

# M. U. as center for nuclear research

The University's budget request of \$1,500,000 for a research reactor is the initial step toward acquiring a \$3,000,000 teaching and research facility that would put the University and the State among the important contributors to the nation's nuclear progress.

Gov. James T. Blair has included the request of \$1,500,000 in state funds for the reactor in his recommendations to the General Assembly. In addition the University would expect to raise \$1,000,000 for construction costs through gifts and grants; an estimated \$160,000 worth of uranium for fuel and about \$300,000 worth of heavy water for the moderator would be leased to the school by the Atomic Energy Commission, without cost.

President Elmer Ellis says the reactor would place the University among the leading educational institutions in its capacity to serve education, science, agriculture, medicine, and industry. The proposed reactor would be comparable in power and usefulness to that of any other university. Because of the University's central location in the state the institution would become a center of nuclear research for this entire area, especially since provisions would be made for its use by other educational and research institutions and by the state's industries.

According to President Ellis, "New vistas of a nuclear age have touched every field of science, from agriculture to medicine, from geology to zoology, and from engineering to veterinary science, in addition to the important discoveries made and being made in chemistry and physics. All those fields are a part of the University of Missouri's educational responsibilities, both in research and teaching, and to fulfill our responsibilities to our youth and to all our citizens, we have to move forward with the nuclear age, lest we fall hopelessly behind."

In reference to the construction of the reactor being contingent on the University obtaining another \$1,000,000 in matching funds, Dr. Ellis explained: "We have reason to believe we would have no difficulty in getting the necessary amount in gifts and grants, from Federal agencies and other sources, once the General Assembly approves the project. Great emphasis is now being placed on nuclear research because of its inestimable significance to the ultimate benefit of mankind."

The broadest use of the reactor would be for the production of artificially radioactive materials, and particularly "short-lived" materials, which have become one of science's most versatile tools for both basic and applied research. Radioactive isotopes have an infinitely varied use that ranges from curing human ailments to revealing the flaws in a piece of machinery or to improving the growing, and fertilizing of food crops.

They already are being extensively used at the University in a number of fields of research and teaching. A recent survey showed that 25 different

divisions feel the need of research involving a reactor or its products; that at present 16 staff members are using radiation in their work; and that others would use it if it were available. Readily accessible radioisotopes would make it possible greatly to expand the present program.

Such expansion would be especially significant in the field of the short-lived radioisotopes, which are those in which the radiation intensity decays very rapidly. Short-lived materials have a very wide range of use in research and also are safer to use than those with a longer half-life (the time in which half the atoms have disintegrated), for their radioactivity dissipates in periods from fractions of a second to a few hours.

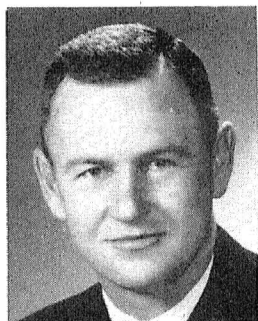
Despite the importance of the short-lived materials, they are not available to University researchers because they must be obtained elsewhere, and by the time they get to the University they have lost too much of their radiation to be of use. The longer-lived radioisotopes, which the University is now using, can be "imported" and are brought in from Oak Ridge and other laboratories. A reactor at the University would make artificial radioisotopes in all the ranges of half-life available to University researchers.

Among the fields of research and teaching that would be expanded or opened to the University with acquisition of a reactor are: radiobiology; malignant diseases; tracer studies in drugs and for industrial applications; radioactive isotopes in soils; radioactive damage to construction and industrial materials; radiation physics; radiation chemistry; radiation safety; genetic effects of radiation; metabolism in plants and animals; food preservation; radioactive fallout and related problems; problems of nuclear waste disposal; sewage treatment; nuclear reactor theory and operation; nuclear power plants and their auxiliary equipment; the use of thermal neutrons to determine the properties of matter and for other research.

Ellis Fischel Cancer Hospital, which is in Columbia, also would find the reactor a valuable asset, as members of the staff have expressed a desire to have reactor facilities available in their studies and treatment of cancerous growths.

"Few educational institutions are so advantageously located for the greatest use of a reactor as is the University of Missouri," Dr. Ellis said. "This is the only university within a 500-mile radius which covers such a complete field of knowledge, teaching and research on one campus in a rural area suitable for the location of a research reactor. We have a modern Medical Center with a Medical School and hospital serving the entire state; an outstanding agricultural college and other schools and colleges concerned with all aspects of science; the cancer hospital that also serves the entire state; and proximity to other institutions that might make use of nuclear materials. The many

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Henry Andrae



Doyle Patterson

## New curators are alums

Two University graduates have been appointed to the Board of Curators by Governor Blair. They are Henry Andrae, '37, of Jefferson City, and Doyle Patterson, '39, of Kansas City.

Andrae received A.B. and LL.B. degrees from the University and has practiced law in Jefferson City since 1937. He is partner in the firm of Hendren and Andrae, is past president of the Cole County Bar Association, and is chairman of the committee which publishes the Missouri Bar Journal. He served three terms in the Missouri General Assembly. Andrae is immediate past president of the Cole County chapter of the University Alumni Association and is now president of the M. U. Law School Alumni Association. In 1947 he received the Outstanding Citizen Award of the Jefferson City Junior Chamber of Commerce. He is a member of Phi Delta Phi. Mrs. Andrae is the former Helen Walton, A.B. '38; they have four daughters.

Patterson is president of the Farm Belt Fertilizer & Chemical Company of Kansas City. He is a director of the Vendo Company, the Unitog Company, and Research Hospital.

After receiving his A.B. degree from Missouri, Patterson was graduated from the Harvard Business School. He is a member of Phi Beta Kappa. As a student at Missouri, he was active in the Student Government Association, being a member of the student cabinet and the student assembly. He was also on the staff of the Savitar.

Mr. and Mrs. Patterson have three daughters and live at 6440 Summit Street.

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agricultural, chemical, petroleum, food, and other industries of Missouri would have at a convenient location a research tool for their industrial problems."

In working with radioisotopes and other aspects of nuclear application University staff members would gain experience in dealing with nuclear research at the same time that they improved their value for training students in a new and expanding field.

It is expected that the proposed research facility would serve to attract outstanding men in all fields of science to the University staff, and to bring here promising students planning to enter careers requir-

ing a knowledge of nucleonics who otherwise would go elsewhere.

The planning of the reactor and the research in connection with the plans have been carried on by a University Reactor Committee of which Dean Huber O. Croft of the College of Engineering is chairman. Other members are Dean Henry E. Bent of the Graduate School; Dean John H. Longwell of the College of Agriculture; Dean W. Francis English of the College of Arts and Science; Dr. Newell S. Gingrich, professor of physics; and Dr. Gwilym S. Lodwick, professor of radiology and chairman of the department.

The reactor as proposed for the University would be an "atomic pile" with an approximate initial capacity of 1,000 kilowatts, and flexible enough in design to permit an increase in power and the flow of neutrons without reconstructing the shield. It would be housed in a building about 70 feet in diameter, 50 feet high, of steel and special concrete, and all plans and specifications would be approved by the Atomic Energy Commission to assure absolute safety.

The reactor cost has been placed at \$1,300,000, with the building to cost \$700,000. Another \$500,000 would be needed for furnishings and equipment. The University would be at no expense for the site, as the College of Agriculture has a restricted site of 250 acres on Highway 63, about three miles south of the campus, which would be a safe and convenient location. Adequate power for the reactor would be available from nearby high-tension power lines.

It is anticipated that a major part of the operation and maintenance costs of the facility would be obtained from grants and research projects. When other than state agencies were using the reactor facilities, appropriate charges would be made to cover the pro-rated share of the costs. In planning the use of the reactor priorities would be assigned as follows: First, any department of the University; second, any other qualified educational institution within the state; third, any industry within the state; fourth, any other educational institution; and fifth, any industry within the United States.

The University recently acquired two training reactors as gifts from the Atomic Energy Commission. The most important of the two is a 10-kilowatt pool reactor for use in the nuclear engineering education program of the School of Mines and Metallurgy at Rolla. The other is a natural uranium sub-critical assembly for laboratory use by the College of Engineering at Columbia. The sub-critical assembly is a form of reactor that is not capable of producing power, of setting up self-sustained nuclear reaction, or of producing dangerous radiation.

Frank H. King, BJ '17, who recently retired as general executive for the Associated Press in the southwest, was honored at a testimonial dinner in Corpus Christi as "The epitome of the type of newspapermen who have made the Associated Press great." King, who lives in Dallas, is president of the Journalism Alumni Association.