

UM reactor key asset in research

On a recent morning a physiologist from the UMC medical center arrived at the University-wide research reactor facility to pick up a can of sodium radioisotope. He found the lead can bound neatly with a red ribbon. It was the 100th delivery of the isotope to Dr. Allan Jones, who is researching hypertension and heart disease.

The value of radioactivity in medical research has been known since 1895, when Wilhelm Roentgen discovered the X-ray. Early experiments showed the rays could destroy cancerous tissues more rapidly than they affected healthy organs.

Radioisotopes are unstable atoms with atomic weights different from those of stable elements. They give off radiation spontaneously. Such radiation is used for tracers or markers in research and for curing diseases such as cancer. The problem with using them is difficulty with half-life, transportation, stringent regulation and inertia.

Jones, for instance, is working on ion transport in vascular smooth muscle. Sodium, long known as a villain in heart disease, is absorbed and expelled from vascular muscle cells. Jones soaks these cells in radioactive sodium for three hours. He then places the cells in a neutral, non-radioactive solution and measures the rate of expulsion of the sodium isotope from the cell's interior.

The problem, however, is that sodium has a half-life of just 15 hours. That is, in 15 hours the isotope loses half its radioactivity.

Rather like a light bulb on a dimmer, the light shines brightly at full power for the first hour. The researcher can see and examine an entire room. By the 15th hour the bulb has been dimmed to half-power. The researcher can see less. Fifteen hours later, the half-power is halved again to quarter power, and so on. As the researcher loses more and more sensitivity, he is able to "see" less and less.

If Jones were to order his sodium isotopes from a supplier in Buffalo, the chances are that he would lose 50 to 75 per cent of the initial activity by the time the isotope arrived in Columbia. Jones says he therefore cannot get isotopes of adequate sensitivity from a commercial supplier.

Another physiologist, Dr. Marvin Zatzman, is also studying vascular smooth muscle, but he is using a potassium isotope in his research. Potassium's half-life is half a day. Zatzman says, however, that he goes to commercial suppliers for long-life isotopes because he doesn't want to put the reactor to the trouble of making what is easily available.

Short half-life is the crux of a problem facing Dr. Michael Kay, senior research scientist of the University-wide research and applications science research group. Kay is trying to find a way to use the isotope krypton 85m commercially as a lung-scanning agent. He has to develop the technology through which krypton can be manufactured, irradiated and delivered for use in just four hours, the half-life expectancy of the krypton isotope. Kay says all the principles of using krypton as a scanning agent are known, but they have never been put together.

Short half-life is compounded by problems of transportation. One and a half years ago, commercial airline pilots refused to carry hazardous cargoes such as isotopes. This means an isotope not directly related to medical use, such as the sodium isotope in Dr. Jones's experiment, must be transported by charter flights. Researchers who obtain their isotopes in this way have to plan experiments weeks ahead with exact schedules delivered to the manufacturer and the charter airline. This usually results in fewer experiments and more cancellations.

The cost of such transportation is another factor. Jones estimates the commercial cost of a can of sodium isotope



Dr. Allan Jones (standing behind table) and lab assistants prepare for a hypertension experiment, using sodium radioisotopes from the UM reactor facility.

at \$40 and the transportation cost of the can at \$50. His 100 experiments, he says, would have cost about \$10,000 had he not used the University reactor. As it was, he spent only \$500.

Cost is the basic reason the UMC medical center is investigating the irradiation of gold seeds to destroy cancerous tissue. The platinum-covered, radioactive gold is injected into a tumor, where the intense radiation with a three-day half-life destroys the cancerous tissue without damaging sensitive healthy tissue nearby. David Switzer, an instructor in radiology at the med center, says these seeds are available from only two places in the Western Hemisphere, a company in Houston and a company in Canada. Switzer says efforts are directed at determining whether difficult procedures needed to irradiate and to test gold seeds for their radioactive value can be established cheaply enough in Columbia.

Another problem with using radioisotopes, whether short or long in half-life, is regulation. Stringent rules are enforced by the Energy Research Development Administration (formerly the AEC) and the Food and Drug Administration. The FDA demands that a new or investigatory drug application be made in the case of isotopes proposed for human use, and such applications may cause months of delay.

Dr. Kevin Ivey, a gastrointestinal researcher at the Veterans Administration Hospital in Columbia, says his application to make and use chromium-51 chloride for human research cost him two months. He says one month was spent writing the protocol for the use of the isotope and

another waiting for the FDA to approve it. This happened despite the fact researchers have used chromium-51 chloride in humans for over 10 years. Ivey says the FDA protocol is so stringent that he can obtain the isotope only from the University reactor.

Federal regulation also has ended the use of other isotopes for human research. Ivey cites the case of a radioactive polyethylene glycol, which he says was used in human research until FDA regulations made it too expensive for even commercial companies to manufacture.

Dr. Noel Nuessle, an associate professor of pharmacy at UMKC's medical center, says he began studies of cobalt-60 sterilization of cosmetic materials because he disagrees with the FDA. He says the FDA's conclusions about the sterilization technique were unscientific because the agency did not give details of its research.

However, Nuessle says that did not prevent the FDA from demanding a new drug application for use of cobalt-60 to reduce bacteria counts in the dyes, lakes (insoluble dyes) and natural gums used in cosmetics and pharmaceutical preparations. Nuessle says his conclusions using the University reactor and a slightly different technique run counter to the FDA's.

Perhaps the most serious problem with using radioisotopes at UM is inertia. Mike Kay says researchers often do not use the services of the reactor because they do not understand what the reactor and isotopes can provide. Moreover, he says, researchers often have difficulty writing the nuclear sections of research proposals.

To solve this problem, Kay says, he is trying to provide full service and support to researchers writing grant proposals involving the reactor. In fact, he says he will write the sections of proposals that relate to reactor use.

Kay emphasizes that the reactor is surprisingly under-used in some areas. He says the reactor could handle 10 times as much isotope business as it has now.

Kay's view is shared by Allan Jones, who is disappointed that the reactor is used so little, especially in medical applications. Because of the reactor, he says, research can be conducted here that can be duplicated in only a few other places in the country.

—Jim Horton

Spectrum

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University of Missouri

UM Press publishes study of Roth

The UM Press has published another volume in its Literary Frontiers series, *The Comedy that "Hoits": An Essay on the Fiction of Philip Roth*, by Sanford Pinsker.

The book is a study of Roth's development through his seven novels, from *Goodbye, Columbus* to *My Life as a Man*.

Copies are available for \$5 from booksellers and from the UM Press, 107 Swallow Hall, Columbia.

NSF data shows where grants went

A geographical breakdown of where National Science Foundation money went in 1974-75 shows that institutions in Missouri received 165 grants totaling about \$6.4 million.

Compared with other states, Missouri ranks 19th in the number of grants received and 24th in total funding. The figures also show that Missouri's "success ratio," the percentage of accepted proposals, was only 40 per cent. In terms of its success ratio, Missouri ranked 40th.

California ranked first in the number of grants—1,412—and first in total funding—\$94.6 million. Its success ratio of 58 per cent was surpassed only by the District of Columbia, which had 60 per cent.

University Calendar of Events

CONCERTS, PLAYS

Sept. 17-21: Readers Theatre at University Theatre at 7:30 p.m. For further information call 882-2021.

Sept. 17-21: University Theatre presents "Under Milk Wood" at 7:30 p.m. in the Fine Arts Center. Information and reservations available by phoning 882-2021.

Sept. 19: Faculty Bassoon Recital, with Barbara Wood at 8:15 p.m., in the Recital Hall Fine Arts Bldg.

Sept. 21: Collegium Musicum, at 3:30 p.m. in the Recital Hall, Fine Arts Bldg.

Sept. 22: Faculty Showcase concert held at Jesse Aud. at 8:15 p.m.

Sept. 24: Broadway play: "Don't Bother Me, I Can't Cope" 8 p.m., Jesse Aud., \$3.50, \$2.75, \$2 MSA members; \$4, \$3.25, \$2.50, public. Last day to buy season tickets.

FILMS, EXHIBITS

Sept. 1-Sept. 26: Women Artists exhibition at Fine Arts Center. Ceramics by Jean Garrett; paintings by Gail Rutherford, Joanne Zucco Berneche.

Sept. 12: Movie: "Mean Streets," 7 & 9:30 p.m., Jesse Aud., tickets required. MUTW-\$.75; \$1 at the door.

Sept. 12: Astronomical Film of the Week: "The Flaming Sky" at 7:00 p.m. Fridays, Room 114 Physics.

Sept. 13: Movie: "Save the Tiger," 7 & 9:30 p.m., Jesse Aud., tickets required. MUTW-\$.75; \$1 at the door.

Sept. 14: Movie: "Ten From Your Show of Shows," 7 & 9:30 p.m. in Jesse Aud.

Sept. 17: College of General Studies: "Ascent of Man" film, Harvest of the Seasons, 7:15 & 8:30 p.m., 204 GCB.

Sept. 17: Movie: Gregory Peck night, "To Kill a Mockingbird," and "Moby Dick," 7 & 9:30 p.m. Jesse Aud.

Sept. 19-20: Movie: "The Sting," 7 & 8:30 p.m., Jesse Aud., Tickets required. Tickets \$.75 at Memorial Union ticket window, \$1.00 at the door.

Sept. 19: Astronomical Film of the Week: "Mars and Beyond" at 7:00 p.m. Fridays, Room 114 Physics.

Sept. 21: Movie: "The Sugarland Express," 7 & 9:30 p.m. Jesse Aud.

Sept. 24: College of General Studies: "Ascent of Man" film, Grain in the Stone, 7:15 & 8:30 p.m., 204 GCB.

Sept. 24: Movie: Blacks in the West, "Buck and the Preacher," and "Man and Boy," 7 & 9:30 p.m., Geology Aud.

Sept. 25-Oct. 15: Stanley Hall Gallery: "Hand Crafted Furniture" by John W. Kriegshauser.

Sept. 26: Movie: "Harry and Tonto," 7 & 9:30 p.m., Jesse Aud. Tickets required. Advanced tickets \$.75 at MUTW, \$1 at the door.

Sept. 26: Astronomical Film of the Week: "The Hidden Earth" at 7:00 p.m. Fridays, Room 114 Physics.

LECTURERS, SPEAKERS

Sept. 15: International: "It's a Small World—Nigeria," 7:30 p.m., Read Hall Basement.

Sept. 15: Lunchbag Seminar on Study Skills at 12 noon in the basement of Gentry Hall. Bring your lunch. Open to the public.

Sept. 16: Lecture: Transcendental Meditation, 2:40 p.m. 41 A & S and 7:30 p.m. Allen Aud.

Sept. 18: Speaker: Bill Russell, 8 p.m. in Jesse Aud.

Sept. 18: Lunchbag Seminar Menopause: Miracle, Magic, or Misery at Women's Center at 12 noon. Bring your lunch. Open to the public.

Sept. 19: Coffeehouse: Steve Martin, 8 p.m., Elbow Room Memorial Union.

Sept. 22: International: Coffeehour, "Future Implications of Nuclear Energy for the World," 7:30 p.m., Read Hall basement.

Sept. 22: Lunchbag Seminar on Financial Aid for the Returning Woman at 12 noon in the basement of Gentry Hall. Bring your lunch. Open to the public.

Sept. 22: English Lecture Series: Marie Borroff, prof. of English, Yale University, "Robert Frost: To Earthward," 8:00 p.m., Small Ballroom of Memorial Union.

Sept. 24: "I'm Not Fat, I'm Just Pregnant" discussion group held by the Women's Center in the basement of Gentry Hall. For further information contact Judy Lavin.

Graduate School and Research Notes

UNIVERSITY RESEARCH FOR SOLUTION OF TRANSPORTATION PROBLEMS - This is the solicitation notice for the FY 76 DOT Program of University Research. No other solicitation is planned for FY 76. The primary purpose of this program is to insure that the resources of the higher education community are brought to bear effectively on national, state, and local transportation problems. The deadline for submission of proposals is Dec. 1, 1975. For copies of the solicitation booklets write: Office of the Secretary, Office of University Research (TST-60), Department of Transportation, 400 Seventh St., S.W., Washington, D.C. 20590.

TRUMAN SCHOLARSHIPS - The President has signed into law (P.L. 94-91) an appropriation bill which contains \$10 million to initiate new Harry S. Truman scholarships as a memorial to the late President. The scholarships will go to students, either undergraduate or graduate, planning to pursue public service careers. The scholarships will be awarded by a Truman Scholarship Foundation which is not yet in operation. It is anticipated that the first awards will be made for 1976-77 academic year. As soon as guidelines for the program are received, they will be published in Faculty Bulletin.

FELLOWSHIPS FOR INTERNATIONAL DOCTORAL RESEARCH SPONSORED BY ACLS AND SSRC - Fellowships are offered for doctoral dissertation research in the social sciences and the humanities to be carried out in Africa, Asia, Latin America and the Caribbean, the Near and Middle East, or Western Europe. Program purposes and eligibility requirements vary slightly from one area to another. Applicants normally must be enrolled in full-time study at universities in the U.S. and Canada and have completed requirements for the Ph.D. except the dissertation, by the time the grant is activated. The fellowships support 9-18 consecutive months of field research in the relevant area. Applicants may also request up to six months of support for specialized preparatory training in disciplinary, language, or methodological skills essential to the successful undertaking of the research. Recipients are also eligible to apply for limited support for a maximum of six months for writing the dissertation upon their return to their home institutions. Completed applications are due by Nov. 3, 1975. The results of competitions will be announced by April 1, 1976 for fellowships to begin by Jan. 1, 1977. For further information write: Social Sciences Research Council, Fellowships and Grants, 605 Third Avenue, New York, N. Y. 10016.

POSTDOCTORAL GRANTS FOR RESEARCH ON FOREIGN AREAS SPONSORED BY ACLS & SSRC - Grants for research on foreign areas are offered to

scholars whose competence for research in the social sciences or humanities has been demonstrated by their previous work and who hold the Ph.D.. These programs are designed to support research in one country, comparative research between countries in an area, and comparative research between areas. The grants may be used for travel and research expenses as well as for maintenance. Applicants for grants for research in Latin American and the Caribbean should specify whether English, Portuguese, or Spanish language forms are desired. Deadline for applications is Dec. 1, 1975 for awards to be announced by April, 1976. For application materials, write above address.

RESEARCH PRODUCTIVITY MEASUREMENT SYSTEMS FOR ADMINISTRATIVE SERVICES - The Division of Advanced Productivity Research and Technology of the Research Applications Directorate, National Science Foundation, will provide support for basic, exploratory, and applied research to create a basis for the design and implementation of productivity measurement systems for administrative services. Proposals should provide for creating a utilization plan for the results of the research. The next deadline for receipt of applications is Nov. 11, 1975 for FY 76 funding. For guidelines request NSF 75-14.

UNITED STATES - FRANCE EXCHANGE OF SCIENTISTS - In furtherance of a decision by the governments of France and the U.S. to develop scientific and technical cooperation, a program for exchange of young scientists is jointly sponsored and administered by the NSF and the National Center for Scientific Research of France. Exchange awards are made for study or work in the mathematical, physical, chemical, engineering, biological and social sciences including economics. The period of the exchange visit shall normally be between 5 and 15 months. An individual in the U.S. wishing to apply for an award may obtain application materials from the National Science Foundation, 1800 G St., N.W., Washington, D.C. 20550. The competition will be open until Nov. 1, 1975.

SAGE FOUNDATION PROGRAMS - In its recently issued annual report, the Russell Sage Foundation outlined eight new program areas established by its trustees and staff for future development. Split into four major and four minor fields, these areas are: 1) Law and Social Science; 2) Assessing Organizational Performance; 3) Civil Liberties and Social Control; 4) Age. The four minor program areas include Changing Social Roles; Historical Studies of Social Policy; Philanthropy; and Increasing the Use of Social Research. For further information contact the Russell Sage Foundation, 230

Park Avenue, New York, N.Y. 10017, (212) 689-6622.

GRADUATE FELLOWSHIPS FOR WOMEN - The Danforth Foundation has opened its Graduate Fellowships for Women program. The program is designed to assist able women to obtain their master's or doctoral degree in preparation for teaching in secondary schools or colleges. Fellowships will be given to qualified women seriously interested in a teaching or educational administrative career. For further information write to Graduate Fellowships for Women, Danforth Foundation, 222 South Central Ave., St. Louis, Mo. 63105. The deadline for submission of application is Jan. 1, 1976.

OTHER DEADLINES:

Sept. 25 NIMH Small Grant Program
 Sept. 30 ACLS Grants-in-aid
 Sept. 30 ACLS Research Fellowships
 Oct. 1 Faculty Research Participation (NSF)
 Oct. 1 HUD Doctoral Dissertation Research Grants
 Oct. 1 NIH Research Project Grant Program
 Oct. 1 NIMH Regular Research Grant Program
 Oct. 1 Woodrow Wilson International Center Fellowships
 Oct. 1 Graduate School funding for Symposia
 Oct. 1 Applications to Graduate School for NEH Summer Stipends
 Oct. 15 OE Research and Training Programs Abroad
 Nov. 1 Fulbright-Hays Graduate Study Abroad through the Institute of International Education
 Nov. 3 Research Corporation Postdoctoral Fellowships
 Nov. 10 Student Originated Studies
 Nov. 10 NEH Research Tools & Editing Program
 Nov. 10 White House Fellowships
 Nov. 21 NEH Work Experience Internship Program
 Dec. 1 NSF Research Initiation
 Dec. 1 NSF Energy-Related Postdoctoral Fellowships
 Nov. 7 NSF Energy-Related Graduate Traineeships
 Oct. 1 NATO Senior Fellowships
 Oct. 27 NATO Postdoctoral Fellowships
 Dec. 1 NSF Graduate Fellowships

RESEARCH COUNCIL MEETING - The next meeting date for the University Research Council has been set for Sept. 19. Proposals should be submitted to the Office of Research by Sept. 10 for consideration at this meeting.
 (For more information on above programs call Ms. Carol McQuary, 882-6311)

Columbia

Mayer, Bank join national medical group

William D. Mayer, member of the faculty and a former dean of the UMC School of Medicine and Gail I. Bank, executive director of continuing education programs at the Medical Center, have been appointed to a newly formed national liaison committee on continuing medical education.

Purpose of the 18-member committee is to provide a body for developing new principles and policies for continuing medical education, its supervision and accreditation, comparable to those liaison committees already existing for undergraduate and graduate medical education. An organizational meeting will be held this fall.

Campbell performs Sept. 27

Glen Campbell will bring a 25-member troupe of entertainers for a performance Sept. 27—the night of the Wisconsin football game—at the Hearn's Multipurpose Building. Campbell, who has won 11 Gold Records for single and album releases during his singing career, will be accompanied by his Las Vegas rhythm section and three girl back-up singers.

Recognized as one of the nation's leading concert attractions, Campbell has been honored five times by the National Academy of Recording Arts and Sciences and holds six awards from the Academy of Country and Western Music. He was named the Country Music Association's entertainer of the year—a title he also holds from the British Country Music Association.

With his "Glen Campbell's Greatest Hits LP" he is one of the few artists to receive both the Gold Cassette and Gold 8-Track awards as well as a Gold Record for a single album in Great Britain. Campbell also is the No. 1 recording artist in New Zealand where he has three Gold Records.

Tickets for the concert are now on sale at the Hearn's boxoffice. Prices are \$5.50, \$4.50 and \$3.50.

Around Campus

21 faculty added to doctoral group

UMKC has added 21 faculty members to the University Doctoral Faculty for five-year terms. Dr. Herwig G. Zauchenberger, Graduate Studies Dean, said this brings the total to 123. The new members and their respective fields are listed. Education: Ronald Carver, John E. George, Jack P. Krueger, and Hugh W. Speer. Psychology: James F. Collins, William Ghiselli, Daniel Levinson. Dentistry: Glenn Harrington, B. Macedo-Aobrinho, Faye Sayegh. Conservatory: Charles Doherty. Pharmacy: Ashok Gumbhir. Mathematics: Elbert Pirtle. Administration: Bernard Sarachek. History: Joseph Schultz. Political Science: Ross Stephens. Biology: Michele Stern, James Vial, Quintin B. Welch. Medicine (Microbiology): Herbert Wenner. English: Robert Willson.

Provost joins new development council

Dr. Wesley J. Dale, Provost, has been appointed to the newly established Development Council of the Society for College and University Planning. He is on the Council for Academic Planning and will gather information on methods of key U.S. institutions' academic planners as well as conduct a study on ways institutions can better be serviced by the Society.

UMKC will give course for AAAS

UMKC is one of six centers in the country selected by the National Science Foundation and American Association for the Advancement of Science to participate in a project to test a Chautauqua-Type Short Course for Secondary School Teachers. If successful, the programs will be expanded in the future.

Discount available for Lyric Opera

The University Associates are offering a limited number of tickets at a 20 percent discount for three evenings of opera during the Kansas City Lyric Theater's upcoming season. Shows include "Captain Jinks of the Horse Marines," on 9/20; "The Flying Dutchman," 9/23; and "La Boheme" on 10/14. All operas are sung in English. For details contact University Associates at Ext. 1574.

New course to build women's math skills

A non-credit course designed to develop math skills in people who believe they cannot do math is being offered by Arts and Sciences Continuing Education Program. Dr. Carolyn MacDonald, Physical Science and Physics assistant professor, will teach Basic Mathematics I, II and III at 7-9 p.m. Mondays, beginning 9/27. The course focus is on women, but all are welcome. For fee information or course registration, call Ext. 1463.

Star music editor will teach course

John C. Haskins, music editor of the Kansas City Star, will conduct a six-session course, "Approaches to Opera Enjoyment," in conjunction with the Kansas City Lyric Theater's opera season. Sessions will provide special preparation for upcoming opera performances. The course meets 7-9 p.m. Mondays 9/15-10/20. For information, contact the Conservatory's Continuing Education Office at Ext. 2741.

Calendar

9/12	University Hour, noon, Med
9/12	Ado, 8, Playhouse
9/12	The Graduate, 8, 116 HHA
9/13	Orchard, 5, 9, Playhouse
9/14	Born, 2, Playhouse
9/14	Well, 8, Playhouse
9/14	The Graduate, 8, 116 HHA
9/15	Bramwell Fletcher as Bernard Shaw, 8, Playhouse
9/16	Desire, 8, Playhouse
9/17	Knights, 8, Playhouse
9/17	Basset Horn Recital, 8:15, Stover
9/18	Ado, 8, Playhouse
9/19	University Hour, noon, Med
9/19	Paper Chase, 8, 116 HHA
9/19	Orchard, 8, Playhouse
9/19	Graduate Recital, 8:15, Stover
9/20	Captain Jinks, 8:15 Lyric
9/20	Born, 5, 9, Playhouse
9/21	Desire, 2, Playhouse
9/21	Well, 8, Playhouse
9/21	Paper Chase, 8, 116 HHA
9/23	Flying Dutchman, 8:15, Lyric
9/24	Closely Watched Trains, 8, HHA

Education alumni set wine festival

The School of Education will hold its fifth annual Harvest Wine Festival on 10/10 at the U-Smile Stadium Inn, 7901 E. New 40 Hwy. Folk music, cider, apples and free wine tasting will be features of the event. A \$2.50 donation will be used to help fund Education programs and projects.

Basset horn to play in lecture-recital

A lecture-recital featuring an unusual instrument—the basset horn—will be held 8:15 p.m. at the Conservatory on 9/17. Former faculty members (1967-69) James Luke on basset horn and Marian Yeager Luke on piano will perform with Charles Doherty on clarinet. The program includes selections by Danzi and Mendelssohn.

Debate session set for Truman Campus

The Truman Campus is sponsoring a high school debate workshop on 10/4. Invitations have been extended to 25 schools in the Greater Kansas City area. Dr. Walter Murrish, Speech professor and Forensics Director, is coordinating the program which will focus on the national interscholastic debate proposition: "Resolved: That the development and allocation of scarce world resources should be controlled by an international organization."

'New Letters' issue stresses loneliness

The summer issue of "New Letters", UMKC's literary quarterly, stresses the theme of loneliness. Edited by David Ray, the issue includes an excerpt from an unpublished novel by James McKinley and a new book by John Balaban as well as nationally known poets and authors.

Promotional Opportunities

If you are interested in any of the positions listed, telephone the designated person at Ext. 1621.

Contact Michael Sweaney:
Boiler Fireman
Mechanical Tradesman

Contact Jane Quigley:
Sr. Stenographer
Switchboard Operator
Sr. Secretary
Photographer
Engineer-TV certified

School and Department Notes

Chemistry

Newly appointed assistant professors include Dr. Anthony J. Hancock and Dr. Kenneth S. Schmitz.

Conservatory

Carol Wilcox, Affiliate Artist, will present a free lecture-recital in Stover Auditorium at 2:30 p.m. on 10/4. The program is part of the activities of a meeting of the Kansas City Area Chapter of the National Association on Teachers of Singing.

Continuing Ed

The Advisory committee of the Carolyn Benton Cockefair Chair in Continuing Education is under new leadership and has added two new members. The new chairman is James W. Powell. Mrs. James W. Powell is new vice-chairman. New members are Mrs. Joseph M. Crowe and Mrs. Dean F. Werner.

Dentistry

New faculty appointments include Dr. Corey H. Holmes as professor and chairman of Periodontics. Appointed as assistant professors are Dr. Donald P. Calhan, Dr. John A. Gilbert, Dr. Thomas J. McGarry, Jr., Dr. Joseph S. Sakumura, Dr. J. Dwaine Wagner, Dr. George Wian, Dr. Ronald D. Wright and Dr. Charles D. Body.

KCUR-FM

New appointments include Mark C. Poindexter as reporter-producer and Betty Anne Morris as administrative aid for public awareness. Both positions are funded by a grant from the Corporation for Public Broadcasting.

Pharmacy

A new series of Sunday Seminars for pharmacists will be sponsored throughout the state by the Pharmacy component of WMAHEC. The series will focus on "The Pharmacist's Role in Ostomy Care." The program will be at the KCI Marriott Hotel on 11/18 at 9 a.m.-2 p.m. For information, contact Dr. Donald Wilk, Pharmacy Continuing Education coordinator.

Medicine

University Hour lectures this month include Dr. James Lynman, speaking on "Sideroplastic Anemia," today (9/12), and Dr. Lemuel Diggs, speaking on "Fifty Years in Hermatology" on 9/19. Lectures are held noon each Friday in Theatre C.

Nursing

Mrs. Helen R. Connors is UMKC's first nurse docent. In addition to duties as a registered nurse, she will have a key role as teacher, planner, decision maker and evaluator.

Sociology

Sandra Walker, who received her B.A. and M.A. here, was chosen the nation's most outstanding minority group student in Sociology by the American Sociological Association and will receive a cash award at its annual meeting in San Francisco.

UMKC

Professional Activities

Presentations

James Falls, History, read a paper, "Henry II, Ranulf de Glanville, and the English Church, 1180-1189" at the Medieval Institute in Kalamazoo, Mich. in May ... John Urani, Physics, spoke on "What Students Might Like about the Twentieth Century, Some Modern Physical Phenomena" at Paseo High in May ... Dr. Hamilton B.G. Robinson, Dental Dean Emeritus, presented papers on "Lesions of the Tongue" and "Reflections of a Dental Educator" at the third annual Hamilton B.G. Robinson Symposium on Oral Pathology at the Ohio State University in May ... Dr. Marvin E. Revzin, Dental Dean, taught three courses at a University of Southern California program in Hawaii in August... Assistant Dean Mary Merryman, Arts and Sciences, spoke on "The Use of Education: Present and Future," 9/19 to the Kansas City Chapter of the American Institute of Banking ... Dr. Don Knight, Education, made a presentation, "Informal Education in England and Implications for Open Education in the United States," at the annual Utah Inter-institutional seminar in Childhood Education in Salt Lake City 9/4-8.

Honors

Dr. James Herbertson, Dentistry and Medicine, was named an honorary member of the American Rhinologic Society on 8/22 ... Bonnie L. Sims, Personnel, was elected president of the Miz-zou Employees Federal Credit Union ... Dr. Lyndel G. Holmes, Dentistry, has been awarded a dental teacher training fellowship by the American Fund for Dental Health ... Frances Singleton, Dentistry, was awarded one of two national scholarships through the American Society of Medical Technology ... Dr. E. Grey Dimond, Health Science Provost, was named an honorary president of the UMKC Pharmacy Alumni Association on 9/23.

Publications

Dr. Tawfik ElAttar, Chemistry has coauthored a section on "Steroid Hormones in the Chemistry Functions of Hormones" in the 1975 edition of "Review of Physiological Chemistry."

Additions to the faculty-- 1975-76

The following are short introductory paragraphs to introduce new members of the faculty. They are listed alphabetically. Because of space limitations, several will appear in this issue of Spectrum and the remainder will be in the next issue on Friday, Sept. 26.

Dr. Gerald P. Alldredge, senior research investigator at the Graduate Center for Materials Research, is a native of Texas. He received his B.A. degree in 1958 from Texas Tech University, Lubbock, and attended the University of California-Berkeley for one year before receiving his M.S. from Texas Tech in 1960. He earned his Ph.D. degree in physics in 1964 from Michigan State University, East Lansing.

Dr. Alldredge joined the faculty of Southern Illinois University-Carbondale in 1964 as an assistant professor of physics and moved to the University of Texas, Austin, as a research scientist associate and lecturer in 1968. His bibliography lists 34 publications and 27 abstracts. He reviews manuscripts for four professional journals and research proposals for the National Science Foundation and Research Corp. He is an active member of the American Physical Society and several other professional organizations.

According to members of his department, Dr. Alldredge is an internationally recognized surface theorist in physics.

Dr. Max D. Anderson, associate professor of electrical engineering, earned his B.S. and M.S. degrees in electrical engineering at Oklahoma State University, Stillwater, in 1958 and 1959 and spent a year in post-graduate work at Northwestern University, Evanston, Ill.

In 1960 he began his career with Rockwell International Information Systems--Autonetics. In 1963, he enrolled at Arizona State University where he served as an instructor while working toward his Ph.D. degree which was awarded in 1967.

He returned to the company in 1966 and his industrial background includes system studies and computer applications to power system data acquisition and control; studies for hardware applications for real-time computer systems in utilities within the United States including Bonneville Power Authority, General Public Utilities, Southern Services, Pennsylvania Power and Light and, most recently, the responsibility for the design, installation and testing of a data acquisition and control system for Ontario Hydro, Ontario, Canada.

William H. Desvousges, instructor in economics, is a native of Florida. He earned his B.A. degree in economics from Stetson University, Deland, Fla., in 1972 and his

M.S. degree from Florida State University, Tallahassee, in 1974. Expected completion date for his Ph.D. degree from the same institution is late 1975 or early 1976.

His research experience and interests are in the areas of natural resources, industrial organization and public finance. His dissertation topic is "Competition in Outer-Continental Shelf Oil and Gas Lease Sales, 1954-1974." He has been a teaching assistant and instructor at Florida State since the spring of 1973.

Dr. John A. Eilers, assistant professor of engineering management, received his B.A. degree in history from Lafayette College, Easton, Pa., in 1954 and his M.A. in political science from the University of Maryland in 1956. He had a year of post-graduate work at the University of Virginia and received his Ph.D. degree in political science from the University of Iowa in 1972.

He was an assistant professor of political science at Arizona State University, Tempe, from 1966 to 1973 and has since served as visiting assistant professor of political science at the University of Maryland and the University of Missouri - St. Louis. His non-academic experience includes the position of associate director, Brakeley, John Price Jones Co., New York, and assistant technical director, U.S. Department of Commerce.

Dr. Eiler's areas of specialization include public administration and American government. His responsibilities within the department will include emphasis on the public works management program.

Dr. Emily P. Hoffman, assistant professor of economics, received her A.B. degree in economics in 1965 from the University of Massachusetts/Amherst, her M.A. from Boston College in 1968 and her Ph.D. from the University of Massachusetts/Amherst in 1975. Her dissertation is entitled "An Economic Study of University of Massachusetts/Amherst Salary Differentials."

Since 1966, Dr. Hoffman has taught at Boston College, Northeastern University, Lowell Technological Institute and the University of Massachusetts. Her research experience has included work at John Hancock Life Insurance Co., Boston College and the U.S. Department of Labor. She has participated in several professional conferences and meetings within the past two years and is a member of two national professional organizations.

Dr. Dennis A. Klein, instructor in Spanish, earned a B.S. degree in education in 1965 and an M.A. degree in 1967 from the University of Kansas, Lawrence. He was awarded a Ph.D. degree in 1973 from the University of Massachusetts.

Since 1965 he has taught at the University of Kansas, the University of Massachusetts and St. Hyacinth's College and Seminary, Granby, Mass. He came to UMR after two years as assistant professor at Southwest Missouri State University, Springfield.

Dr. Klein's areas of specialization are Spanish theater and modern literature. His dissertation is entitled "A Critical Bibliography of the Theatre of Federico Garcia Lorca: 1940 through 1970." He is currently compiling a two-volume bibliography on Lorca.

Dr. Leonard F. Koederitz, associate professor of petroleum engineering, is a native of St. Louis and a UMR alumnus. He received his B.S. in chemical engineering in 1968, his MS. and Ph.D. degrees in petroleum engineering in 1969 and 1970--all from UMR.

Since receiving his Ph.D. degree, Dr. Koederitz served on active duty with the U.S. Army Chemical Corps and worked for Atlantic Richfield as senior engineer and staff reservoir engineer with assignments in the reservoir simulation and technology group and the primary development and evaluation group. In 1974 the company named him senior research engineer, project leader: reservoir description and simulator applications.

Dr. Ronald A. Kohser, assistant professor of metallurgical engineering, is a native of Pennsylvania. He received his B.A. in physics in 1969 from Lehigh University, Bethlehem, Pa., and his M.S. in physics in 1970 from Iowa State University, Ames. He was awarded a Ph.D. in metallurgy and materials science from Lehigh University in June, 1975.

His experience includes five summers of employment with United State Steel Corp. and teaching and research positions at Iowa State and Lehigh universities. His dissertation is entitled "An Upper Bound Analysis of the Upset Forging of Rectangular Strip and Solid Cylindrical Disc to Account for Bulge and Fold."

Industry day

A total of 55 industries doing business in Missouri will participate in Missouri Industry Day Tuesday, Sept. 16, 10 a.m. to 5 p.m., at the Multi-Purpose Building.

Companies will set up displays demonstrating products or services they provide and indicate the employment opportunities they offer. Representatives from each industry will be on hand to answer questions.

Everyone is invited to attend. There is no admission charge. UMR students will serve as hostesses and guides to specific displays. Door prizes will be awarded periodically during the day.

Chemistry seminar

Dr. Michael Gross, associate professor of chemistry, University of Nebraska, will conduct a chemistry seminar Tuesday, Sept. 16, 4:30 p.m., Chemistry-Chemical Engineering 125. Title of the seminar is "An Ion Cyclotron Resonance Study of Ion-Molecule Reactions of Various C₆H₆ and C₈H₈ Radical Cations."

Coffee will be served at 4 p.m.

Agenda deadline

Deadline for items to appear on the agenda of the next Academic Council meeting (scheduled for Oct. 2) is Wednesday, Sept. 17. Items should be sent to Professor Ralph E. Schowalter, Mechanical Engineering 203.

Faculty-staff tennis singles

A faculty-staff round-robin singles tennis tournament is in the process of development. Three divisions (A, B and C) are proposed. Those interested in participating or wishing more information should call Dr. Moore's office (4401) on or before Wednesday, Sept. 17.

Rolla

Calendar

- Sept.
- 15-16--Computer instruction course, Introduction to Job Control Language, 3:30 p.m., Mathematics-Computer Science 209
 - 16--Missouri Industry Day, 10 a.m. to 5 p.m., Multi-Purpose Building
 - 16--Chemistry seminar, Dr. Michael Gross, 4:30 p.m., Chemistry-Chemical Engineering 125
 - 17--Agenda deadline for Academic Council meeting, Professor Ralph E. Schowalter, Mechanical Engineering 203
 - 17-19--Computer instruction course, Time Sharing Option, 3:30 p.m., Mathematics-Computer Sci 209
 - 23--Class roll check sent to departments



Back to the grind; the first meeting of the Academic Council.

Conference schedule complete

A number of faculty members from three UM campuses are among those who will present papers at UMR's second annual Conference on Energy, according to Dr. J. Derald Morgan, conference director.

The theme of the conference is "Energy Crisis—Two Years' Progress Toward Self-Reliance," Dr. Morgan said, and the sessions should be of interest to scientists, engineers and social scientists who are concerned with energy-related problems.

Opening the conference, which is scheduled for Oct. 7-9 on the Rolla campus, will be Dr. Raymond Bisplinghoff, UMR chancellor. Luncheon speakers will include Dr. Paul Davidson, professor of economics, Rutgers, and P. N. Ross, manager, systems planning, Westinghouse. Dr. Bill Atchley, dean of engineering, University of West Virginia, and William R. Cherry, head, Agricultural and Process Heat Branch, Energy Research and Development Administration, will be session keynote speakers.

Further information may be obtained from Norma Fleming, Extension Division, UMR.

'Students forced to go public'

The president of the Commission on Independent Colleges and Universities has criticized New York State for its failure to increase subsidies to independent institutions. As a result, he said, students who cannot afford to pay higher tuition are being forced to attend public colleges and universities.

The commission president, Henry D. Paley, said tuition at the more than 100 private institutions in New York would increase by an average of \$200 per student this year.

"More low-income and middle-income students are left without any real freedom of choice," he said. "They are simply priced out of the independent sector and have no option other than a government-operated university or no college."

Paley said the State Education Department had forecast that 17,045 students would be added to the rolls of colleges and universities in the state this year, and that only 484 of those students would be attending independent institutions.

UM's liability insurance

On a steamy summer afternoon a few years ago, a perspiring professor wiped his forehead, glumly surveyed the sullen faces of his students and proceeded resignedly to attempt to illuminate for them the dark side of a subject in which their interest was clearly waning rapidly.

Midway through the lecture, he peered hopefully over the hot, slumberous bodies, searching out the bleary eyes of the few die-hard scholars and insomniacs who remained conscious. Thinking that he might revive them with fresh air, he opened the door and drew up a chair to secure it against the resulting draft, then resumed his discourse.

At last, with the words "That's all for today," he snapped his notebook closed and stepped from the lectern, assuming that he could probably slip away without disturbing his audience. But suddenly he heard behind him a great shuffling and scraping of chair legs, and before he could reach the door he was overtaken and passed by several of his fleetest students, the first of whom rammed painfully into the chair which he had placed in the doorway and toppled over it into the hall.

And then what happened? Bob Marriott puffs gravely on his pipe, which went out during the part about propping the door open. He is in no hurry to conclude the story. As director of insurance and risk management, in which position he is required to worry constantly about every conceivable calamity that might befall the University, he has little time to concern himself with the art of weaving a narrative.

Finally, having rekindled his tobacco, Marriott briskly summarizes the concluding action: the injured student sued the professor, who was found to have created a hazard by blocking the exit, and the judgment was rendered in favor of the plaintiff. Of course, the professor didn't actually have to pay anything himself, Marriott points out. He was protected by his university's liability insurance, which is similar to ours at the University of Missouri.

The fact that the professor was negligent, Marriott says, has no bearing on the question of coverage.

"This is sometimes a point of confusion," he says. "Many persons seem to think that if they are negligent they aren't protected by our insurance. Negligence isn't an issue. That's why we have insurance. We assume that if there is a legitimate claim or judgment it is a result of some negligence."

"There are exceptions, but generally speaking, anything an employee is doing, anything related to his job, arising out of or in the course of his employment, is covered by our insurance."

A frequent target of suits at the university level is the chemistry instructor whose students blow up the laboratory after having been left unattended. Juries may or may not find the instructor negligent, depending on the circumstances—or perhaps merely on how hot it is in the courtroom. But coverage is extended without question, Marriott says.

On the other hand, suppose a professor is moonlighting, using a University laboratory for purposes wholly unrelated to his work at the University. If an accident occurs under these circumstances, resulting in a suit against the professor, he'll have no protection under the University's liability insurance.

A second area of coverage of particular importance to many University employees is auto liability. "This coverage,"



These UM agricultural students, posing for a photographer in the summer of 1900, have shown up in the latest special issue of LIFE, which is a report on "The 100 Events that Shaped America." The picture illustrates event no. 51, the Morrill Act, which allowed the states to sell 17 million acres of federally owned land and use the proceeds to establish land-grant colleges.

Marriott explains, sounding like the *Business Policy and Procedure Manual*, which he helped write, "provides protection against damages for bodily injury or property damage caused by an occurrence and arising out of the ownership, maintenance or use of any vehicle being used for official University business." The vehicle need not be owned by the University. In fact, he says, it may be owned by an employee, in which case the coverage is in excess of the employee's insurance.

In any event, Marriott says, the important thing to remember is that the coverage applies only if the vehicle is being used by an authorized driver on official University business. Moreover, any passengers in the vehicle must be on official University business as well. Unauthorized side-trips, such as stopping off at a grocery to pick up a loaf of bread, are not covered.

Another important area, one in which activity is increasing almost daily, is personal injury. As Marriott explains it, personal injury encompasses bodily injury, sickness, mental anguish, etc., but it also takes in such offenses as false arrest, wrongful eviction, libel, slander, defamation of character and invasion of privacy, several of which are frequent subjects of suits against universities and their employees.

"Suits of this nature are pretty common," Marriott says. "Say there's a student who is being very obnoxious, and the professor asks him to leave the room. The student refuses and the professor threatens to call the University police. After the student again refuses, the professor calls the police and they haul him out. Now the student might bring a suit against the professor alleging wrongful eviction, and he might sue the police department, too, claiming mental anguish, wrongful detention, false arrest or false imprisonment."

"The professor would be covered, of course, and our insurance would also provide for legal defense. There would be no expense to the employee. He wouldn't even have to hire his own attorney."

This coverage, like numerous other clauses in the University's insurance policies, was the result of Marriott's

worrying, worrying about all the things that might conceivably go wrong. At this point, he says, after worrying for five years, he's fairly certain he's thought of everything.

So that means no more worrying? "Well," Marriott says, clicking his pipe stem against his teeth, "maybe you should throw in a little paragraph to caution your readers to check out the insurance situation before they sign off on anything. Part of the coverage is really pretty complicated, you see, and there are a lot of things I didn't even mention, so maybe, just to be on the safe side. . ."

Enrollment projected through 1979

Enrollments at UM's four campuses will continue to increase gradually over the next four years, reaching a total of almost 53,000 in 1979, according to projections calculated by the University Office of Institutional Research.

The projections, which include campus subtotals, are worked out in terms of student credit hours and full-time equivalents as well as simple headcounts. The data are contained in a report entitled *Enrollment Summaries, 1973-74 and 1974-75, and Enrollment Projections, 1975 to 1979*.

Following are headcount projections for each campus:

	1974 (actual)	1975	1977	1979
UMC	22,961	23,199	23,587	24,147
UMKC	11,004	11,441	11,839	12,080
UMR	4,064	4,080	4,230	4,410
UMSL	11,394	11,515	11,895	12,285
	49,423	50,235	51,551	52,922

GED tests lead to credentials for 300,674

More than 300,000 persons received high school equivalency credentials in 1974 after taking the General Educational Development tests, according to the annual report of the GED Testing Program.

The report shows that 561,203 tests were administered in calendar 1974 to a total of 430,253 candidates, 300,674 of whom were awarded credentials on the basis of the results.

Information supplied by states and GED centers showed that 61 per cent of the examinees were under 25 years old, while 11 per cent were over 40, the average age being 27.2. The average examinee had completed 10.7 years of school.

Vacancies announced

The following professional and administrative vacancies were listed as of Sept. 3:

UMC—Admissions adviser; associate reactor supervisor; chemist; group leader; health physicist; maintenance coordinator; mgr. of cashing; mgr., staff benefits; photographer; prog. coordinator/legal educator; reactor eng. II; sr. editor; sr. fiscal analyst; sr. research chemist; sr. research tech. (5); sr. systems analyst.

UMC MED CENTER—Chief radiation therapy tech.; mgr. of safety and security; med. records administrator; personnel mgr.; sr. personnel asst.; staff nurse (12); staff nurse II (2).

UMKC—Admin. assoc.; instr. dev. spec.; Out Reach coordinator, inner city.

UMR—None.

UMSL—Asst. personnel off.; dir. of dev.; dir., OPI; sr. personnel asst.

Persons interested in an announced vacancy should contact the personnel office on the campus where the vacancy exist.

NOTE: Department chairmen wishing to place announcements of academic vacancies in *Spectrum* should write to *Spectrum*, 424 Lewis Hall, Columbia.

Extension plan circulating

Another phase of the University of Missouri's Academic Plan, the one for extension, is completed. The final document, approved Aug. 1 by the Board of Curators, has been printed and is being distributed to faculty on the four campuses.

The plan, which makes projections to 1980, provides an inventory of current extension programs, predicts social conditions which may influence extension programs and identifies educational activities which the University proposes to carry out through extension.

The extension plan covers the same 22 academic categories as the Academic Plan for degree programs which was approved a year ago by the curators. The third phase of the overall plan, involving research, still is being developed.

Evaluation and projection of extension programs were made by campus faculty and academic deans from the four campuses, the staff of off-campus extension specialists, citizen advisory groups and evaluation teams composed of faculty and administrators from universities outside Missouri.

Planning also involved Lincoln University, the state's other land-grant institution which participates in the statewide extension effort.

Dr. Carl N. Scheneman, vice president for extension, said the purpose of the plan is to set priorities and to provide program flexibility.

"Today's problems and updating require a team effort among disciplines," Scheneman said. "The demands and needs for educational programs and services from the University through extension are increasing." The plan encourages cooperation among campuses and among academic departments within a campus in developing and carrying out extension programs.

The curators decided earlier that UM Extension would not be any broader than the University's academic base. The major extension programs at UM, as in other land-grant universities, are in agriculture, home economics and youth development (4-H). The plan projects that these will remain major extension programs.

All academic categories project increased extension effort over the next five years, the document shows, although some more than others. Substantial growth is expected in professional education, health professions, journalism and speech communications, engineering, performing and fine arts, business and public administration, social work, community development and recreation.

"These projections appear consistent with the mission of a major university and the needs and trends in our society," Scheneman said.

The plan says "the emphasis which stands out most among all of the disciplinary category projections is the need to provide the updating and retraining of professionals, a large number of which acquire their initial training from the University."

The document stresses the need to assist elected and appointed officials and employes of local governments with information and training. The plan also projects the need for assisting individuals, communities and businesses with the technological help of University research and providing information and education that will benefit both business and consumers alike

—Ken Whitt

Affirmative action requirements draw criticism

The Department of Health, Education and Welfare has complained to the Labor Department that some of its requirements for affirmative action employment efforts at colleges and universities are "simply unworkable and counterproductive."

The charge was contained in a statement filed by HEW at the opening of a series of public hearings on implementation by colleges and universities of the Labor Department's affirmative action requirements. The 17-page statement was signed by Caspar W. Weinberger on his last day as HEW secretary.

"While I believe, based on our own observation and experience, that most of the substantive requirements of current Department of Labor regulations and policies are workable and productive in the non-academic employment setting," Weinberger writes, "I have concluded that some of these provisions ignore important affirmative efforts which could be made by colleges and universities, while others are simply unworkable and counterproductive in the area of academic employment. This dysfunction, in my view, occurs uniquely in the academic employment area of higher education institutions because of several important and traditional aspects of university life. For example, the current regulations—with a total emphasis on the demand-side of the academic employment market—have placed the entire thrust of current affirmative action enforcement on the question of the proper distribution of those persons already in the available pool and have ignored the equally important issue of entry by minorities and women into the available pool. This skew is particularly serious from the standpoint of academic employment for minorities where current availability in many academic employment pools is often less than 1-2 per cent.

"A supply-side emphasis would appear to be much more relevant to the interests of improved employment opportunities for minorities. This is particularly true because of the fact that colleges and universities for the most part control the access of persons to the academic employment pools from which they recruit. Because most academic employment positions require any 'qualified' applicant to possess at least an undergraduate degree (and, usually, at least one or more graduate degrees), and because such degrees are exclusively granted by higher education institutions, the possibility exists for a unique contribution by this type of contractor on the supply-side."

Rochester to launch aid campaign

Because of the increasingly heavy financial burden on its students, the University of Rochester is preparing to launch the largest fund-raising campaign in its history in order to help endow scholarships and fellowships.

According to Rochester's president, Robert L. Sproull, the university has planned a five-year campaign to raise \$102 million, almost half of which will be used for student aid.

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Here and there

. . . Twenty-six of the 110 first-year medical students at UMC are women. Ten years ago, in a first-year class of 83, there were only two women.

. . . Dr. Paul C. Nagel, professor of history, UMC, has been selected to write a volume on Missouri in the bicentennial state history series of the American Association for State and Local History.

. . . The question on everyone's lips—"What is a professor?"—is answered in a new 20-minute documentary film narrated by James C. Olson, UMKC chancellor. The film, which features professors from all four UM campuses, is available through University Information Services for group showing.

. . . The Ohio Supreme Court has reversed an appeals court decision and held that Case Western Reserve University did not breach a contract with a professor when it changed its retirement policy. The appeals court had ruled that the professor, granted tenure in the 1940's, was entitled to retire at age 70, as specified in his original contract, even though the retirement age later was lowered to 68.

. . . A male bastion for 408 years, Rugby will go coed in 1976, according to a recent announcement by the school's governors.

. . . Although there were an estimated 415,000 college graduates unemployed in March, they constituted the smallest percentage of the 8.4 million jobless when ranked by educational attainment, according to a survey conducted recently for the Bureau of Labor Statistics.