chimneys. One of his key moves toward the end of that period was to coordinate a group of investors (including himself) who bought shares of Slew o' Gold, a son of Seattle Slew, the Kentucky Derby winner. This syndication turned out to be eminently successful, and Clay was firmly established as a stallion broker.

"It was about this time that we had a chance to sell the fertilizer company, and one of my Harvard professors who was visiting our home persuaded me to make the sale and concentrate on horse breeding—which I did."

Three Chimneys continued to prosper, and he gives much credit to Capt. A.D.D. Rogers, founder of the Airlie Stud in Ireland. "Tim Rogers had come to Three Chimneys to buy a yearling and liked what he saw of our operation. He decided to buy an adjoining 100-acre tract and a partnership emerged. The new farm was called Kenirey (combining Kentucky and Ireland)."

In part, this relationship helped stimulate Clay's interest in international breeding, and he now spends considerable time in the British Isles and France on business. Kenirey, of course, remains a vital part of the Clay operation as a broodmare farm, while the Sheffield division concentrates on yearlings.

General manager Dan Rosenberg, who came to Three Chimneys from the Calumet Farm, oversees and coordinates the activities of all divisions and works closely with Clay in all aspects of the business. "But," Rosenberg has observed, "he does all the syndications, partnerships and long-range goal planning and makes key financial decisions. He is a very involved, concerned owner, extremely intelligent, with unquestionable integrity."

Together, these men and their staff of more than three dozen expert trainers, grooms and office personnel, form one of

the most successful operations of its kind in the country. Their immediate goals have been achieved: to have a small, high-quality stallion operation with nothing but champions. "We have a barn with six stalls and five stallions. We want to keep it that way," Rosenberg says. "We don't plan to expand. We've had our share of luck, which you do need in this business." But the success has been a lot more than luck, involving careful buying, shrewd management and exquisite timing.

"We look for stallions with race performance, pedigree and conformation," Rosenberg says. "And at a price that will be attractive to syndicate owners and breeders."

Bob Clay wheels his Mercedes back up the drive to farm headquarters, past a curving line of locust and sycamore trees turning delicate shades of rust and ochre. He parks under the ancient oak and returns to his tastefully decorated offices with hardwood floors, well-worn oriental rugs and a variety of horse prints decorating the paneled walls.

After he has dealt with a variety of phone calls and queries, Clay settles back on a comfortable sofa facing picture windows that look out on the central stallion barn and talks of his growing concern about the over-development and commercialization of the historic horse farms surrounding



Yearlings from Clays' Three Chimneys Farm bring top dollar. In 1988 at the Keeneland yearling sale, the farm sold eight yearlings for a gross of just over \$3 million—an average price near \$400,000. At Keeneland in 1989, Three Chimneys was the second-leading consignor, selling 13 yearlings for a gross of \$6,330,000.



The staff at the Clays' picturesque 827-acre farm includes more than three dozen expert trainers, groomers and office personnel, who form one of the most successful operations of its kind in the country.

Lexington. A *Wall Street Journal* story this spring described the "mall" of the farm lands as owners and horse breeders succumbed to tempting offers from Japanese industrialists, real-estate developers and "latter-day carpetbaggers."

"A lot of us are worried about what's happening," he says. "We have already lost some battles and the perimeters are closing in on us. But we have a strong and active organization called "Bluegrass Tomorrow" that is trying to forestall future random development without consultation or planning. We've got to be looking at the next tier of farms that might be targets, even places like Calumet.

"It is a serious problem, ironic in many ways, that this beautiful area might be paved over. We can all understand the temptation for someone to sell off land for say \$50,000 that might only bring in \$3,000 a year being farmed. But we are trying to offer viable alternatives for people, trying to preserve the land for agricultural purposes and for horses. We have seven counties involved now, and we are working closely with county governments and industry. But when a governor can go to Japan and negotiate a deal with Toyota for a big plant at Georgetown without any consultation or consideration for the ecology, that's a serious worry—or should be—for all of us.

"We are not simply preservationists, per

se, but we want to work with everyone—developers, industrialists, citizens—and put together a blueprint for the future, incorporating as much of everyone's interests as possible. Growth is probably inevitable, but maybe we can control where and how, and to what degree."

There is no doubt that Kentucky's horse farms are in decline. They have dwindled from 1,400 in the early 1980s to around 1,000 now, and the pressure continues. Often, neighboring farms have become highways, motels and restaurants, and local people have also grown apprehensive about the expanding Japanese influence and presence. The very name of a large proposed mall on land near Calumet Farm—Bluegrass Mall—seems an oxymoron to many old-timers.

On the other hand, Clay remains reasonably hopeful, and his personal leadership has brought together a number of individuals and organizations in an effort to bring some order to the inevitable process of growth and change. He has gained increasing support for the nonprofit "Bluegrass Tomorrow" project, and initial funding has been provided by Toyota, Ashland Oil, IBM and others. The horse industry contributed 25 percent of the costs.

"We've raised \$300,000 and have an executive director now," Clay notes. "We are involving politicians, developers, educators

and horse farmers. We feel confident that some viable compromises and arrangements will be made."

Clearly, change is in the wind for the bluegrass country. J.T. Lundy, president of Calumet, says "Kentucky will be a different kind of place in 10 or 15 years." And Alex Warren Jr., a senior officer of Toyota in the U.S., says, "This community cannot rely only on the thoroughbred horse farms to maintain this area forever."

"No matter what happens, racing is still the sport of kings," Clay says. "Breeding and racing remain one of the state's top industries, and certainly the best known in the country. It provides lots of jobs, attracts capital, and generates tourism. I am confident that the industry will thrive in the future. I know I plan to continue in my work, and to join with my associates in advancing our cause."

He and others, through the Thoroughbred Racing Associations of North America, have been involved in marketing and publicizing various aspects of breeding and racing. Some of their activities include an advertising campaign called "Your Ticket to Ride" to attract potential new owners, informational booklets, regional seminars, the expanded use of video at the tracks, and cable television of additional major races like the Breeder's Cup.

There has been some speculation that Clay may, in the foreseeable future, diversify a bit more and expand his active racing activities, which, at present, consist of only two horses, Code Satin and Gorgeous (which scored an impressive second in the November 1989 Breeder's Cup races). Clay doesn't see any conflict in a breeder competing on the track against horses owned by his customers.

"I think you can forgive a breeder for keeping an occasional filly," he says. "It doesn't hurt to have one's silks on the race track. It demonstrates to people your interest in the sport."

Clay's colors, incidentally, are green and white, with a yellow band. Sound familiar?

Creating the Curriculum of the Future

By Christie niDonnell

One of the goals of a liberal arts education is breadth of knowledge: to teach students to read carefully, write clearly and think critically. A varied and vital curriculum forms the basis of these goals, with, naturally, the conventional academic disciplines being the building blocks of such a curriculum. But there is more than one way to construct a curriculum, and as William and Mary moves into its fourth century, it is finding new ways to augment and complement the excellence of its established departments. As in the days of Jefferson, changes are in the works that will build on the traditional disciplines to create curricula for the future.

One of these changes involves initiatives in several interdisciplinary programs and centers for multidisciplinary scholarship. The Roy R. Charles Center for Honors and

Interdisciplinary Studies, the Wendy and Emery Reves Center for International Studies and the Commonwealth Center for the Study of American Culture are new umbrella organizations that provide structure for diverse fields of scholarship. There is also a new emphasis on American Studies, Public Policy Studies, International Studies and Applied Science. What these centers and programs have in common is that each calls upon the resources of several established academic departments, crossing conventional disciplinary lines to pursue academic excellence for both students and faculty.

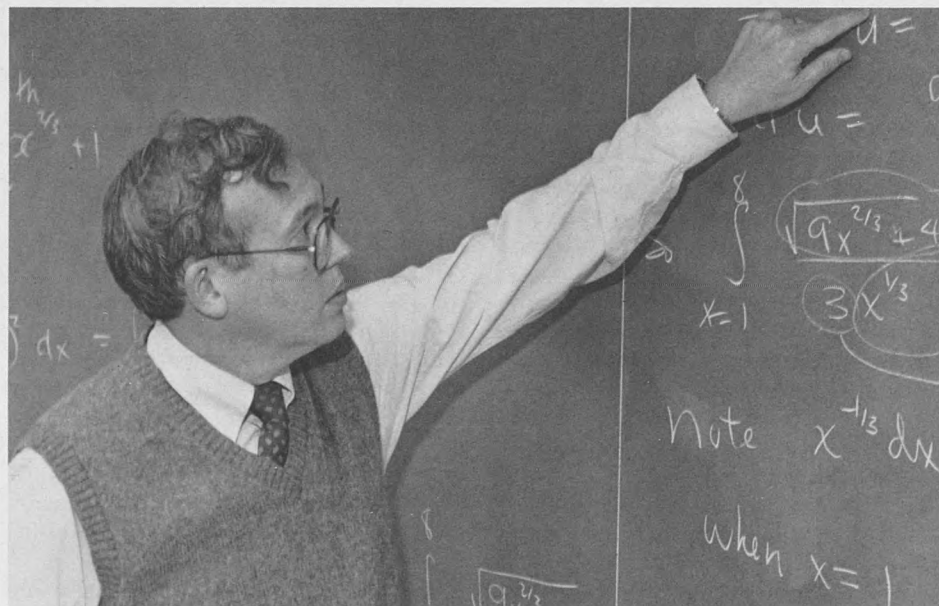
According to David J. Lutzer, dean of the faculty of arts and sciences, the traditional disciplines made William and Mary's reputation, and will be the backbone of these multidisciplinary efforts. But creating what he calls umbrella programs allows a synergy

to build, using approaches from the traditional academic fields to give both students and faculty new perspectives on the subject under discussion.

"We are a small university—we can't do it all," Lutzer acknowledged. "But we can do a few things well." Umbrella programs make possible a greater flexibility within the curriculum. Moreover, with faculty hiring coordinated among the generally small academic departments, cross-disciplinary programs allow focused growth in the departments. For example, economics and government are the major part of the Public Policy program. Opening the interdisciplinary degree allows for hiring professors in either department with an emphasis on public policy expertise.

Multidisciplinary programs aren't the wave of the future everywhere, Lutzer conceded. But the College's size and high aca-

As William and Mary moves into its fourth century, it is finding new ways to augment and complement the excellence of its established departments. As in the days of Jefferson, changes are in the works that will build on the traditional disciplines to create curricula for the future.



"We are a small university—we can't do it all," says David Lutzer, dean of the faculty of arts and sciences. "But we can do a few things well."

demical standards make these new curricula both feasible and advisable. "There are exciting things happening in each of these umbrella fields," he said.

On an undergraduate level, American Studies has long been offered as one of several interdisciplinary majors, which have been gathered with the Honors program under the administration of the Roy R. Charles Center for Honors and Interdisciplinary Studies.

The Interdisciplinary Studies major can be a catch-all category, noted Charles Center Director Joel Schwartz, as students can follow a somewhat narrowly proscribed course of study as environmental science or comparative literature, or work up his or her own concentration with the help of a faculty advisor. Some programs have grown so much—such as American Studies, International Studies and Public Policy Studies—that they have taken on a life of their own. "We are the centrifuge out of which these others have spun," Schwartz commented.

The Charles Center (funded by a major gift from a Class of 1932 alumnus) is the center for undergraduate program development, not just interdisciplinary programs, he said. The Center administers the Presidential Scholars program, national fellowship programs such as the Fulbright and Rhodes scholarships, and the freshman and sophomore honors courses. It sponsors a visiting journalist each spring, and supports other visiting speakers and programs. Lutzer summarized the Center's function: "The Charles Center is a place where wonderful and interesting things happen."

Schwartz, who has been director at the Center for two years, pointed out that interdisciplinary studies have been a part of William and Mary's curriculum for at least 25 years. What's new now are the attention and resources being devoted to the concept. "People have come to realize that it's not an either/or battle. Department boundaries are not being destroyed here. Interdisciplinary programs are not challenging or supplanting traditional ones. They augment rather than challenge the power of departments," he explained.

Moreover, Schwartz echoed Lutzer when he pointed out that multidisciplinary studies have faculty development as well as curriculum development goals. Thus, a successful program in, say, Women's Studies brings in money for the participating departments (history, English, sociology, anthropology—the list can encompass a large part of the campus for any given interdisciplinary program) to engage in more research. At William and Mary, where there is a strong tradition of balanced emphasis on research and teaching, there is a greater likelihood of putting energy into such pro-

grams. And the College's size makes the mechanics of the exchange of faculty ideas simpler, Schwartz pointed out.

Some of the programs seem as though they couldn't be built anywhere but at William and Mary. Take American Studies and the Commonwealth Center for the Study of American Culture, for example. The College's environment and tradition of creating and documenting American history and culture make it uniquely qualified to establish a formal degree program as well as a national resource center devoted to the study of all aspects of the New World. As Lutzer commented, "This is a laboratory of American history and culture."

According to Robert A. Gross, director of the American Studies Program, it is one of the few American Studies departments in the South, and the broadest he knows of. Its goal is to produce scholars of American life on a wide spectrum. Beyond that, it has one other aim that is in keeping with the College's

Interdisciplinary studies have been a part of William and Mary's curriculum for at least 25 years. What's new now are the attention and resources being devoted to the concept.

tradition: "We want to turn out self-critical thinkers," he said.

Gross noted that the department is building on an important and ongoing strength of its faculty of Americanists across the board. With five core professors holding joint appointments in American Studies and another department, the program draws on faculty from music, fine arts, theatre, anthropology, English, religion, philosophy, history and government departments. American Studies already confers graduate degrees at the master's and doctoral levels, and has approval to begin its bachelor's degree program next year. The strategy, Gross pointed out, is to build a first-rate foundation at the graduate level, on which an excellent undergraduate program can be built. There is a structured curriculum built upon a sequence of required seminars; each student then chooses an area of specialization from such offerings as Southern Studies, Women's Studies, Material Culture, and Human Ecology and Urban Studies.

Gross, who came to William and Mary this year from Amherst College to chair the department, is a prize-winning historian who



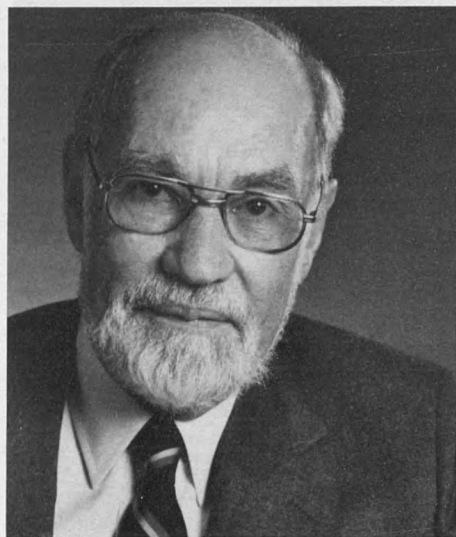
Under the direction of James A. Bill, a distinguished scholar of Middle East society and politics and one of the nation's foremost experts on Iran, the Reeves Center puts a special emphasis on education, faculty teaching and research and community outreach.

views his position as director in a newly created interdisciplinary program as exhilarating. "It's a very exciting opportunity," he enthused. "It's not often that you get the opportunity to work with a new program, to reinvent your field."

Working closely with, yet still independent of, the American Studies Department is the Commonwealth Center for the Study of American Culture. CCSAC is one of seven "centers of excellence" mandated by the General Assembly and funded by the State Council of Higher Education at state universities. Five of the seven centers are devoted to high technology research, in the hope of drawing new corporate interests to Virginia. But, the Council recognized that there was also a need for research in the humanities, to enhance the state's intellectual resources. And the Commonwealth Center is a prime example of building on what already exists to make it better.

Thad W. Tate retired from the directorship of the prestigious Institute of Early American History and Culture earlier this year to become director of the new center. Its purpose is to create a national resource center for the study of all aspects of American life. In large part, says associate director Chandos Brown, while the Center does support some colonial era scholarship, its main focus is on 19th-century America, and could be said to pick up where the work of the IEAHC leaves off.

The Center and the American Studies program, Brown emphasized, are mutually reinforcing. CCSAC's goal is to encourage scholarship in such areas as ethnohistory,



Thad W. Tate retired from the directorship of the prestigious Institute of Early American History and Culture earlier this year to become director of the new Commonwealth Center for the Study of American Culture.

Some of the interdisciplinary programs seem as though they couldn't be built anywhere but at William and Mary.

gender studies and history of science, technology and medicine. The Center directs its own program of research, fellowships, conferences and seminars, publication and teaching. Conferences center on problems in contemporary cultural studies, such as an early 1990 program on three centuries of black experience in America.

CCSAC supports postdoctoral and senior fellows, who participate in its seminars and conferences, and can offer special classes, lectures or seminars to students. In this way, Brown pointed out, the two entities, American Studies and CCSAC, form a symbiotic relationship, as American Studies contributes to the intellectual climate within which the fellowship program can flourish, and the fellowship program contributes to the high quality of American Studies. In a sense, Brown added, it is another aspect of the cross-disciplinary approach, "creating a very broad cover to encourage new ways of looking at New World culture."

The International Studies program was once part of the Charles Center's responsi-

bility, but is now operating under the aegis of the newly endowed Wendy and Emery Reves Center for International Studies. Under the direction of James A. Bill, a distinguished scholar of Middle East society and politics and one of the nation's foremost experts on Iran, the Reves Center puts a special emphasis on education, faculty teaching and research and community outreach. Promoting inter-regional and intercultural programs, and focusing on problems and issues that transcend specific regions or disciplines, it emphasizes an interdisciplinary approach to examining these problems, and encourages students and scholars to cross the intracollege boundaries, promoting cooperation among the schools of education, law and business. The Reves Center draws on the unique intellectual resources available in its environment—state and national capitals close by filled with policy-makers; a burgeoning military-industrial complex involved with international affairs; and an ever-increasing population of retired diplomats, officers and business leaders who have expertise in all aspects of international relations—to support its teaching and research activities. The Center in turn sponsors programs that take the results of its research and studies back into the local schools and community in the form of seminars, conferences and lectures. It's a complex and intricate design—and an ambitious one; not unlike the patterns of a Persian rug. Or the workings of international policy-making itself.

"What we try to do is to do cross-cultural, inter-regional work where we pull together these regions and study common problems and common issues," Bill explained. "The

same kinds of issues, for example, are religion and politics or terrorism or issues that transcend national boundaries and even regions. What the international study center does is pull together all these regions and study common problems through the lens of the various regions."

Bill believes that the College's commitment to the study of foreign language is one of the important building blocks for a first-class international studies program. The course of study is structured around core and capstone classes: courses that set out basic issues or problems to be studied, preparing students for further inquiry; and then wrap-up courses that help them tie together their individual studies. The Reves Center's program is unusual in the world of international studies in that there is no graduate program attached. This, however, is in keeping with William and Mary's historical commitment to undergraduate education.

The Center has taken under its wing several international activities already established at the College. It coordinates the undergraduate interdisciplinary concentration in International Studies, and supervises study-abroad programs. It is also active in attracting foreign students to William and Mary via exchange programs and for full-time matriculation.

Like International Studies, Public Policy Studies began as part of the Interdisciplinary Studies offering, but is in the process of standing on its own academic feet. The establishment of a formal program is a natural outgrowth of work and research already in place. Under the direction of David H. Finifter, associate professor of economics, the program will include a redesigned



The new Public Policy Program brings to William and Mary nationally prominent speakers such as political experts Mark Shields and John Sears for conferences on contemporary issues.

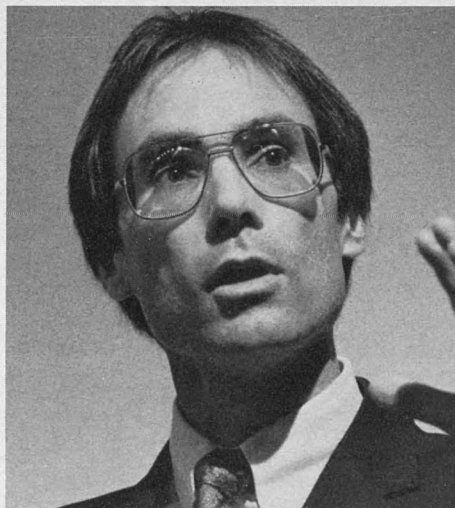


undergraduate curriculum as well as a new master's program in public policy analysis. The latter will be unique in Virginia, and will join a small number of distinguished universities, such as Harvard, Princeton and Duke, offering this degree. Using the expertise of faculty from several departments in the Arts and Sciences, the program will also draw on the schools of business administration and law.

The program got off to a strong start this year with the filling of two key professorships: Paul Whiteley of the University of Arizona has accepted the Pamela Harriman Chair of Government and Public Policy, and Donald Campbell of the University of Toronto has taken the CSX Chair of Economics and Public Policy.

In addition to administering the graduate and undergraduate curricula, the program supervises the Washington Program, through which undergraduates from several departments spend two days in Washington, D.C., meeting with government officials, lobbyists and the press in order to discuss issues related to the Federal Government. Recent visits to the nation's capital have centered on such issues as the management of presidential campaigns, regulatory reform and financial markets, and trade relations between the United States and its Pacific rim allies. It also sponsors lecture series and conferences, which have ranged from examining health care policy to questioning the method of picking the President.

While perhaps narrower in focus than other umbrella programs, the establishment of a graduate program in applied sciences is in the tradition of cross-disciplinary scholarship of William and Mary. The College has conferred a master of science degree in the field since 1970, and a Ph.D. program beginning in fall of 1991 has been approved. As with American Studies—albeit with dif-



Robert Gross (top) came to William and Mary from Amherst to work with the American Studies Program. **Joel Schwartz (above)** has been director of the Charles Center for the past two years.

ferent specifics—it is no accident that such a program has developed here. The location of NASA-Langley and the Continuous Electron Beam Accelerator Facility (CEBAF) in nearby Hampton and Newport News, respectively, contributes to an environment that both needs and supports the scholarship in the field. There is also a large and growing high tech business community that has a strong interest in this research.

A search for a permanent director for the program is under way. Meanwhile, interim Director Robert A. Orwoll, professor of chemistry, noted that the focus of the program is on materials science: polymeric materials, quantitative materials characterization, accelerator science and surface science. The departments affected are mainly chemistry, physics, mathematics and computer science. While primarily a graduate offering, there will be opportunities for ad-

From American culture to applied science, the College is drawing upon its traditions of academic excellence to build a vital curriculum for the future. The establishment serves innovation, which is only fitting for a university entering its fourth century.

vanced seniors to take some of the courses, he said.

Also in the area of the sciences, the College has received a grant from the Howard Hughes Foundation to the chemistry and biology departments to build an undergraduate program in molecular biology and biochemistry. Restricted to these two disciplines, the grant will nonetheless build a bridge between them that will help both grow, according to Lutzer. Ultimately, the cooperation between the two may expand to include other sciences.

Another umbrella program sponsored at the College is the Institute of Bill of Rights Law of the Marshall-Wythe School of Law. Its mission is to link legal scholarship, interdisciplinary studies, journalism and public education to foster public understanding of the Constitution and Bill of Rights. Directed by James Gould Cutler Professor of Constitutional Law Rodney Smolla, who considers himself a humanities scholar as well as a lawyer and law professor, the Institute takes a multidisciplinary approach to the study and discussion of the prime documents of American law. It works with other departments and programs, such as the Commonwealth Center and Public Policy Studies program, to examine issues and conduct research on cross-disciplinary subjects relating to the cornerstones of the American legal system.

These programs represent the vigor of William and Mary's approach to a liberal arts education. From American culture to applied science, the College is drawing upon its traditions of academic excellence to build a vital curriculum for the future. The establishment serves innovation, which is only fitting for a university entering its fourth century.



A friendly, scholarly, modest man, President Pomfret, who served as William and Mary's president from 1942 to 1951, got along well with students, faculty, administrators and alumni and could inspire them all to work together for a common cause. Above, he presents Alumni Medallions to Dr. Hudnell Ware and Dr. H. M. Stryker at Homecoming in 1950.

John Edwin Pomfret— The Progressive President

By Susan H. Godson '53

John Edwin Pomfret was president of the College of William and Mary from 1942 until 1951 — an era dominated by World War II, the veterans' wave, and finally the athletic scandal. Such major events have obscured Pomfret's progressive contributions to the College and have left the man himself in the shadows.

Born on Sept. 21, 1898, in Philadelphia, Pomfret was the son of an English father, who was an engraver, and an Irish mother. He received his B.A., M.A. and Ph.D. degrees from the University of Pennsylvania. After teaching a year at the University of South Carolina, he became an instructor in history at Princeton and rapidly rose to associate professor and assistant dean. In 1937 he moved to Vanderbilt as dean of the Senior College and Graduate School, director of the Institute of Research and Training of the Social Sciences, and managing editor of the Vanderbilt University Press. Under his guidance, the

fledgling graduate school began to blossom, and the university's publishing program grew. During these years, Pomfret also established himself as a colonial historian and published two major books and numerous articles in learned journals.

As his scholarly and administrative attainments grew, so did his reputation for tact and kindness. A friendly, modest man, he got along well with students, faculty and administrators and could inspire them all to work together for a common cause.

To the special committee of William and Mary's Board of Visitors conducting a search for a new president to replace retiring John Stewart Bryan, he seemed the ideal choice. Here was an administrator as well as a scholar who could improve the College's academic reputation. In spite of being the first non-Virginian ever selected, Pomfret satisfied nearly everyone. He even looked presidential.

Soon after he arrived in Williamsburg in September 1942, Pomfret announced his vision for transform-

ing William and Mary into a first-rate liberal arts college. An outstanding faculty, renown in selected research fields, better qualified students attracted by financial aid, and campus improvements would create "an environment of learning" and raise the College's academic status. If he could carry out his program, he wrote, "we shall in a brief span reach the top level among the colleges and universities. This is where William and Mary, with its great tradition, belongs."

Before Pomfret could begin, he had to take steps to restore the College's accreditation, lost in 1941 because of irregularities at the school's Norfolk Division. He quickly made changes at Norfolk that met the Association of American Universities' requirements for its list of accredited colleges.

With accreditation restored, Pomfret faced another immediate problem: maintaining enrollment as World War II drew male students into the U.S. Armed Forces. In its long history, the College had survived many wars — the Revolution, the Civil War and World War I — and once again its existence depended on attracting enough students to keep it open. Enrollment plummeted from 1,489 in the fall of 1942 to 960 a year later.

To fill the emptying campus, Pomfret encouraged admitting more women, and by 1944 they composed 73 percent of the student body. The few male students were boys under 18 years old, 4-Fs, and conscientious objectors. Pomfret turned to the military to utilize college facilities. The Naval Chaplains School with several hundred men opened in March 1943, and a few months later an Army Specialized Training Unit began with almost 500 trainees. The College remained in full operation.

When the war ended in September 1945, the College faced the reverse of the wartime dearth of male students. Military veterans, taking advantage of the subsidized education provided by the G.I. Bill of Rights, pushed William and Mary's enrollment to 2,047 by the fall of 1948. Pomfret oversaw the College's resourceful provision of educational programs and living accommodations for the veterans and rejoiced that qualified students received a liberal arts education regardless of their financial backgrounds.

Concurrently, the president revived his plans to raise the College to a higher academic plane. There was no reason that William and Mary could not be a first-class college, he wrote. "This is the challenge that binds me to the old College of William and Mary."

His first step was to draw and keep an excellent faculty. A teacher himself, Pomfret empathized with faculty problems and used his own experience as a springboard for improvements. During his administration, salaries for full professors, for example, rose

from an average of \$3,530 to \$5,700; and benefits increased proportionately. In 1943 he inaugurated the new rank of Chancellor Professor, which gave recognition and monetary rewards to the College's outstanding teachers; and he encouraged a moderate amount of faculty research, using College and grant funds.

Pomfret had a comfortable relationship with his faculty members — he spoke their language, attended their meetings, and was accessible to them. Contemporaries remem-

When the war ended in September 1945, the College faced the reverse of the wartime dearth of male students. Military veterans, taking advantage of the subsidized education provided by the G.I. Bill of Rights, pushed William and Mary's enrollment to 2,047 by the fall of 1948.

bered him fondly as "a scholar and a nice guy to work with," "easygoing and trustful," and "a man of genuine integrity." As a result of Pomfret's efforts, William and Mary kept most of its capable teachers and attracted well-qualified new ones. During the postwar era the number of faculty with earned doctorates rose from less than 41 percent to nearly 49 percent. Simultaneously, a sense of pride and accomplishment grew among them because William and Mary was well on its way to becoming a leading liberal arts college.

As the faculty improved, Pomfret sought ways to attract better students, and foremost was defraying educational expenses. The work-study program, begun during the war, offered part-time jobs at the College and in Williamsburg to needy students. More and more full and partial scholarships became available.

Another attraction was the fraternity system, revived after its wartime suspension. Pomfret led the drive to build fraternity lodges as places for student socialization. William and Mary's powerful athletic teams drew still other students. The football, bas-

ketball and tennis teams chalked up impressive records and basked in the national spotlight. The athletic successes provided a rallying point for school spirit and pride.

Earlier, Pomfret had hoped to add new dormitories, classroom buildings and a library, but postwar construction costs curtailed any major capital improvements. Instead, redecoration of existing buildings, more landscaping, new roads and sidewalks, and better athletic fields spruced up the campus.

The administration's efforts bore fruit. In the immediate postwar era, test scores of entering students remained stable. But by 1949 Dean of Students and Registrar J. Wilfred Lambert '27 happily reported that the freshman class was "the best yet." Many William and Mary graduates went on to advanced study in Ivy League universities — additional evidence of the capabilities of the College's students.

Another requisite for drawing competent students and faculty was a good library. Although a new building to relieve the overcrowding of the old library did not materialize, the library's holdings increased dramatically. Pleased with the growing number of books and manuscripts, Pomfret boasted that William and Mary's library stood eighth among southern colleges.

In still another move to raise the College's scholastic level, Pomfret, with faculty concurrence, tightened the curriculum. Basic distribution and graduation requirements remained the same; but non-academic subjects, such as home economics, library science, secretarial science and women's physical education, soon ended as majors, though most remained as electives. At the same time the College established an interdisciplinary taxation program leading to a master's degree in taxation, and it also began offering a master's degree in education to train administrators and counselors for Virginia's public schools. One new department, Military Science and Tactics, was added.

Any college must be run on a solid financial basis, believed Pomfret. He was so opposed to debt that he laughingly told the faculty that he wanted "He got rid of the debt!" inscribed on his tombstone. By careful budgetary restraints and by avoiding new building and educational projects, he reduced the College's debt from \$690,000 to \$159,000. Pomfret was also an effective fund raiser. Under his administration, donations exceeded \$100,000 a year (about \$500,000 in today's dollars), and the College's endowment rose from \$1.3 million to \$2.1 million.

Ever the scholar, Pomfret advocated using faculty expertise for appropriate research. The Virginia Fisheries Laboratory (forerunner of VIMS), established in 1940 by Wil-

liam and Mary and the Virginia Commission of Fisheries, operated a primitive laboratory at Yorktown. After the war, biology professor Nelson Marshall busily directed the Fisheries' growing studies of Tidewater marine biology to help encourage conservation and commercial production of Virginia's plentiful fish resources. In 1950 a new, modern laboratory at Gloucester Point enabled the Fisheries to expand its research and educational programs.

Another avenue for utilizing the College's research capabilities was an interdisciplinary study of the war's economic, political and social impact on the entire Peninsula. Directed by business administration professor Charles F. Marsh, the Hampton Roads-Peninsula War Studies Committee spent the postwar years evaluating the war's effects on the area and then published its study, *The Hampton Roads Communities in World War II*.

Colonial history was Pomfret's great love, and he felt that the historic college located in Colonial Williamsburg was a natural center for early American studies. One of his first actions as president was to revamp the *William and Mary Quarterly*. He changed its emphasis from the narrow field of Virginia history and genealogy to a broad sweep of U.S. history from 1492 to 1815 and subtitled it *A Magazine of Early American History, Institutions, and Culture*. The new *Quarterly* appeared in 1944 under the editorship of history professor Richard L. Morton and

quickly became a leading scholarly journal of national importance.

At the same time Pomfret thought of another way for the College to gain preeminence as a center for colonial history. "Why not join forces with Colonial Williamsburg?" he mused and immediately approached its president Kenneth Chorley with his idea. In December 1943 representatives of the two organizations met in New York City, and the Institute of Early American History and Culture (IEAHC) was born. Its first project was to assume publication of the *Quarterly*. After the war, noted colonial historian Carl Bridenbaugh became director, and IEAHC's reputation as an outstanding historical center spread. The Institute remains a lasting tribute to the scholarly president's vision and tenacity.

On the state level Pomfret expanded the College's influence by bringing it into the Richmond Area University Center movement. Nine Virginia colleges and universities pooled their resources and launched a program of sponsoring noted speakers and scholars, hosting professional conferences, and providing grants-in-aid.

While Pomfret worked at raising William and Mary's academic status, he found time to pursue his own historical research. During his presidential years he published numerous articles and contributed chapters to several books — an unusual feat for a busy administrator. Recognition of his achieve-

ments mounted. Nationally, he was a senator of the United Chapters of Phi Beta Kappa for 12 years, then became its vice president in 1949. Regionally, he served as president of the 46-college Southern University Conference.

Among Pomfret's many assets was his wife Sara, a charming native of South Carolina whom he had married in 1926. Vivacious and warm, she graciously took part in the endless social activities expected of the president's wife. The Pomfrets had one son, John Dana. Pomfret delighted in his family and often wrote glowingly about it in his voluminous correspondence.

Pomfret's interests expanded beyond his family and the College community. Known for his wit and friendliness, he maintained close relationships with civic and business leaders in Williamsburg, attended Bruton Parish Episcopal Church, and became an integral part of life in the small town.

It seemed as though this idyllic scenario might last forever; but, just as Pomfret had firmly gotten William and Mary on a solid upward path, his world and the College's fortunes crumbled. Although Pomfret had always advocated a modest athletic program that was secondary to academics, the Board of Visitors emphatically demanded winning teams. Athletic Association director and head football coach Reuben N. McCray and head of the physical education



President Pomfret served during an era dominated by World War II and the veterans' wave on campus. Above, he salutes Naval officers at the Naval Chaplains School, including (l-r) Capt. H.A. McClure, Capt. T.R. Cooley, Capt. N.S. Salisburg and Capt. Clinton Neyman.

department and head basketball coach Bernard E. Wilson responded by fielding bowl-winning football teams, Southern-conference-winning basketball and baseball teams, and nationally acclaimed tennis teams. These were spectacular accomplishments for a college with only about 1,000 male students. Many wondered how the coaches were so successful.

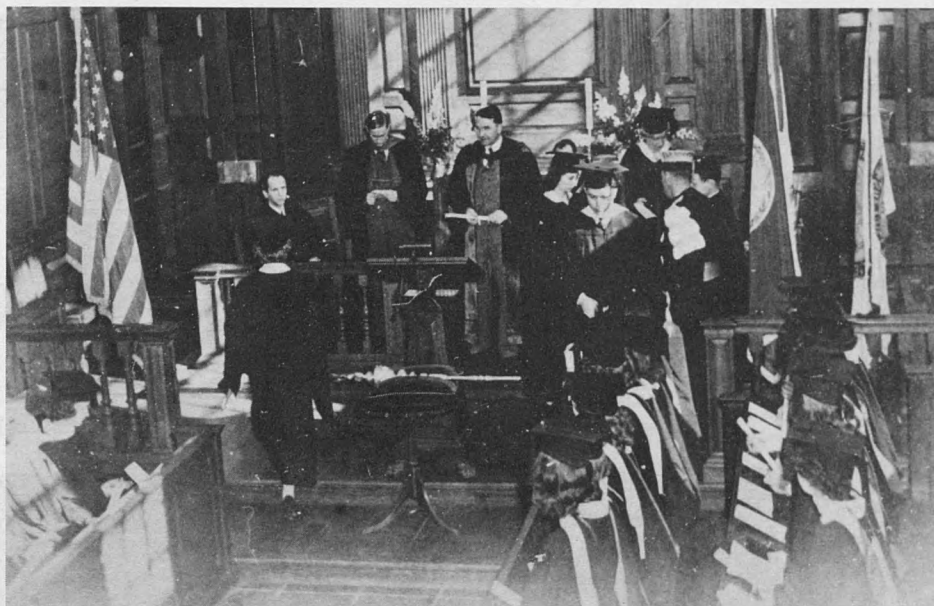
In the fall of 1949 the secrets of the College's athletic successes began unraveling when Dean Lambert discovered falsified high school transcripts of athletes submitted by the Athletic Association. By June 1951 Dean of the College Nelson Marshall had uncovered a string of flagrant malpractices such as scholarship preferences for athletes, unearned credits given in physical education, grade altering and influencing, inflated work hours for athletes, and kickbacks paid to the head of the physical education department.

During the chaotic summer months, Pomfret, who found it difficult to believe that anyone could betray him or the College, confronted the two coaches, and the faculty began an investigation of the situation. The newspapers incessantly speculated about the College's athletic turmoil. After McCray and Wilson unexpectedly resigned on Aug. 10, the Board of Visitors launched its own inquiry. When it met again on Sept. 8, it squarely blamed Pomfret for the results of its own demand for winning teams. The whole matter "could and should have been handled with dispatch by the administrative officers of the College," it piously intoned.

While the athletic crisis developed, Pomfret himself had been looking for another job. For months he had been trying to obtain the directorship of the prestigious Huntington Library in San Marino, Calif. After the Board of Visitors met on Sept. 8 and blamed him for the athletic scandal, he went to the Library for a series of interviews. On the 12th the Huntington trustees informally told Pomfret that he had the position. He flew back to Williamsburg and decided to bear full responsibility for the athletic crisis. He resigned on the 13th because he did not "possess the confidence of the full membership of the Board of Visitors." He did not mention the new job.

Pomfret had been caught in an impossible, no-win situation. He could not condone the unethical athletic practices, but if he had summarily fired the two popular coaches when the dimensions of the scandal became apparent, he would have incurred the wrath of the pro-athletic Board of Visitors and also have brought unfavorable publicity to the College. He wisely decided to go elsewhere.

After Pomfret left William and Mary, he



Above, Dr. Pomfret presents diplomas at Commencement in 1943 while right, in one of his last visits to campus, he and Mrs. Pomfret visit with President and Mrs. Thomas A. Graves Jr.



Photos courtesy of College Archives

must have held bittersweet memories of the college that he had transformed from mediocrity into a rising star in the academic field. Tragically, his presidency ended in vicious controversy caused by a few overly ambitious men. Pomfret returned to Williamsburg only for several IEAHC council meetings and in 1966 the program was dedicated to him as the founding father.

Pomfret became director of the Huntington Library in November 1951, and served ably for 15 years. Under his guidance, the Huntington attracted gifted researchers and scholars; enlarged its massive collections of manuscripts, books and art work; became a major depository for colonial records; and stepped up its publishing program. One researcher remembered the warmth and friendliness of the place — an atmosphere generated by the self-effacing, amiable director.

At that "paradise for scholars," Pomfret hit his full stride as an eminent historian, specializing in colonial New Jersey history. He published six major books, including volumes on the East and West New Jersey

provinces that still remain cornerstones of colonial historiography. He was influential in reviving national interest and scholarship in the colonial era. After he retired, his writing continued, and, among other works, he published a history of the Huntington Library and Art Gallery.

The Pomfrets remained in California for 10 years, then returned to Mrs. Pomfret's hometown of Columbia, S.C. They finally moved to Camden, where John Pomfret died on Nov. 26, 1981, at the age of 83. Pomfret's long life and career had reflected the diversified talents of an exemplary scholar-president. He was, perhaps, one of the last of his kind.

Susan Godson '53 is one of five authors preparing a history of the College of William and Mary to be published in 1993 in conjunction with the 300th anniversary of the founding of the College. The accompanying article is based on research developed in preparing the book.

Winning Big, Losing Big

By John R. Thelin and Lawrence L. Wiseman



In 1951 the president of the University of Oklahoma went to his state legislature to ask for increased appropriations, with the bold claim, "I would like to build a university of which the football team can be proud." This was a tough assignment — and for all we know, still remains unfinished. But in 1989 the challenge is reversed, the University of Oklahoma and many other American universities face the question, "Can we build a football team of which our university can be proud?"

Winning teams are hardly the sole answer. In fact, all too often the price a university pays to achieve national championship teams has been expensive, both in terms of financial costs and in the important domain of institutional integrity and educational priorities. The University of Oklahoma certainly has been successful in varsity football (and, in more recent years in basketball, too). But such triumphs coexist with a record of public disgrace: varsity athletes convicted of felonies, gun play and drug dealing in the athletic dormitories, exposés of "slush funds" from boosters and alumni, and low graduation rates for student-athletes. And, from time to time, abuses are sufficiently documented that the National Collegiate Athletic Association (NCAA) has placed universities on probation. The University of Oklahoma, for example, is on probation right now.

The result is that today "Scandal" stands out as the dominant theme the American public associates with journalistic coverage of intercollegiate athletics. Nor is the University of Oklahoma alone in its excesses. In the past five years such institutions as North Carolina State University, Southern Methodist University, Tulane, the University of Kentucky, the University of Minnesota, Virginia Polytechnic Institute and State University, University of San Francisco, the University of Georgia and the University of Illinois have all had the dubious distinction of being associated with substantial abuses in their intercollegiate athletic programs. The message is that for a university opting for big time intercollegiate sports, the Hall of Fame often is not far from the Hall of Shame.

Paying the Price

How have our colleges and universities today managed to get into these compromising situations? One answer is that the temptations of over-emphasis are part of our national heritage from which relatively few colleges have been immune. Even William and Mary has fit this historic pattern. Its "golden age" of college sports in the late 1940s and early 1950s was prelude to national notoriety for its own football scandals. Perhaps the best explanation is that our colleges and universities today are heirs

to a legacy of varsity sports and American boosterism in which institutional glory is linked to state and regional pride.

This includes the lore from one southwestern state where a winning football coach at a major public university was advised he ought to run for governor. He rejected the suggestion on the grounds that to change jobs would cause him to lose both pay and prestige! And who could blame his reluctance to move? His colleague, the football coach at Texas A&M, earned more than the president of the university!

Moving to the Southeast, Louisiana's history provides a good illustration of the peculiar pursuit of glory. Foremost is the case of Huey Long, the governor of Louisiana in the 1930s who made varsity athletics at Louisiana State University central to his

The finances of "big-time" intercollegiate athletics indicate that most budgets show signs of precarious fiscal fitness. Over the past decade there has been an alarming syndrome: a rich-get-richer pattern, with an increasing number of major programs showing annual deficits.

master plan for state pride. Governor Long wrote LSU's varsity fight song, "Tiger Rag," and even led the marching band at the half-time ceremonies at LSU football games. When LSU played far from Baton Rouge, Governor Long convinced railroads to reduce train fares to nominal amounts so that literally tens of thousands of LSU students and alumni could follow the team to Nashville, Birmingham and Knoxville.

A half century later, what is the legacy of Huey Long's strategy to build state pride and achievement via winning state university teams? Does it follow that such college sports boosterism led to educational greatness? In the case of Louisiana, the results are mixed, with some pivotal episodes suggesting that varsity sports often become an end in themselves. For example, in the mid-1940s a budget crunch at the university meant LSU officials had to decide between continuing financial support for an eminent scholarly journal, *The Southern Review*, or buying fresh meat for the Bengal tiger, the football team's mascot. As historian

Allen Guttman has noted, it was an easy choice: the tiger got his meat, and the university abandoned the literary journal.

In recent years LSU football has been near the top of the Southeastern Conference standings. But at the same time, national test score data published in 1988 showed that students in Louisiana's public schools edged out their counterparts in Mississippi for the dubious distinction of having the *lowest* mathematics scores of all states in the nation! These incidents offer scant support for the notion of diffusion and trickle down from winning teams to educational excellence.

Economics of College Sports

Most college and university presidents subscribe to the adage, "Keep the college sports news *on* the sports page but *off* the front page!" Certainly the American public has become fascinated with the recent college sports scandals, as suggested by such recent best-selling books as Peter Golenblock's *Personal Fouls*, Rick Telander's *The Hundred Yard Lie* or Richard Lapchick and John Slaughter's *The Rules of the Game*. However, preoccupation with scandals can be tiresome and misleading because it tends to obscure a less spectacular but equally important concern: what is the health of intercollegiate sports as shown in standard operating procedures and policies — apart from the "bad news" of scandals?

This is the question that shaped our book, *The Old College Try: Balancing Academics and Athletics in Higher Education*. Our perspective is that of concerned faculty members who have been active, respectively, as chairman and member of William and Mary's athletic policy advisory committee — and as former student-athletes who believe varsity sports can and ought to be integral to liberal education. We looked at athletic policy as part of educational mission, philosophy and decision-making structure. Our premise was that academic leaders can no longer afford to ignore the proposition that the standard procedures and policies of intercollegiate athletics often are in conflict with sound institutional planning. The most dangerous game today in college sports is the financial strategy that leaves even big-time athletic programs over-extended and fragile. Along with lack of financial control, many varsity sports programs have only marginal connection to educational accountability.

The finances of "big-time" intercollegiate athletics indicate that most budgets show signs of precarious fiscal fitness. Over the past decade there has been an alarming syndrome: a rich-get-richer pattern, with an increasing number of major programs showing annual deficits. Despite large crowds and widespread media coverage, few varsity sports programs are self-supporting because

rising expenses continually jump ahead of revenues. For example, among the 64-member College Football Association (a group of the nation's biggest university football programs), one estimate is that over 40 percent of the intercollegiate athletic programs at these institutions are losing money. Last year the University of Michigan issued a press release announcing its projection for an annual deficit of over \$2 million!

The financial picture becomes gloomier when one finds that athletic directors and coaches have tended to vote against reforms that would contain costs — often in opposition to the recommendations of university presidents! Television revenues, an alleged savior, assist only a relatively small number of institutions — and show few signs of increased net revenues in coming years. What this suggests is that most intercollegiate athletics programs — *even among the major sports at many major universities* — are not “run like a business.” Rather, most are highly *subsidized* activities whose highly commercial character fails to remove the fact that revenues often are surpassed by their expenses. Varsity sports programs that show deficits look to private donations and/or mandatory student fees as strategies for balancing budgets. This usually includes the mechanism of specially incorporated athletic foundations or associations — entities that tend to drift from academic accountability within the university structure.

Such practices led our analysis from institutional finances to the domain of public policy. Our key finding was that some standard procedures of big-time college sports programs may jeopardize many privileges and exemptions that colleges traditionally enjoy as non-profit educational organizations. Sports programs managed as admittedly commercial enterprises tend to have government agencies look at athletic foundations more as entertainment than as education. If this scrutiny intensifies, athletic foundations may have to forfeit such traditional perks as local property tax exemptions. Second, the Internal Revenue Service probably will apply with increasing vigilance tests as to whether the athletic foundations' activities and expenses qualify for exemption from federal income taxes. And, donors will be less likely to claim tax deductions for donations to varsity athletic programs that have little demonstrable connection to the university's educational mission.

Why Resist Reform?

Given these economic and policy problems, why do intercollegiate athletics programs resist academic reform? There is unanimous agreement that the key reform figure is the college and university president. Yet making decisive changes in athletics policy is not easy for a president who

must contend with external pressure, the high visibility of college sports, and the difficulties of a single institution working in isolation. There is a high burn-out rate among those presidents who take a stand as national leaders in the campaign to contain college sports costs and abuses. Above all, a president must work within the boundaries of a college's sports heritage and identity. Justification for big-time sports programs includes the claim that college sports bring publicity and donations that benefit the *entire* institution — leading to spirited debates among social and political scientists who have attempted to systematically test such claims.

Policy changes are further complicated by the fact that much of the important action and reform takes place beyond the campus. The really exciting contests in varsity sports are taking place not on the

The financial picture becomes gloomier when one finds that athletic directors and coaches have tended to vote against reforms that would contain costs — often in opposition to the recommendations of university presidents!

playing fields but in the courts, the college boardrooms, congressional hearings, at NCAA conventions, in presidents' offices, and at the television network headquarters. Significant athletic reform most likely will not come about until standards for intercollegiate athletic programs are recognized as central to institution mission — and hence subject to prominent scrutiny in regional accreditation.

Some Policy Recommendations

To achieve a proper balance between academics and athletics in higher education, colleges and universities might consider the following reforms:

- **Changes in institutional mission statement:** If intercollegiate athletics are truly central, not peripheral, to a university's functions and purposes, have this stated forthrightly.

- **Changes in regional accreditation standards:** “Intercollegiate athletics” might be appropriate as a distinct category for institutional self-study. Under current guidelines, varsity sports' size and importance often are masked because “intercollegiate athletics” is depicted as an appendage of some other university function such as “student life.” Under this reform, a college or university that failed to comply with its self-determined standard for intercollegiate sports would jeopardize the good standing and accredited status for the *entire* institution. This would prompt faculty and academic administrators to pay close attention to college sports as part of the *whole* educational program.

- **Internal Taxation:** Institutions with major athletic programs ought to consider charging overhead expenses on each dollar



The authors, John Thelin (center) and Lawrence Wiseman (right), served on a panel with William and Mary Athletic Director John Randolph '64 (left) in October that discussed the current condition of intercollegiate athletics.

of revenue or philanthropy generated by intercollegiate athletics programs. This would build in formal assurance that there is fidelity to the frequent claim that athletic fund raising is for the benefit of the entire institution.

- **Public Policy for Nonprofit Organizations:** Intercollegiate athletic programs that define themselves as a "business" and are incorporated as a foundation distinct from the formal university structure ought to be prepared to be treated by local governments, by state agencies and by the Internal Revenue Service as commercial enterprises, rather than as nonprofit educational activities.

- **Governance:** While emphasizing the real and symbolic role of the campus president in intercollegiate athletics, presidential leadership can be best shown when it is selective and discriminating in its involvement. Therefore, universities are urged to consider having the athletic director report to the appropriate vice president. For example, if a college defines its sports program as part of student life, the athletic director might report to the vice president for student affairs. At those universities where college sports are primarily *educational* in character, the athletic director would logically report to the vice president for academic affairs. Finally, if a university decides that it is the *publicity* and *external* relations that best define the role of its sports teams, then the athletic department would report to the vice president for university advancement. Similarly, a highly *commercial* intercollegiate athletics program would report to perhaps the vice president for business and finance. Such a plan would bring intercollegiate athletics into line with other campus units and would have two benefits: better use of the expertise of vice presidents while sparing the president except for the most significant *policy* issues involving college sports.

One of the most interesting developments in recent years is that a few major universities — notably, the University of Illinois and Virginia Tech — have opted to dissolve their athletic foundations. According to the chancellor of the University of Illinois at Champaign-Urbana, such reform is logical and necessary. Otherwise, the danger is that the chancellor or president forfeits control over the intercollegiate athletics program (and its host corporation) while the athletic director reports to *both* the university president and the athletic corporation board of directors. Such dual affiliations dilute presidential and academic oversight of college sports.

Conclusion

Twenty-five years ago Clark Kerr, president of the University of California, advised

new college presidents that there were three "no win" issues they ought to avoid: parking for the faculty, social life for undergraduate students and varsity football for the alumni. Today, that advice no longer works. Presidents — as well as provosts, deans and faculty — would do well to know about and work with athletic department officials to achieve the proper place for intercollegiate sports within the particular campus. A good way to think about a university's intercollegiate athletics program is that its budget (ranging from \$5 million to \$15 million) is about the same as that of a medium-sized professional school or of a large academic department. As such, it ought to be integrated into campuswide discussions and shared governance and budgeting as are other educational units.



When the choice was between funding the literary magazine and buying meat for the LSU mascot, the Bengal Tiger, guess who won?

To avoid incorporating college sports into the total fabric of campus issues and educational mission is derelict — and dangerous. In the past years several university presidents have resigned or been fired because of surfacing scandals associated with their campus's sports programs abuses. One university's application for receiving a Phi Beta Kappa charter was turned down because of gross irregularities in its treatment of student-athletes. In short, college sports are consequential.

Our recommendations are strong medicine for restoring health to intercollegiate athletics — but reform is both timely and necessary. One athletic director who thought it was curious (and perhaps inappropriate) that two professors would write about college sports asked, "How would you like for an athletic director to write about biology or history or education?" Our response is three-fold:

First, intercollegiate athletics is an appropriate topic of inquiry for all faculty — and, especially for one who serves on the



Oklahoma's president once joked he wanted a university that the football team could be proud of, but the school got more than it bargained for in the modern-day Sooners.

athletic policy committee and as faculty athletic representative to the National Collegiate Athletic Association;

Second, the study of college sports is, indeed, part of the study of higher education and social history.

Third, we searched in vain for a good study about the finances and workings of intercollegiate sports written by an athletic director.

What puzzled us as we undertook our own study was that there appeared to be a conspicuous silence from within the ranks of the National Collegiate Athletic Association and its athletic directors.

By introducing the contemporary issues of college sports to the entire campus community our common concern is less with dismantling and more with saving intercollegiate athletics. The task is important and deserves no less than "The Old College Try."

© 1989 John Thelin and Lawrence Wiseman

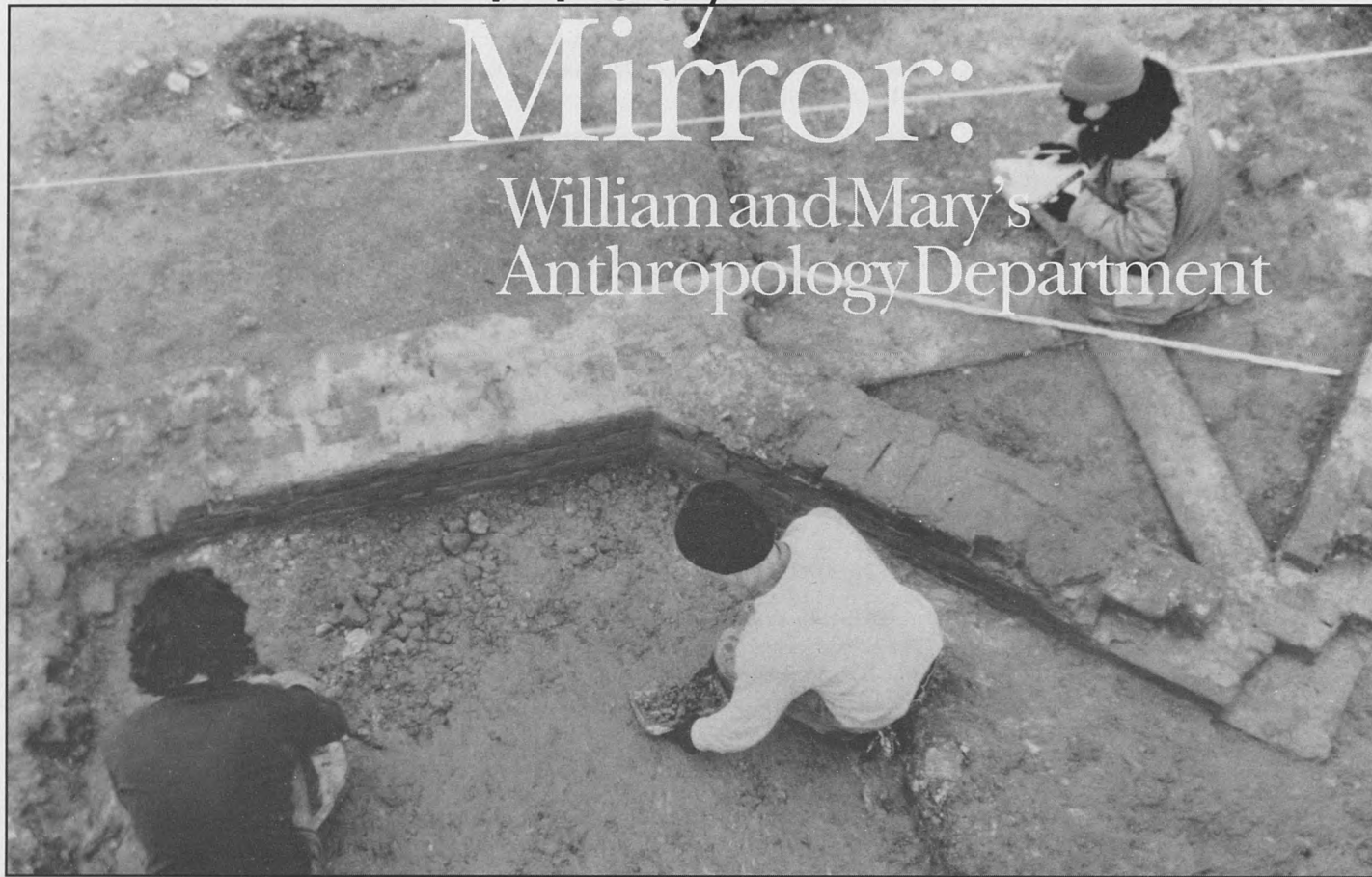
About the Authors

John R. Thelin is Chancellor Professor of Education and a member of the faculty athletic policy advisory committee. He also serves as vice president and president-elect of the Faculty Assembly. Lawrence L. Wiseman is professor and chair of the biology department. He served as chair of the Athletic Policy Committee and faculty representative to the National Collegiate Athletic Association for four years. In 1987-88 he was American Council on Education Fellow, with assignment as special assistant to the president of the University of Colorado. He is a charter member of the Faculty Assembly.

The Two Way

Mirror:

William and Mary's
Anthropology Department



By Lisa Heuvel '74

Traditionally, anthropologists go into the field to study their subjects. So there's something oddly fitting about the temporary location of anthropology offices at William and Mary.

They're not nestled in the heart of campus. Instead, faculty offices are in two houses on Prince George Street near delis, stores, sororities and tourists who wander by from Merchants Square. It's firsthand culture, tailor-made for an academic discipline, which respects the cultures of people around the world.

Founded in 1968, the Department of Anthropology was the first of its kind in Virginia. Its accomplishments since that time have been formidable, if sometimes overlooked in the College's pursuit of knowledge. There are quiet triumphs in anthropology, a kind of success based on years of observation and field work, hundreds of interviews and unbiased immersion in societies which may be radically different from anthropologists' individual backgrounds. By becoming part of the societies they study and describing what they learn, anthropologists also teach us about ourselves.

"What we've learned in the past century and a half is that we are patterned by the society we grow up in," says one of the pioneers of the department, Vinson H. Sutlive Jr., professor and acting chair.

"Anthropology by its nature is comparative. People learn to become members of society at the same rate. The acquisition of speech proceeds at about the same rate. The thought processes of all people are essentially the same, whether they're working with stone tools or computers. People also learn to differentiate between like and unlike things at about the same rate."

Anthropology has as many definitions as definers, but basically it's the study of societies in all times and places. This is done in four ways, which often overlap. Archaeology is the study of the prehistoric and historic past. Physical anthropology is the study of evolutionary processes of change. Cultural anthropology is the study of human societies and their cultures. Linguistics is the study of languages and speech.

William and Mary's Department of Anthropology was founded by cultural anthropologists, Prof. Nathan Altshuler and Prof. Carol Ballingall (now retired) and an archaeologist, Prof. Norman Barka.

From that modest beginning, anthropology has grown into one of the more popular departments on campus. Currently, approximately 45 courses are offered per year, with an average enrollment of 1,500-2,000 students per year. Virtually all disciplines are represented, particularly concentrators in biology, geology, history, sociology, philosophy, psychology and religion.

Why the wide appeal? "I can only project from my own interests," says Sutlive. "Anthropology offers a broader understanding of the human condition and a deeper insight into the human past. The birth to death dimension is fascinating to most of us."

In fact, many students have viewed their courses as a window into their world at William and Mary, doing research on aspects of student life. They've been inspired by teachers like Virginia Kerns '70, who was the 1989 recipient of the Thomas Jefferson Teaching Award, and Rita Wright, who won a coveted \$315,000, five-year MacArthur Fellowship in 1988, the first ever given to a William and Mary faculty member. (Wright has since left the department to join the faculty at New York University.)

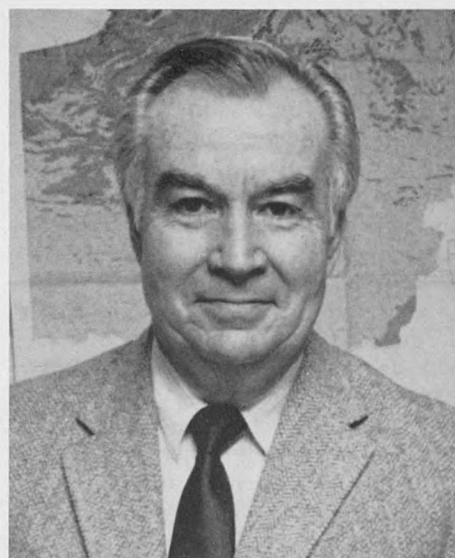
"I think we've been exceedingly fortunate in the quality of women faculty we've been able to attract," says Sutlive, "and their commitment to teaching and outstanding research projects."

In addition to their strengths as teachers, the anthropology faculty is involved on a regional, national and worldwide basis in archaeological studies.

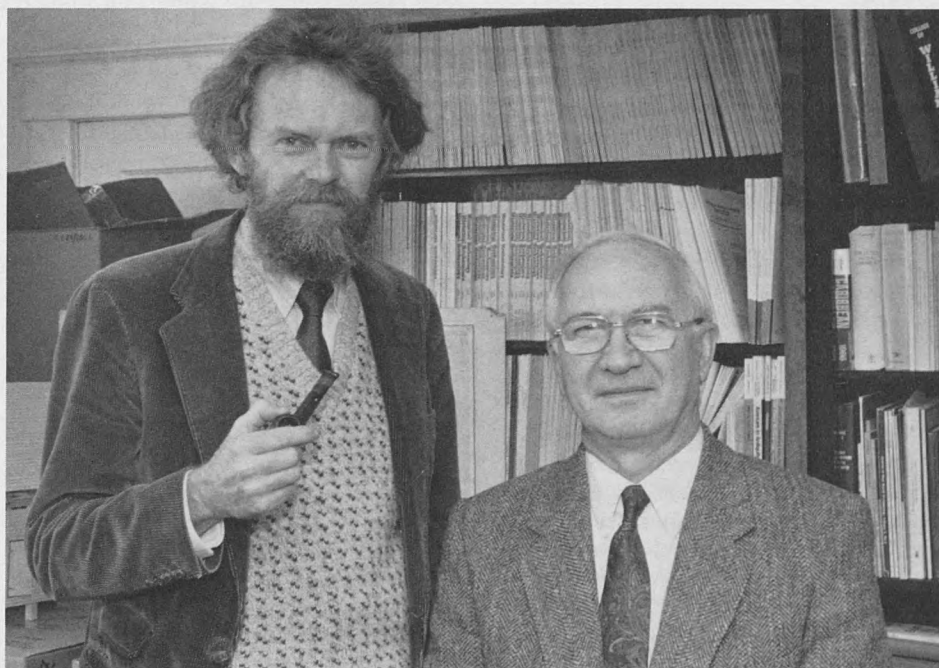
For instance, Theodore Reinhart is a former president of the Archaeological Society of Virginia and was selected as the Professional Anthropologist of the Year last year by the society.

Mario Zamora is vice president of the International Union of Anthropological and Ethnological Sciences. In addition to his teaching, research and writing, he founded and co-chairs with Sutlive the Mahatma Gandhi Lecture Series and Benigno Aquino Memorial Lecture Series. More than 7,000 professors, students, diplomats and community members have participated since

According to Sutlive, members of the faculty have conducted research and traveled in 120 countries. They have developed courses on Africa, South and Southeast Asia, East Asia, the Caribbean, South America, Mesoamerica, the Middle East and Oceania.



Dr. Sutlive



The anthropology department was founded in 1968 by Professors Barka (left), Altshuler, and Ballingall (not shown).

the series began 14 years ago.

In the past 20 years, over 350 William and Mary students have earned B.A. degrees in anthropology. Thirty-three earned M.A. degrees and more than a dozen have earned Ph.D.s from other universities such as Harvard and the University of Pennsylvania, many of whom are making their presence felt in the scholarly world.

For instance, at the 22nd Chacmool conference in Canada recently, which was on the archaeology of gender, women scholars from the United States presented 56 papers—and more in the historical archaeology session were given by women associated with William and Mary than anywhere

else. They included Linda France Stine '83, who received her Ph.D. at the University of North Carolina and is a research associate at the University of South Carolina; Linda Derry '84, who is project manager of the Old Cahawba Preservation Project for the Alabama Historical Commission; Carmen Weber '80, the Philadelphia City Archaeologist at the Philadelphia Historical Commission and a Ph.D. student at Temple University in urban history, and Anne Yentsch, archaeological director for the Morven Landscape Project in Princeton, N.J., who taught anthropology and American Studies from 1982 to 1986. Dr. Mary C. Beaudry '73, president of the Society of Historical Archaeol-

ogy, was invited but could not attend.

According to Sutlive, when he and Mario D. Zamora joined the anthropology faculty in the early 1970s as cultural anthropologists, the faculty agreed that with its limited staff and resources it could not build a comprehensive program balancing all four aspects of anthropology. Instead, historical archaeology and comparative colonial studies were chosen as strengths.

That decision laid the groundwork for the two decades to follow. Since Barka's hallmark course in historical archaeology in 1969, the department has developed the strongest master of arts program in that field in the nation.

In the department's early newspaper clippings, the name "Flowerdew Hundred" is prominent. An historical site in Prince George County, Virginia, it was the subject of archaeological and ethnohistorical re-

search by Professors Altshuler and Barka from 1972 to 1979. In 1978, Reinhart directed the department's first field school at Flowerdew Hundred. Two years later, he directed a second at Shirley Plantation.

In 1975, the William and Mary Archaeological Conservation Center was established, one of only five such centers in the East. Currently directed by Curtis Moyer, it allows students to learn techniques for stabilizing and preserving artifacts of all kinds, from bone to glass to ceramics.

In 1981, the St. Eustatius field school in archaeology and ethnography was established by Barka in the Dutch West Indies. With \$300,000 in grant and tuition monies, it has since enrolled 200 undergraduate and graduate students from 46 states. Eric O. Ayisi, a member of the department since 1980 and assistant to the provost since 1987, has been director of ethnography for the

Statia project and has been responsible for bringing West Indian students to study at William and Mary. In 1982, Barka, a former president of the Society for Historical Archaeology, became editor of the society's newsletter.

The College's proximity to Williamsburg's Historic Area has influenced the department's cooperative efforts with the Colonial Williamsburg Foundation. Each year since 1983, two graduate students have worked as interns for the foundation, sometimes basing their master's theses on research carried out there.

In 1985, Marley Brown, director of archaeological research for the Colonial Williamsburg Foundation as well as an historical archaeologist, began teaching in the department's graduate program. The same year, the historical archaeology program was further enhanced by the addition of Dr.

The Archaeological Project Center

Thanks to director Steven Spielberg and his Indiana Jones films, archaeology has gone to Hollywood.

The only trouble is, professional archaeology bears little resemblance to Jones's death-defying adventures. Contract archaeologists battle less dramatic foes: competitive bidding for government projects, land development, lack of funding and too little time to rescue a diminishing number of untouched historical sites.

That hasn't stopped archaeologists yet. Case in point: the William and Mary Archaeological Project Center, whose staff members are using their skills in archaeology, business and marketing to preserve the past.

Since its founding in 1988, the center's staff has made it the second-largest producer of grants in the arts and sciences at the College, with \$1.5 million in grants to date.

Four principal members of the center are graduates of William and Mary's M.A. program in archaeology: its director, Robert R. Hunter Jr. '87; Donald Linebaugh '82, director of administration and project archaeologists Thomas F. Higgins '85 and Gary Robinson '87.

The center's ties to the College and to the Department of Anthropology have proven to be mutually beneficial. Undergraduate and graduate students in anthropology, history and American studies gain employment and practical experience in the applied aspects of contract archaeology, as well as access to the center's extensive re-

search and collections.

Perhaps just as important, they learn firsthand about rewards and frustrations inherent in working with the public and private sectors. Because federal, state and local laws mandate the protection of architectural and cultural remains, contract archaeologists are frequently called on for expert analysis of possible archaeological sites.

Director Rob Hunter says the center's most ambitious undertaking to date is a project for the city of Hampton, Va.—the excavation of an entire city block in the oldest part of Hampton. The project team encountered seven centuries of occupation in six months of field work. Report writing required another six months and included a 300-page list of artifacts.

We expect the unexpected," says Hunter. "In the first week of the Hampton project, we found a 10,000-year-old spear point." That artifact is a remnant of the paleo-Indians, Virginia's earliest prehistoric inhabitants.

Other aspects of the dig were less exciting. It began in December and ended in May with lots of rain in between. The team dug with pumps running to drain the site, which was also co-inhabited by ducks for awhile.

That combination of romance and reality is all in a day's work.

Don Linebaugh, who directs operations for the center, says: "We also do work for people like private developers who are not required to do rescue archaeology. In Wil-

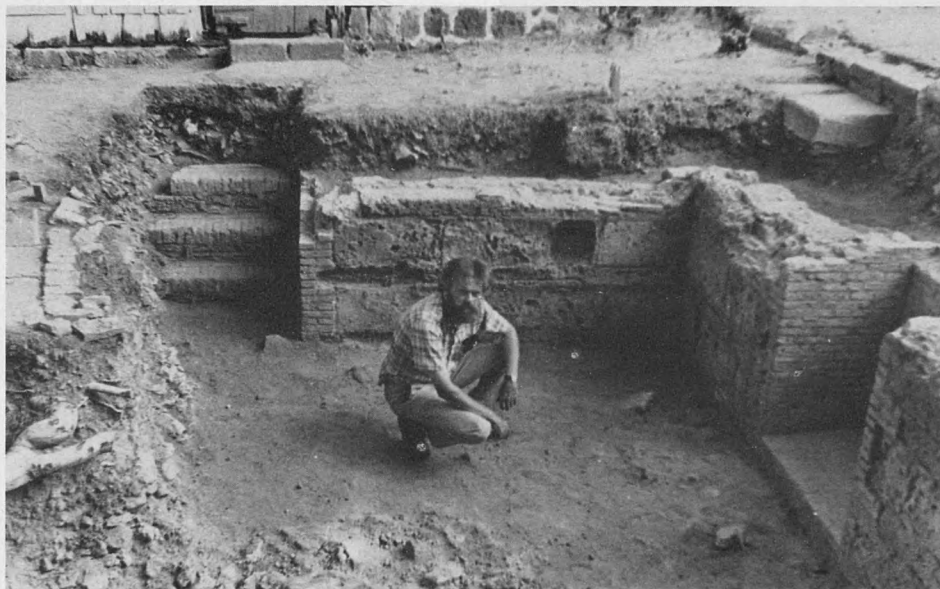


Two graduates of the master's program in anthropology, Tom Higgins '85 (left) and Don Linebaugh '82, now work for the Archaeological Project Center.

liamsburg, it's tied to historical ambiance. A lot of developers understand the potential market value and historical significance of sites. But there are still those who see archaeology as a barrier to progress."

"For alumni who are developers and who are interested in this kind of thing, it's an opportunity to continue their relationship with William and Mary and get something done through the College. There's a lot of archaeological research that needs to be done at sites with no funding available."

—Lisa Heuvel '74



Professor Barka studies an 18th-century foundation in St. Eustatius, where the William and Mary field school has enrolled 200 graduate and undergraduate students from 46 states since it was founded in 1980.

Wright, assistant professor of anthropology, whose field work and laboratory studies center on the Indus Valley in Pakistan.

In the Commonwealth, Gunston Hall, Kingsmill, the Yorktown Battlefield and other historic sites were the focus of many faculty research and educational activities. Over 12 years, two pottery kilns and a quarter million shards of stoneware were excavated at the site of the 18th-century Yorktown Pottery Factory, through grants from the National Park Service.

The department's dual focus on historical archaeology and cultural anthropology, particularly comparative colonial studies, parallels a recent trend at smaller universities.

In 1987-88, 90 percent of the Ph.D.s earned nationwide were archaeology and cultural anthropology, according to data from the American Anthropological Association.

Comparative colonial systems was a natural selection, as Drs. Sutlive and Zamora both had extensive experience with colonized peoples: Sutlive with the Iban of Sarawak, formerly a British Crown Colony, now part of Malaysia, and Zamora with fieldwork in India as well as the Philippines.

The Borneo Research Bulletin, edited by Sutlive, and *Studies in Third World Societies*, edited by Altshuler, Sutlive and Zamora, began publication in the mid-70s. The latter journal is approaching its 41st volume.

Eric O. Ayisi joined the department in 1980, adding courses in social anthropology and peoples and cultures of Africa.

In 1985, Dr. Kerns joined the department. She has conducted extensive research and written on her experiences with Afro-Indians in Belize, the last colony in Central

America. She has also taught courses on the Caribbean and Latin America.

Assistant professor Tomoka Hamada became a member of the anthropology faculty in 1987, concentrating on East Asian Studies. She is specializing in Japanese investment in the U.S. and has already initiated a number of Japanese-America academic business exchanges. Visiting professor Ronald Engard has added courses and lectures on African Studies, particularly a series centered on the department's George W. Harley Collection of Liberian Art and artifacts. Visiting professor Michael Malpass focused his attention last year on a pre-Columbia artifact collection on loan from the Ecuadorean Embassy to the Muscarelle



Rita Wright was the first William and Mary professor ever to win the prestigious MacArthur Fellowship.

“Anthropology offers a broader understanding of the human condition and a deeper insight into the human past. The birth to death dimension is fascinating to most of us.”

Museum of Art. For the past five years, he has been involved with a research project in Southern Peru, studying the evolution of agricultural systems.

Visiting assistant professor Barbara King is writing a book on information transfer in all primates, having spent 14 months in Kenya concentrating on information transfer in baboons.

According to Sutlive, members of the faculty have conducted research and traveled in 120 countries. They have developed courses on Africa, South and Southeast Asia, East Asia, the Caribbean, South America, Mesoamerica, the Middle East and Oceania. The department has hosted scholars and officials from more than 30 countries.

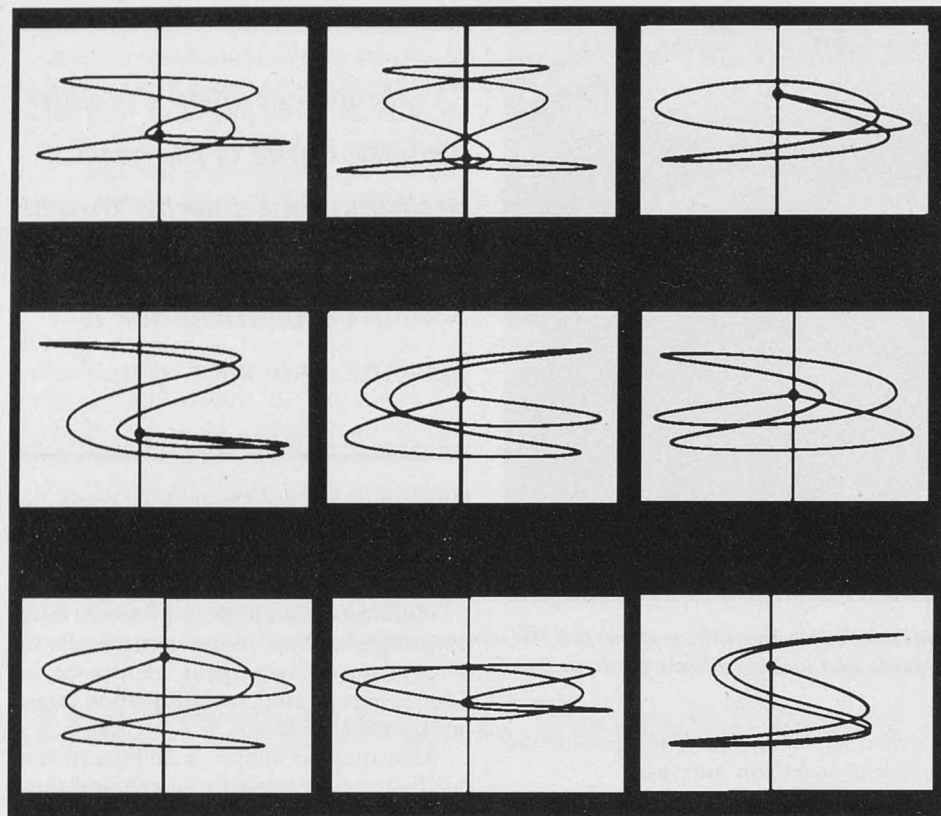
With these and other achievements to date, the anthropology department has proposed the establishment of a Ph.D. program. If approved by the State Council of Higher Education, the College will inaugurate the program in 1993.

Also ahead it is hoped is a professorship in comparative colonial studies. An anonymous donor has committed \$100,000 toward the \$750,000 needed the support to position.

If successful in both efforts, the department will have taken two more steps toward establishing William and Mary as one of the top two or three centers nationwide for historical archaeology.

It would also enhance its stature as an important center for comparative colonial studies, which are considered by many to be a key toward understanding Third World nations.

“I think anthropology, more than any other discipline, attempts to remind us that institutions of state, multi-national corporations and nations themselves are made up of people,” says Sutlive. “It’s all well and good to analyze people in terms of nation-state and marketplace, but it’s also imperative to understand the influence of cultures and groups.”



Chaos

at William and Mary

By John B. Delos

Chaos? At William and Mary? On our peaceful, green campus, with its polite, well-scrubbed students, gentlemanly faculty and conservative Board? Chaos? Where? In the stillness of Crim Dell?

Yes. Chaos is alive and well at William and Mary. In fact, William and Mary faculty and students are giving new meaning to the word.

The ancient Greeks used the word *chaos* in the context of their theory of the creation of the universe: Chaos was the dark and formless state of the primordial universe

before the creation of distinct objects. This concept is also poetically expressed in the Biblical creation story —

And the Earth was without form, and void, and darkness was on the face of the deep.

In present-day English, “chaos” describes a state of utter confusion, completely wanting in order, organization or predictable pattern. The word has a new definition in modern physics — it refers to a type of mechanical motion which follows deterministic laws, but which is so unstable that no practical long-term prediction is possible. It

is this new Chaos that thrives at William and Mary. Professors, graduate students and undergraduates are engaged in a vigorous research program at the frontier of this new branch of physics.

Many mechanical systems exhibit chaotic motion. The most familiar is the weather. Like every other mechanical system, the atmosphere, with its winds, water vapor, clouds and rain, obeys laws of motion. These laws have been known for hundreds of years — their basic structure was given by Sir Isaac Newton in the 17th century, and a more complete formulation of them was given by Navier and Stokes in the mid-19th century.

These laws are deterministic in the following sense: if one could know exactly the state of the atmosphere at some initial time — if one could know precisely the density, wind velocity, temperature, pressure and water content of the air at every point, then the laws would predict the exact behavior of the atmosphere everywhere at all times in the future. However, everyone is familiar with the difficulty and unreliability of weather prediction.

The difficulty arises from three sources. First, collection of an adequate amount of data to describe the whole atmosphere at any one time is a daunting task. Second, the laws have an intractable mathematical form, so that solutions to the equations can only be attempted on the largest, fastest computers that are presently available. Third, and most fundamental, the equations are unstable. This means that any tiny uncertainty in the initial conditions, or the tiny errors that arise because the computer expresses numbers only to 16-digit accuracy, build up rapidly as time elapses. These tiny uncertainties and tiny roundoff errors, which seem completely insignificant initially, increase so rapidly that after a short time, the numbers generated by the computer are all error and no solution. As a consequence, it is possible to make reasonably reliable predictions of weather patterns for only a few days into the future. To find out what will happen next month, try the *Farmer's Almanac*.

Many simpler systems than the atmosphere behave chaotically. Specialty shops at airports often display a shiny toy consisting of a pair of balls swinging on an arrangement of rods, rings and bearings. It attracts attention because it seems to keep moving with no visible energy source. But of course it is not a perpetual-motion machine — hidden inside, one finds a battery and a driving circuit. It is interesting for a different reason: it is a simple example of chaotic motion. Watch one for a while. Note its regular swinging for a short time, and then its sudden flips as the balls go from one side to another. Then while you watch, try to

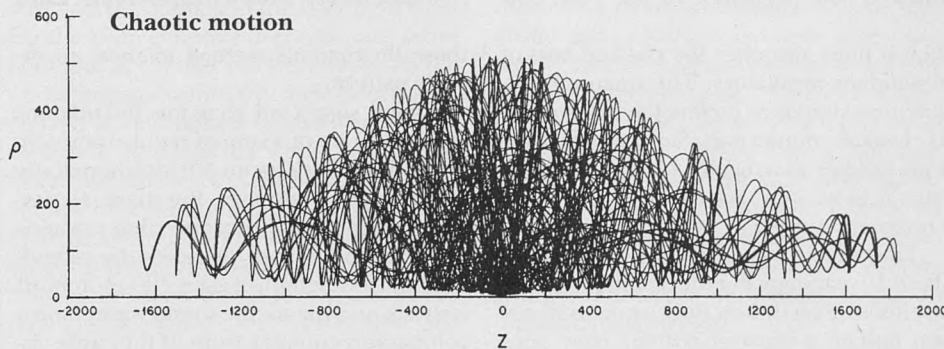
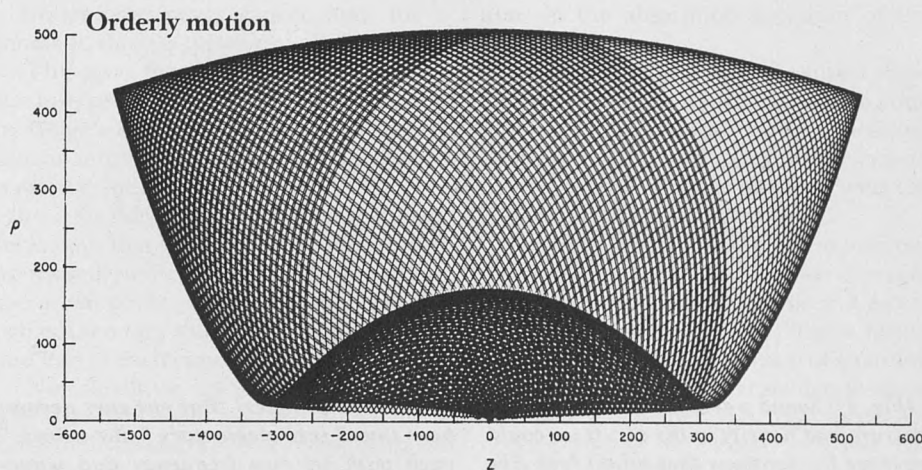
John Delos is a professor of physics at William and Mary.

predict how many swings there will be before the next flip. You will find that you cannot reliably predict it. This is an example of a very simple mechanical system which is governed by deterministic laws, but for which long-time prediction is impossible. The motion is chaotic.

It is now known that most systems that obey classical Newtonian laws of motion behave chaotically. Many physicists all over the world, including my colleagues George Vahala and Allen Boozer, and their students, are now actively involved in the study of chaotic motion of such systems.

Ever since chaos was recognized in mechanics, physicists have wanted to know whether microscopic systems — electrons, atoms and nuclei — would also behave chaotically (Figure 1). These systems do not obey Newtonian laws of motion. Instead they obey laws of quantum mechanics that were discovered in the 1920s, and these laws have a very different form and meaning than classical laws. Quantum mechanics is a wave theory. When physicists think of an electron, we do not think of a little ball of matter that moves along some well-defined path. Instead we compute a wave, whose propagation tells us where the electron is likely to be. This fact represents the most fundamental difference between classical and quantum systems: electrons in atoms behave very much like waves of water on a pond.

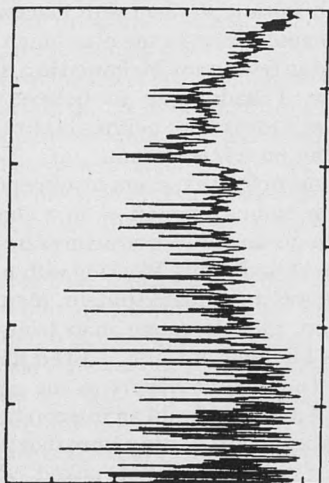
Despite the differences between quantum laws and classical laws, the laws have a close relationship to each other. The quantum laws of microscopic systems must somehow approach the Newtonian laws that govern macroscopic (human-sized) systems. If we put a large number of atoms together into a structure, like a solid crystal, then each atom, and the crystal as a whole, obeys the laws of quantum mechanics. But if enough atoms are put together so that the crystal as a whole is a macroscopic object,



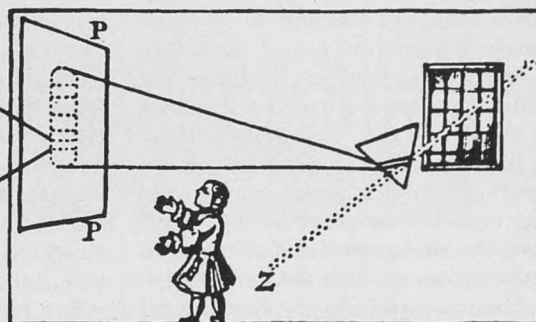
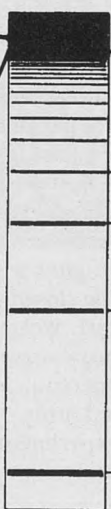
Above (Fig. 1): If an electron were a little ball of matter that moved according to Newton's laws, and if we could put a pencil on it and have it draw a line as it moved through space, these are two of the lines that we would get. In these cases the electron is attracted to a nucleus by an electric force and it feels also a magnetic force. In the upper picture, the line creates a complicated but orderly structure. In the lower one the orbit is chaotic.

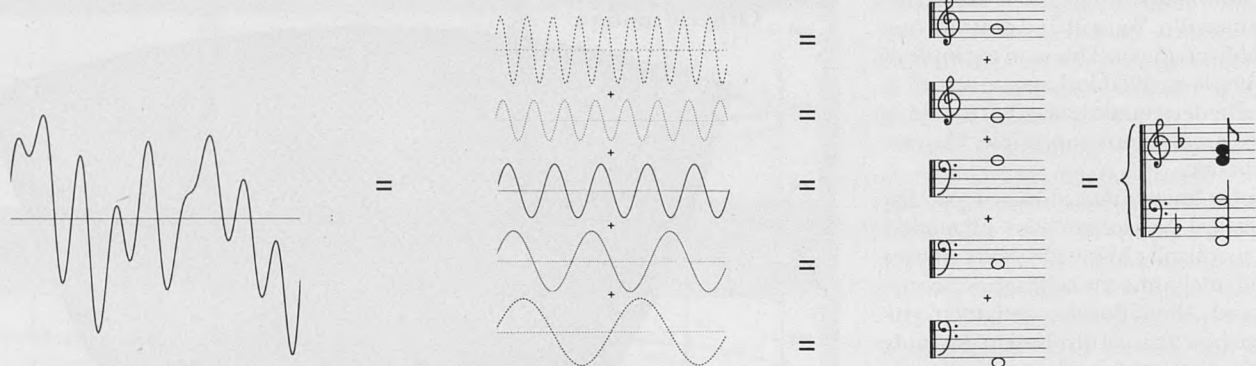
Below (Fig. 2): Newton's experiments showed that a prism splits a beam of white sunlight into its colored components (right). When the pattern of colors on the wall is examined very closely, thin dark lines and broad dark bands can be seen (center). These are caused by atoms between the prism and the sun that absorb light of certain wavelengths. In the center are shown lines and a dark band caused by absorption of light by hydrogen atoms. Recent experiments using a laser directed at a beam of hydrogen atoms have shown that if the atoms are in a magnetic field, then the dark band is not uniformly dark. The darkness or absorption shows wild fluctuations (left).

Darkness or Absorption in the Band



Dark Lines and Dark Band





(Fig. 3): Sound waves are fluctuations of pressure and density in the air. If we could see these fluctuations they might look like the figure on the left (up is high pressure; down is low pressure). To our eyes, this

wave is meaningless. But our ears decompose sound into elementary "sine-waves," each with its own frequency and wavelength. The wave on the left is the sum of five such waves, shown in the middle. Each

wave is a single tone or note. Listening to the wave on the left, a trained musician can name the individual notes and identify the instruments or voices. (This is the first chord of "Yesterday" by the Beatles.)

then it must also obey the classical laws of Newtonian mechanics. The quantum system must therefore imitate the behavior of its classical counterpart. Since classical systems behave chaotically, chaos must also emerge as we approach the classical limit of a quantum system.

This much was generally understood about 10 years ago, but the details proved to be elusive. Exactly how does a quantum system imitate a classical system? How does classical chaos show up in the quantum states of a system? What kinds of orderly patterns can be found in a quantum system that is classically chaotic?

Many theorists pondered over such issues for a long time. Speculations were made, and subsequently disproved by calculations. New calculations seemed to show evidence of "quantum chaos," but then hidden order was found in those calculations. At conferences, shouting would erupt suddenly, and then dissolve into laughter. In short, the subject developed into a state of total chaos.

At last, from an unexpected source, there came a fundamental insight. In the town of Bielefeld, Germany, Prof. Karl Welge and his students were measuring the absorption of light by atoms. When light passes by an atom, an electron in the atom can absorb a bundle of energy of that light (a photon), and make a "quantum jump" within the atom. In the light that remains, there is a pattern of dark lines and dark bands, known as the absorption spectrum (Figure 2).

In Welge's experiments, laser light was directed at hydrogen atoms, which were passing between the poles of a powerful magnet. The absorption in a dark band was carefully measured. This absorption spectrum showed a surprising property. Instead of being uniformly dark, the absorption showed wild fluctuations. A skeptic would have said that there was a wire loose in the apparatus. But in fact, the fluctuations were reproducible. And on further examination,

these fluctuations seemed to show an orderly pattern.

Welge suspected that the fluctuations were made up of a sum of regular periodic oscillations. Such a sum can look hopelessly complicated to our eyes. But there is a simple mathematical procedure that unravels the oscillations and identifies the magnitude and wavelength of each. (When a chord is struck on a piano, the sound waves have a comparably complex form. If they were visible we could make no sense of them, but our ears instantly perform the analysis that allows us to hear the individual notes that make up the chord.) (Figure 3)

Welge's students performed the necessary calculations. They showed that the spectrum, far from being wild, did indeed consist of a smooth background plus a sum of regular oscillations.

Then they went one step further: they computed classical orbits of the electron as it moves away from the atom. When the electron absorbs a laser photon, it gains from it a great deal of energy. Just as a satellite on a mission to the outer planets roars off with just enough energy to escape from the pull of the earth, and then slowly continues on its orbit, so the electron first speeds away from the proton, then coasts, gradually slowing down as it moves farther away. However for the electron in this experiment the added magnetic field produces another confining force. With this magnetic force in place, the electron can no longer escape, and instead it follows a wandering path. Of all the paths that the electron might follow, a very small number of exceptional orbits bring the electron back to the proton after a short time. Such orbits are said to be closed (they return to their original point). Welge and his students found the very surprising result that each oscillation in the spectrum is correlated with just such a closed orbit.

I first heard about this experiment at a conference in California, and when I re-

turned home, I immediately told my students and colleagues about it. We had known for a long time that this system was one for which classical mechanics was chaotic and quantum mechanics was mysterious. My friends Steve Knudson in our Chemistry department and Don Noid at Oak Ridge National Lab had already calculated thousands of electron orbits, and we had sorted them into various families of orderly ones (which we understood) and chaotic ones (which we couldn't understand at all). We knew that Welge's experiment examined states in which the orbits were utterly chaotic, and no vestige of order was visible in our calculations. We began to search for the interpretation of his results.

About 10 years earlier, several of us in the Physics department, including Profs. Carlson, Remler and von Baeyer, had studied the work of Martin Gutzwiller, an IBM scientist. In a series of papers beginning in 1968, he had examined chaotic systems, closed orbits, and their implications in quantum mechanics. I had read those papers because I had been told that they were specially important. My first impression was that they were bizarre, and my second impression was that they were wrong. Then later I had had the good fortune to meet with Gutzwiller, who explained them to me over lunch in a Washington restaurant. Mellowed by a pleasant wine, I had come to believe that Gutzwiller's ideas were neither bizarre nor wrong, but merely irrelevant.

But now Welge's experiments were pointing in the same direction — in a chaotic system, important orderly structures are produced by closed orbits. Working with me at the time was a graduate student, Meng Li Du, a very capable young man from the People's Republic of China. I asked him to explain Gutzwiller's papers to me again, and see if we could build an interpretation of the experiments starting from that point of view. Every day we met, talked, wrote

equations and pondered the problem.

As our discussions went on, we felt as if we were groping through the original Chaos, perceiving nothing but darkness and the formless void. Six weeks later, dim and fuzzy outlines began to appear. Six more, and dawn was breaking, with the first computational results. Another three weeks, and we were blinking in the sunlight, as theory and calculations illuminated a rich, open field, ripe for harvesting.

The theory would have to tie together the known chaotic classical behavior of the electron with the order that was seen in its quantum behavior. First let us recall an important property of chaos in mechanical systems. No matter how chaotic the behavior may appear on a long-time scale, there is order on short-time scales. Even weather prediction can be done for a few days into the future, and the motion of our electron is much less complicated than that. Moreover, in a chaotic system there are always orbits that return to their original point after a short-time, and for that time they behave in an orderly fashion.

Furthermore, the order that appears on short time scales in classical mechanics can carry over to a kind of order in quantum mechanics if the right kind of measurement is made. Welge's measurement was the right type: it was not sensitive to the long-term chaos in the system, but only to the short-term order.

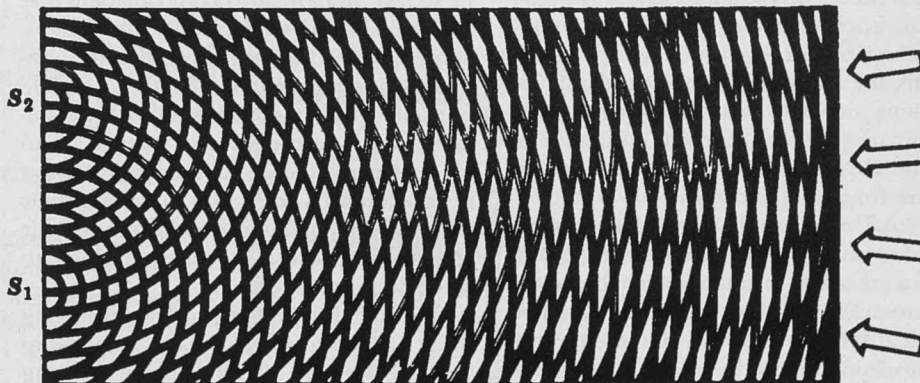
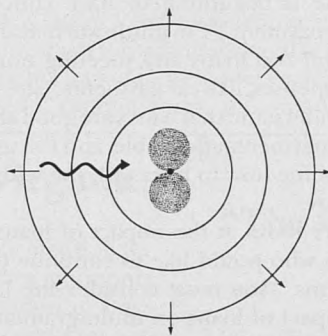
Now we must look again at the relationship between quantum laws and classical laws. We have already said that in classical mechanics we talk about orbits or paths followed by a particle, but in quantum mechanics we talk about waves. What is the relationship between these quantum waves and the classical orbits? To answer this, imagine dropping a pebble into the pond from the bridge at Crim Dell, and imagine the group of circular waves that propagates outward. You can draw these waves as concentric circles on a piece of paper. Now draw a set of lines going radially outward through the circles, like spokes of a wheel (Figure 4). These are the particle orbits. The orbits in classical mechanics show the direction of motion of the waves of quantum mechanics. Conversely, the crests of quantum waves cut across particle orbits, and as the orbits follow their gentle arcs through space, the waves follow, with their crests always perpendicular to the direction of motion of the orbits.

Waves have remarkable properties that are not shared by pebbles or other little balls of matter. When two groups of waves collide, they pass right through each other. While they do so, they display a phenomenon called interference. Where a crest of one wave meets a crest of another, the waves add, and create a large crest. Where a crest meets

a trough, the waves cancel, and, for a moment, there is no wave at all. (Figure 5)

This gives the last essential clue about the interpretation of the fluctuations seen in Welge's experiment. They must represent an interference pattern resulting from waves that intersect in some region of space. Where do they intersect? We have already found out that the relevant classical orbits are closed, so the final point is the same as the initial point — if the waves follow the orbits, then they intersect at the beginning and end of each closed orbit.

Now finally we can put all this together. The laser light shining on the atom is like a continuous stream of pebbles being dropped into a pond — the pebbles generate a continuous series of outgoing circular water waves on the pond, and the laser light striking the atom generates a continuous series of outgoing circular electron waves. As the waves propagate outward, their direction of motion is determined by the direction of motion of the orbits that would be followed if the electron were a classical particle. Most of these orbits are chaotic. The waves follow them on their unruly paths, and eventually break up as neighboring trajectories diverge from each other. But a few of the orbits return to the atom after a short time. For



that short time they are orderly, the quantum waves that follow them are orderly, and this order was detected by Welge's experiment. The continuous stream of returning waves intersects the continuous stream of outgoing waves, and an interference pattern results. In this case, the interference pattern is visible as an orderly set of oscilla-

tions in the absorption spectrum of the atom.

Meng Li found a way to express these ideas in quantitative formulas and to compare these directly with Welge's measurements. Every essential aspect of the experiment was successfully explained by his calculations.

Recently Welge found a way to improve his experiment, to display another aspect of chaotic systems. By varying over a larger range the energy of the laser photon, he was able to survey a broad spectrum of quantum states of the electron. Our calculations show that at low energies, the trajectories are orderly, and as the energy increases, the motion changes from orderly to chaotic. As this happens, the closed orbits go through zones of stability and instability, and they divide and proliferate as chaos takes over. We can already see these phenomena in the experimental results, and William and Mary researcher Jian Mao, graduate students John Shaw, Jon Goetz, Aaron Peters and Qun Yao, as well as undergraduates Sayoko Blodgett-Ford, Valerie Dean and J. B. Wilson, are developing the theory to describe them. Through their work, Chaos and mystery are giving way to Order and understanding. In the words of Emerson:

"It is for men [and women!] to tame the chaos: on every side to scatter the seeds of science . . . that its benefit may be multiplied."

Left (Fig. 4): When light (wiggly line) strikes an atom (dark blobs), it generates outgoing circular electron waves. If the electron were a classical particle, it would move radially outward; the paths it could follow cut through the circular waves like spokes in a wheel.

Above (Fig. 5) is a copy of Thomas Young's original drawing showing interference effects in waves. S1 and S2 are two sources that generate circular outgoing waves. These waves pass through each other, creating an interference pattern. By sighting along the arrows at a glancing angle to the page, you will see a pattern of light and dark bands.

Financial Aid— An Unmet Need

By Melissa Gill '82

Melissa Jacobson is a senior at William and Mary. Right now, she's thinking about her last semester of classes, her final set of exams and her last-ever paper. But Melissa is also thinking about life after graduation: starting a career, maybe going on to graduate school, and how she'll be able to repay her student loans.

Melissa's concerns aren't unique, including her apprehension about student loans. At William and Mary, 21 percent of all entering students come to college with demonstrated financial need. The College attempts to fill this need with a combination of scholarship aid, student loans and work-study programs. Still, there is over \$440,000 of unmet student need annually at William and Mary.

The College is seeking to provide adequate financial assistance for all of its students through the Campaign for the Fourth Century. Part of the campaign's \$150 million goal includes \$35 million designated for student support. Of this amount, \$10 million is designated for need-based scholarships. The remaining \$25 million is divided between merit scholarships, athletic grants-in-aid, research scholarships and graduate fellowships. To date, \$7.3 million has been received for student support.

The push for private monies for student support comes at an appropriate time. A recent article in *The Chronicle of Higher Education* reports that cuts in federal spending for the 1990 fiscal year will reduce significantly the amount of money available for student aid. The resulting budget could eliminate grants for nearly 200,000 students in the 1990-91 academic year and reduce grants for a million others.

Like many students, Melissa has depended on a combination of loans, grants and work-study to finance her education. Approximately half of the financial aid offered at William and Mary is in the form of grants from federal, state and institutional sources. The remaining need must be filled through loans and part-time employment.

W. Samuel Sadler '64, vice president of student affairs, sees the toll that financial burdens place on students. "Many students must work 30 to 35 hours a week to help finance their educations," he says. "At William and Mary, you can't realistically work much more than 10 hours a week, keep up

your studies, and participate fully in the life of this academic community. These kids are burning their candles at both ends. Their health suffers. Their grades suffer. And they really don't have time to enjoy their academic experience."

Melissa stresses that campus employers are very understanding about students' schedules. "I really haven't found working that bad," she says. "I've managed to find part-time jobs that fit in around my class schedule. I am getting a little tired of never having any free time, though. I haven't had a free weekend since my first semester freshman year — I'm always working!"

Loans are another means of helping to

*At William and Mary,
21 percent of all entering
students come to college with
demonstrated financial need.*

finance a William and Mary education. Melissa took out two loans to help pay the bills. Now, as she looks forward to graduation, she is beginning to have concerns about repayment. "I'm a little worried about paying off two loans and meeting normal living expenses, like car payments," she says. "But I understand that banks are good about making payments affordable, and I'm trying to save some now to help with the loans in the future."

Sadler looks at the impact of loans on students who would like to continue their educations. "You must consider the long-term impact of loans on undergraduates," he states. "Students are taking out loans that they are hard-pressed to repay after graduation. They are leaving college already thousands of dollars in debt. That's a horrible burden for a young adult. Many of these students, who are bright, who want to go to graduate or professional school and often need additional education to further their careers, feel that they cannot continue their educations because they are unwilling to face additional debt."

Through fund raising and by dedicating some of its own resources for scholarship aid, William and Mary has made a strong commitment to reducing students' dependence on loans and part-time employment to finance their educations. Sadler points out another reason to increase the availability of scholarship aid: to generate a wide pool of applicants to the College. "Quite often, qualified students will not apply to institutions that have the reputation of not offering aid, even if that reputation is not accu-

rate," he says.

According to Edward P. Irish, director of student financial aid, the availability of such aid is one means of increasing the diversity of William and Mary's student body. "We are doing fairly well at offering aid to our best-qualified applicants," he says. "The existence of the Monroe Scholarships, merit-based scholarships which are offered to the most distinguished applicants to William and Mary, has a definite effect on acceptance rates. The presence of additional scholarships would help the College reach other well-qualified students and encourage them to come here.

"At present, we can meet the financial needs of most students from Virginia," says Irish. "But we would like to reduce the amount of aid that comes from work-study programs and loans. In addition, since William and Mary is a national university with a commitment to enrolling a diverse student body, we need to be able to offer more aid to out-of-state students."

Melissa Jacobson echoes the importance of adequate financial aid: "I have a twin brother, and it's expensive for a family to have two kids in college at the same time. I initially had planned to go to a community college for two years and then transfer to a four-year college. But I visited William and Mary during my senior year of high school, and just loved it. I had the grades I needed to get in, so my guidance counselor helped me find out about the financial aid packages available here. It's been a struggle sometimes to make it all work, but getting the financial aid really made it possible for me to come to William and Mary."



At a celebration held Dec. 7 at the Atlanta Botanical Gardens, President Verkuil '61, Susan Cass '86, president of the Atlanta chapter of the Society of the Alumni, and Michael Alembik '58, chairman of the Atlanta regional campaign, announced that the Georgia campaign had raised over \$1 million toward the \$150 million goal of the Campaign for the Fourth Century.

1990 Offers Variety of Alumni Programs

The following are major alumni programs planned for 1990 by the Society of the Alumni (individual chapter events are not listed). If you have questions or would like further information, call the alumni affairs office at 804/221-1172.

JAN. 27: Career Exploration Day

Students will have the opportunity to learn from alumni about their careers and the paths they have taken since graduating from William and Mary. Sponsored jointly by the Society of the Alumni and the Office of Career Services. Morton Hall, 11 a.m. For information, call Robert Hunt, associate director of career services, 804/221-3234.

MARCH 2-4: New York Auction Weekend

An exciting weekend of activities will unite alumni and friends in the nation's entertainment capital. The fun begins on Friday evening at Christie's auction house with a champagne reception and auction, the proceeds from which will benefit the Tercentennial Endowment Fund established with monies from the previous New York Auctions. On Saturday evening, there's



a reception at the New York Yacht Club followed by the Broadway show, *Annie 2: Miss Hannigan's Revenge*. Orchestra seats will be available for \$55 per person. Accommodations are being provided at Trusthouse Forte's Westbury Hotel at the special rate of \$160 per room per night.

Space is limited and reservations are urged by Jan. 31. For information, call the alumni chapters office at 804/221-1173.

MARCH 15-16: Student Host Program

The Student Alumni Liaison Council will sponsor the second annual Student Host Program for high school juniors and seniors who have alumni ties and are interested in learning more about William and Mary. Over a 24-hour period spent side by side with Council members, participants will uniquely experience student and academic life at the College. Participation is limited.

APRIL 18: Olde Guarde Day

Members of the Olde Guarde, which includes alumni who graduated 50 or more years ago, will be special guests of the College for a reception and luncheon. The classes of 1930 and 1935 will celebrate their 60th and 55th reunions. William and Mary Hall, 10:30 a.m.

MAY 11-13: 50th Reunion—Class of 1940

The Class of 1940 will celebrate its golden anniversary with a full weekend of events. Highlights include a welcome cocktail party, special campus tours, presentations of

the class gift, a candlelight dinner/dance, induction into the Olde Guarde and attendance at Commencement exercises as a group. Class members will be hearing from their reunion committee soon.

JUNE 21-24: Alumni College

Alumni, family members and friends are invited to explore a topic as current as today's headlines: "The Changing Face of Communism." For further details, see related notice on this page.

JULY 13-15: Leadership Conference

Alumni leaders will visit campus for a unique opportunity to share ideas, learn about College and alumni programs, and develop goals for the future. General sessions will be combined with "tracks" developed for individual groups, including chapter officers, alumni admissions network representatives, class reunion committee members, class reporters and Young Guarde Council members. Sponsored jointly by the Society of the Alumni and the Office of Admission.

NOVEMBER 1-4: Homecoming

Celebrate "William and Mary Magic" with alumni and friends. The Tribe will play Furman University, and the weekend will be filled with all the traditions and special events that make Homecoming a memorable occasion. The classes of 1945, 1950, 1955, 1960, 1965, 1970, 1975, 1980 and 1985 will celebrate reunions.

Homecoming Plan: Best in Virginia

The Society of the Alumni was awarded honorable mention for its Homecoming 1989 communications plan in the Best in Virginia competition sponsored by the International Association of Business Communicators, Richmond Chapter. The recognition was given in the category of Total Communication Programs. The competition attracted 170 entries in 14 categories from organizations throughout the state. Virginia Collins, director of alumni communications, accepted the award at a dinner held Dec. 7 in Richmond.

Nominations Invited for Alumni Board

All alumni are encouraged to submit names in consideration for the board of directors of the Society of the Alumni. Information and supporting materials regarding each nominee should be submitted on a Board of Directors nomination form, available by writing Alumni Board of Directors, P.O. Box GO, Williamsburg, VA 23187, or by calling 804/221-1165. Nominations must be received by April 1, 1990.

Suggested nominees will be reviewed by the Nominating Committee, whose members will be appointed at the February board meeting.

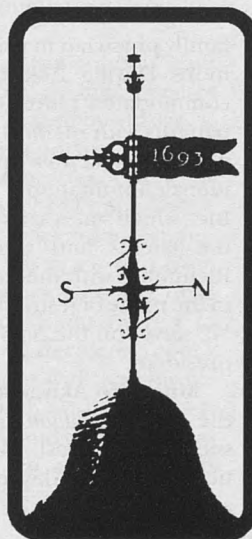
The committee will nominate two persons for each of the five board vacancies that will occur in 1991. The slate will be published in the June issue of the *Alumni Gazette*, and the election will be held this fall. All alumni who contribute to a recognized fund of the College will be eligible to vote.

Alumni College 1990: "The Changing Face of Communism" June 21-24

From Tienanmen Square to the Brandenburg Gate, the pictures are as dramatic as the headlines. What does it all mean for the 1.5 billion individuals who are governed by Communist systems and for the West? In fact, is the term "communism" now a misnomer?

Eminent members of William and Mary's faculty will explore the political, economic, historical and cultural ramifications of these monumental changes shaping today's world scene. A combination of lectures, films, discussions and special events will be offered as part of this special program sponsored by the Society of the Alumni for alumni, family members and friends. The program will take place on campus and in the surrounding area with participants staying in college housing.

For further information about this stimulating educational experience, please write: Alumni College 1990, Society of the Alumni, P.O. Box GO, Williamsburg VA 23187.



Alumna Named Top Principal

By Virginia Collins '77

Elizabeth Keahey Rice '67, principal of Spring Hill Elementary School in McLean has been named Virginia's 1989-90 National Distinguished Principal. The award recognizes principals whose schools show educational excellence and strong ties to parents and the business community. The U.S. Department of Education and the National Association of Elementary School Principals established the award in 1984 in conjunction with Pizza Hut Inc. Ms. Rice, who has been with the Fairfax County school system for 22 years, was recommended for the honor by parents, teachers and members of the school staff.

Ronald L. Buckwalter '62 J. D. of Lancaster County, Pa., has been nominated by President Bush to fill a vacancy on the Eastern District Court bench, which sits in Philadelphia. Buckwalter is a former district attorney and has served as a county judge for 10 years. Another William and Mary alumna, **Rebecca Beach Smith** '71, '79 J. D. recently was confirmed by the Senate for a federal judgeship in the Eastern District of Virginia.

Actress **Glenn Close** '74 was the subject of *Ms.* magazine's November 1989 cover story. Describing the diversity of Ms. Close's talents, author Bonnie Allen said, "Working in an industry where careers often have a short shelf life and hot new actors are called the ice cream flavor of the month, Glenn Close is an instant classic." Ms. Close is now working on her eighth film, *Reversal of Fortune*, in which she plays Sunny von Bulow.



Glenn Close

Eileen St. Denis Werber '73 has been promoted to human resources executive officer at Sovran Financial Corp. Ms. Werber will direct the establishment of policies and programs in compensation, training and development,



Eileen S. Werber

productivity management, human resource planning and management associate recruitment and development.

The People Down South, a collection of 15 short stories by **Cary C. Holladay** '80, has been published by the University of Illinois Press. The volume "focuses on intelligent women in their mid-20s who seem destined to make unfortunate choices, or who are subtly self-destructive." Ms. Holladay is currently writer-in-residence at La Salle University in Philadelphia. She is co-founder of the *Maryland Review* and winner of the 1986 Fiction Network Short Fiction Contest. Her book's title story appeared in *O. Henry Festival Stories 1989*.



Cary Holladay

Louis "Bud" Fisher '56 has received the Louis Brownlow Book Award from the National Academy of Public Administration for his book, *Constitutional Dialogues: Interpretation as Political Process* (Princeton University Press, 1988). The award is given to an author for providing "new insights, fresh analysis and original ideas contributing to the understanding of the role of governmental institutions and how they can most effectively serve the public." Dr. Fisher, who works at the Congressional Research Service of The Library of Congress, also won the award in 1976.



Bud Fisher

Daniel Jannuzzi '78 is medical director of the Cross-Over Health Center, which serves the medical needs of Richmond's homeless and inner-city poor. He previously was a family physician in private practice in Baltimore. During 1988 the health center accommodated more than 5,000 visits from patients with medical, dental and eye care needs. The center operates as part of the interdenominational Cross-Over Ministry Inc., which states as its mission: "To connect the talents and resources of suburban Richmond with the needs of the inner city, in the name of Jesus Christ." **Edgar J. Fisher** '42 serves on the board of directors as vice president.

Mitsuhiko Akiyama '84 was featured on the cover of *Billion* magazine's premier issue published last August. The related article chronicles Akiyama's successful career as a fund manager of the investment man-

agement unit of Tokyo's Mitsui Bank. Akiyama is profiled as one of a small group of young money managers who are wielding considerable influence in the world's financial markets.

William D. Smyth '75, a Ph.D. candidate in American studies at William and Mary, has written *If You Took the Grand Tour: Traveling to Europe in the 1850s and 1990s*, published by Gifted Education Press, Manassas, Va. In the book's foreword, Eugene D. Genovese, former visiting distinguished professor at William and Mary, writes: "This admirably spirited and well-crafted book should be a treat for any student who wants



William Smyth

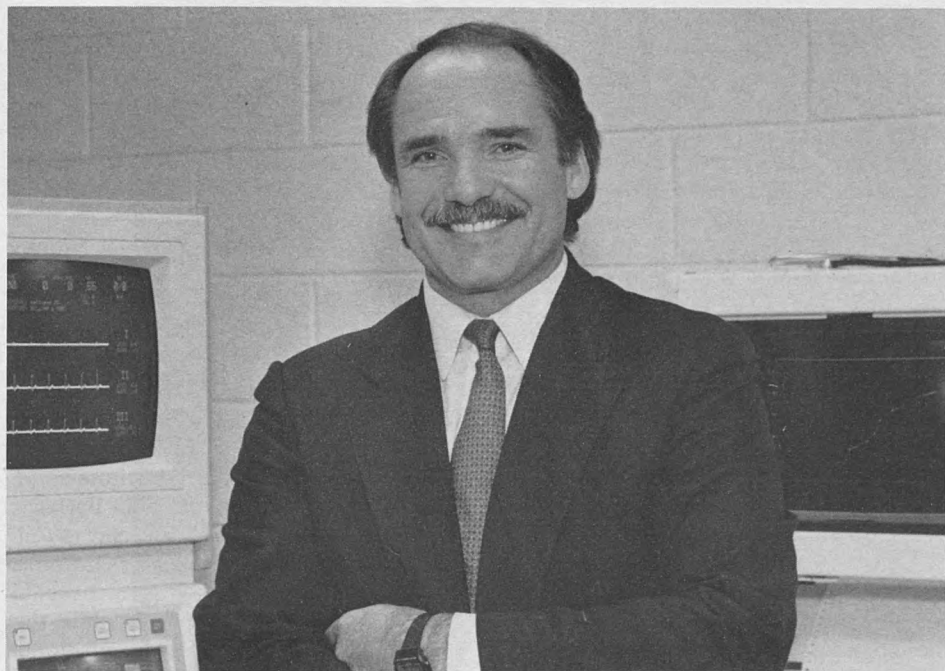
to learn about his own country and the world." Smyth has taught history and other subjects to middle- and upper-school students since 1978. In 1986, he received one of 12 Distinguished Teacher Awards given in South Carolina.

Christopher Bram '74 is the author of *In Memory of Angel Clare* (Donald I. Fine), a novel that deals with how people cope with the loss of a friend through AIDS, and moreover, how the survivors cope with each other.

Robert P. Sutton '64 is the author of *Revolution to Secession: Constitution Making in the Old Dominion* (University of Virginia Press, 1989). The book offers the first detailed narrative of the proceedings and debates of Virginia's three constitutional conventions. Sutton is professor of history and director of the Center for Icarian Studies at Western Illinois University, Macomb.

Rick Overy '88, assistant director of alumni affairs—chapters, has been elected to the board of directors of the Virginia Soil and Water Conservation Board as a representative from James City County.

Jacquelyn Good Legg '60 has received recognition for her latest publication, *The Low Cholesterol Cookbook*. Published under her Words Worth Eating label, the collection of health-conscious recipes was awarded the 1989 Dietary Award from the Virginia Nutrition Council. In 1978, Mrs. Legg began working with classmate **James E. Ukrop** '60 to create weekly recipe cards for customers of his Richmond-based grocery stores. Since then she has compiled a 318-page *Words Worth Eating Cookbook*, and the program has expanded to stores in 20 states. Her duties also have expanded at Ukrop's central kitchen where she is director of creative food merchandising for a new program of freshly prepared foods.



Ken Kambis with some of the tools of his profession in the Wellness Laboratory at William and Mary.

The Pursuit of Longevity

By Bob Jeffrey '74

Ken Kambis wants you to get addicted — to exercise. Adherence to a program of regular exercise and sensible nutrition can result in a longer, healthier life.

An assistant professor of physical education at William and Mary, Kambis is an exercise physiologist and aging expert who conducts research and designs training programs that prove people can dramatically improve their physical condition and even extend the productive years of their lives. And all it takes is getting addicted.

"Exercise is physically addictive," he said. "You produce some powerful hormones called endorphines when you exercise at moderate to intense levels. The endorphines stimulate the pleasure centers of the brain."

The pleasurable pain of exercise is just one component of an innovative Wellness Program that Kambis directs at the College. His Wellness course attracts 400 students a semester for activity credit, and his classes for academic credit in nutrition and exercise physiology break new ground for physical education majors and other students.

But Kambis's message — that each of us

must assume personal responsibility for our own physical well-being — is one that applies to people of all ages. By taking control of what Kambis calls "the changeable lifestyle patterns that affect aging," primarily nutrition and exercise, people can add active productive years to their lives and accomplish goals they thought they were "too old" to achieve.

"Saying 'I'm too old' is a copout," said Kambis. "Old doesn't kill people; diseases do; and diseases aren't caused by old age. If you're sick, you can see a doctor."

A classic case in Kambis's experience is 78-year-old Jack Borgenicht of Long Valley, N.J., an entrepreneur, conservationist and friend of the College. When a group from his hometown invited Jack to come on a climb to base camp at Mount Everest (a 19,000-foot elevation), he decided to check out his physical condition with Kambis before attempting the climb. At the Wellness laboratory in Adair Gym and at William and Mary Community Hospital, a battery of tests revealed that Borgenicht was in no condition to make the trek.

The doctors discovered that he had a

fungal infection of the lungs, which he attributed to his age. But after medical treatment, Jack had greatly increased lung capacity and was ready to embark on a personally designed training program that would enable him to scale mountains.

"I prescribed exercises for him of specific amounts and types, designed to get him in better cardio-vascular condition," Kambis said. Borgenicht's program consisted largely of extended walks of four to five miles a day while carrying a 30-pound pack, through the rolling hills of New Jersey. In two and one-half months Jack had gained eight pounds of lean muscle, astonishing for a person his age. He was ready for graduation — a trip with Kambis to try a climb in the Colorado Rockies.

"It was a magnificent experience," said Kambis. "We spent a week climbing and camping at altitudes between 8-11,000 feet to get acclimatized. He was doing very well, and I was doing okay."

For the finale they decided to try an assault on Mt. Elbert, the highest mountain in Colorado (14,431 feet) and the second highest peak in the continental United States. "We both made it to the top of the mountain, and Jack beat me to the summit," Kambis said.

The point, according to Kambis, is that the training program worked for a 78-year-old man with prior health problems who wanted to climb mountains. Think how well it might work for a younger person with less lofty goals. "That's why it's so imperative to start people exercising," said Kambis. "We know that as you continue to exercise, it gets much easier."

At the Wellness Lab, Kambis designs personalized training programs based on the age and starting level of condition of each subject. "I have to have them in the lab setting to evaluate their current status. An exercise physiologist needs a lot of information before he starts to prescribe," he said.

A starter program, for six to eight weeks, gradually increases the level of conditioning until a person achieves his optimal state. "You can continue to improve, but at that point you can maintain the optimal level with three non-consecutive days of training a week," Kambis said.

A general training program should emphasize endurance rather than sudden bursts of high intensity exercise. "People should decrease intensity in order to increase duration of exercise. If you're training for lifetime fitness, or health risk reduction, then running one mile in seven minutes is not nearly as good as running three miles in 30 minutes," said Kambis.

Engaging in frequent low intensity exercise — like walking or swimming — for 35-40 minutes at a time is what helps increase

not just longevity of life, but also quality of life. "The objective is to increase the disease-free middle-age years in a person's life, and we do that with exercise and nutrition," Kambis added.

Far from espousing fad diets or ingesting vitamins and protein supplements, Kambis advocates common sense and nutritional education. "The Nutrition Council of the National Science Foundation establishes minimum daily requirements that will meet the needs of 97 percent of the population. If you follow those guidelines, you should have a balanced diet," Kambis said.

Unfortunately, most Americans have too much saturated fat in their diets. "Far and away the biggest problem we have is fatness, or obesity, which leads to the onset of chronic diseases — cancers and especially heart diseases. The average American diet is about 41 percent fat, and it shouldn't be more than 25-30 percent fat," he said.

Even worse, the majority of these fats are saturated, or derive from animal sources such as milk, cheese and butter. In a correct diet, most fats should be from plant sources, or unsaturated. Modern food processing exacerbates the problem by hydrogenating natural vegetable oils to make food more tasty, turning it into saturated fat. "Raising the level of nutritional awareness is an important educational priority, because most people wouldn't pick these fats to eat if they knew the problems they were creating for themselves," said Kambis.

Disseminating nutritional information is especially important among the college students Kambis teaches. In the Wellness Laboratory, Kambis has compiled data on the dietary habits of 2,500 William and Mary students. "I think some of them live on Pop Tarts," he said. "It's a result of their being out on their own for the first time, having to make their own food selection, and not being aware of the good versus the bad selections. I want to give them enough nutritional education so that when they choose french fries over a baked potato, at least it'll be an anguished decision," said Kambis.

Along with exercise and diet, another factor in a healthy lifestyle is coping with stress. In his Wellness workshops Kambis teaches students skills for dealing with the strains and tensions of everyday life. "There's an intimate relationship between stressful situations, or distress, and premature aging. Stress leads to health breakdowns that produce symptoms of aging," he said.

Not surprisingly, Kambis finds that the best defense against stress is good physical conditioning. "Exercise itself is a classic stress situation. If you train yourself physically with applications of low-intensity physical stress, you develop a greater tolerance to it," he said.

Reacting to stress is a basic human trait, according to Kambis. "All kinds of stress produce the same kind of response in a person. Your heart rate goes up, respiratory rate goes up, blood pressure increases, and adrenalin is released. It's a cave dweller reaction, preparing you to 'fight or flee.'

"All these responses prepare us for physical activity. The best way to defuse that time bomb is to exercise, because you use all the metabolites you've released into your system. If you end up with a chronic condition of having your body ready to exercise, but never exercising, that condition can lead to disease states and health breakdowns. The best way to manage stress is to intersperse situations of stress with regular bouts of moderate exercise. We call it the tranquilizer effect of regular exercise."

When exercise, diet and stress are in balance, the sky is the limit as far as human aging is concerned. Kambis has studied both the biological and sociological factors involved in aging. "People are born with the capacity to live much longer than they actually do," he said.

Experiments on cell regeneration indicate that human life should extend to about 120 years. "It's all the things we do to ourselves in the meantime that diminish our life span," said Kambis.

In the remote mountainous regions of Georgia in the Soviet Union, Pakistan and Ecuador, people who survive infancy often live to the age of 100 or older. Certain common characteristics are evident in each of these societies, according to Kambis. All are rural, agrarian societies, where people rise early and work outdoors all day long, tilling the soil. Because of the nature of their food source, they eat lots of vegetables and fruit, complex carbohydrates, and very little animal fat. Their fats come mostly from vegetable sources, grains, nuts and bread.

Perhaps most difficult to quantify, in these isolated, traditional cultures, older people gain respect in the community. They are looked to for wisdom and leadership. It is attractive socially to grow old, which is the opposite of what often happens in our culture.

So, as Kambis puts it: "It's very simple. All we have to do is respect the wisdom that is acquired with age and make it a socially accepted phenomenon. Make sure that people exercise properly; ensure that they eat properly. We know that these things will allow people to live longer and better. Now, all we have to do is — like the ad says — just do it!"

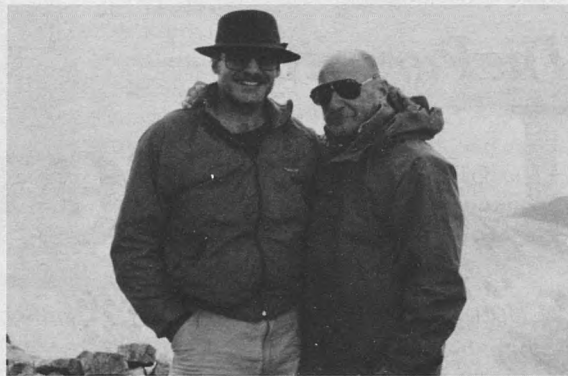
Kambis has been interested in the com-

bination of fitness and science since he was a youngster in Richmond. He attended Catawba College on a football scholarship, and took a double major in biology and physical education. "I found that I could apply the areas of science I was interested in most readily to the human population in physical education" he said.

A graduate assistantship at the University of North Carolina at Chapel Hill led to a master's in P.E. and a Ph.D. in cardiovascular physiology. Kambis became director of the Exercise Physiology Laboratory at UNC, but eventually became concerned about the need to expand his research beyond the scope of elite athletes.

Kambis set up a Wellness Institute at the University of California at Santa Barbara, the first of its kind in the University of California system. That program featured a unique relationship with a local hospital that provided clinical services, while the University did exercise and nutritional education.

But Kambis was lured back east by the



Kambis with his star pupil, 78-year-old Jack Borgenicht, on the summit of Mt. Elbert last August.

opportunity to join the faculty at William and Mary. He set up the Wellness lab on campus in the fall semester of '86, and the program has been growing in popularity ever since. "It's a very dynamic environment here. We're constantly learning new things about lifestyle and wellness. Each year we rely on the class to educate us," said Kambis.

The interest in aging runs in the Kambis family. Ken's brother Mitchell has a master's in sociology from W&M and a master's in gerontology from the Medical College of Virginia. Together they co-taught a course on "The Sociology of Aging at MCV," and are now collaborating on a book on "The Biology of Aging."

Kambis's vitality and excitement about health and wellness are the best advertisement for the successful addiction of exercise. "The reality of it is that it works," said Kambis. "All you have to do is experience how effective it is, and you'll do it — happily."

SOCIETY OF THE ALUMNI
P.O. Box GO
Williamsburg, VA 23187

Non-Profit
Organization
U.S. Postage Paid
Permit No. 19
Gordonsville, VA

