other now known. This exploration has uncovered many miles of cave passages, including connections between Crystal Cave and other nearby caves, showing that integration exists in the Flint Ridge cave system.

Passages already surveyed or explored in the system now total 32 miles, making it the largest known. It is anticipated that many more miles will be added to this figure as additional known and yet-to-be-discovered passages are studied. The second largest cave is Hollich in Switzerland.

Since early 1954, systematic exploration has been conducted in Flint Ridge by the project members to compile complete data covering the cave system configuration, underground drainage, and animal lfe. The work was described at the recent meeting of the AAAS by Roger W. Brucker, David B. Jones, William T. Austin, and Brother G. Nicholas.

News Briefs

■ Radio waves come from at least 1936 heavenly sources, most of which are not identified with any visible object, according to a report to the Royal Astronomical Society by Martin Ryle of the Cavendish Laboratory, Cambridge, England. About 500 sources have been accurately plotted. Some 30 are large, several may be galaxies in collision, and a few are the expanding remnants of supernovas.

■ The volcano Bezymyanny in Kamchatka, U.S.S.R., considered extinct for hundreds of years, erupted on 20 Oct. Director Zladovets of the volcanological laboratory of the Soviet Academy of Sciences said on the Moscow Radio that the cloud of ashes above the crater had swelled to 6 miles in height by the middle of November.

■ A planetarium capable of projecting the motion of 8600 stars and planets was opened on 4 Dec. in Poland's heavy industry city of Stalinogrod. The planetarium, the first in the country, is named after Nicholas Copernicus.

Scientists in the News

WILLIAM F. GIAUQUE, Nobel laureate and professor of chemistry at the University of California, Berkeley, is to receive the Gilbert N. Lewis medal of the California Section of the American Chemical Society. The gold medal is awarded from time to time in recognition of special achievements in theoretical chemistry. This is the third time the medal has been given. It will be presented to Giauque on 15 Feb. at a special award ceremony.

Giauque was selected especially for his low-temperature work, which also won him the Nobel prize. His method of using a strong magnetic field made it possible to achieve temperatures a few thousandths of a degree above absolute zero.

W. C. NIXON of the Cavendish Laboratory, Cambridge University, Cambridge, England, has arrived at the University of Redlands for a period of 3 months. The National Science Foundation has provided funds to support Nixon's stay as a visiting research associate in x-ray microscopy. He is one of the pioneers in this field.

Nixon will deliver a series of evening lectures on 7, 15, 22, and 25 Feb. During his visit he also will give informal talks and will review the progress of x-ray microscopy research at the university. Information may be obtained from Prof. Albert V. Baez, Physics Department, University of Redlands, Redlands, Calif. Nixon will spend April, May, and June at Stanford University under the same NSF grant.

EDGAR L. PIRET, professor of chemical engineering at the University of Minnesota, has received the William H. Walker award of the American Institute of Chemical Engineers.

ROBERT L. PIGFORD, chairman of the department of chemical engineering at the University of Delaware, was awarded the institute's Professional Progress award.

DAVID TABOR of Cambridge University, Cambridge, England, has arrived at Stanford Research Institute, where he will work for a year in the control systems laboratory on problems of surface physics. He is on leave from his post at Cambridge as assistant director of research in the Laboratory for the Physics and Chemistry of Surfaces.

WALTER G. FRANKENBURG of Lancaster, Pa., has received the Cigar Industry Annual Research award in recognition of his contributions to the development of the basic science and technology of tobacco. Specifically, acknowledgement was expressed to the award winner for his thorough investigations of the chemical processes that occur in the harvested tobacco leaf, including the conversion of nicotine into a series of other substances, and for the successful application of this new knowledge to problems of the cigar industry. The award is sponsored annually by the Cigar Manufacturers Association of America in conjunction with the Cigar Institute of America.

RUSSELL W. MUMFORD, vice president and consulting engineer for American Potash and Chemical Corporation, retired recently after 35 years of service with the company. Mumford's association with the organization began in 1920 when he was named chemical engineer in charge of research and development for the company's main plant at Trona, Calif.

During succeeding years he served as assistant manager of the Trona plant, and in 1929 he became consulting engineer. Mumford was named a vice president of the corporation in 1941 and was elected a director in 1947. He continued as vice president and consulting engineer until his retirement.

HARLOW SHAPLEY, professor of astronomy at Harvard University and former director of the Harvard College Observatory, has been elected an honorary member of the National Academy of Sciences of India.

CHARLES W. MAYO, professor of surgery at the Mayo Foundation, Rochester, Minn., recently received the 1955 award of the American Pharmaceutical Manufacturers Association. He was cited for contributions to medicine and to world understanding through work with the United Nations.

DANIEL D. CUBICCIOTTI, JR., has joined the staff of Stanford Research Institute as a senior scientist in the recently formed department of chemical physics. He was formerly supervisor of inorganic chemistry research with the Atomics International Division of North American Aviation at Downey, Calif. Cubicciotti will be engaged in fundamental studies of fused salt systems and metal-gas reactions at high temperatures, thereby opening up a new field of research at S.R.I.

OTTO STRUVE, chairman of the astronomy department at the University of California, Berkeley, has been awarded the Medaille Julés Cesar Janssen for 1955 by the Institut de France.

WILLIAM SEEMAN, former chief of the clinical psychology department at the Mayo Clinic, has assumed the newly created position of associate professor of medical psychology in the department of psychology, University of Oklahoma School of Medicine.

ARCHIE O. HALLER of the department of rural sociology at the University of Wisconsin, has been named associate professor, sociology and anthropology, at Michigan State University, effective 1 July.

ELBERT DECOURSEY, brigadier general and commandant of the Army Medical Service School at Brooke Army Medical Center, was made an honorary member of the National Society of Anatomical Pathology of Venezuela when he attended the sixth Venezuelan Congress of Medical Scientists at Caracas 18–26 Nov.

JOHN G. GIBSON, II, research associate in medicine at Harvard Medical School and associate in medicine, Peter Bent Brigham Hospital, has been honored by the American Association of Blood Banks for research that has extended the life of red cells in collected blood. With his associates, Gibson developed a citrate-phosphate-dextrose solution that reduces the damage suffered by red blood cells during and following blood collection.

Working with Gibson were WALTER SCHEITLIN, research fellow in medicine, Harvard Medical School and Peter Bent Brigham Hospital, and WILLIAM P. MURPHY, JR., and SEARLE REES, both of whom were formerly on the school and hospital staffs.

TRUMAN O. WOODRUFF, who has been serving as research associate in physics at the University of Illinois, has been appointed research associate in the metallurgy and ceramics department of the General Electric Research Laboratory, Schenectady, N.Y.

ALBERT I. MENDELOFF of the Washington University School of Medicine, St. Louis, has been appointed associate professor of medicine at Johns Hopkins Medical School and physician on the staff of Johns Hopkins Hospital. He also has been named clinical chief of the staff in medicine at the Sinai Hospital in Baltimore, Md.

P. M. AUSTIN BOURKE, assistant director of the Irish Meteorological Service and chairman of an international group of experts established by the World Meteorological Organization to deal with plant-disease problems, has recently started a 1-year mission in Chile under the auspices of the United Nations Technical Assistance Program. He will advise the Chilean Government on meteorological control of the potato blight, which in the last 5 years has become a serious menace in Chile.

Necrology

ALBERT R. BECHTEL, Indianapolis, Ind.; 73; emeritus professor of botany and chairman of the department from 1920 to 1950 at Wabash College; 12 Dec.

EDWIN M. BLAKE, Mt. Kisco, N.Y.; 87; mathematician; 20 Dec.

BENJAMIN B. FREUD, Chicago, Ill.; 71; emeritus professor and first chairman of the chemistry department at Illinois Institute of Technology; 12 Dec.

G. RILEY HOUCK, Memphis, Tenn.; 39; associate professor of physiology at the University of Tennessee; expert on kidney function and hypertension; 10 Dec.

SEYMOUR KORKES, Durham, N.C.; 33; associate professor of biochemistry at the Duke University School of Medicine, Durham, N.C.; 10 Dec.

SIEGFRIED W. LANDSBERGER, New Rochelle, N.Y.; 79; chemical engineer and food preservation expert; 12 Dec.

JAMES MCELGIN, Philadelphia, Pa.; 54; chemical engineer with the E. F. Houghton, Co., Philadelphia, Pa.; 7 Dec.

Education

■ The chemistry department of Howard University has inaugurated a graduate program leading to the Ph.D. degree. This is the first department in the university to begin training at this level. The department has 6 doctoral candidates enrolled in the new program.

With the initiation of the additional graduate training, the chemistry department has made arrangements for extending its activities in biochemistry by enlisting the cooperation of the department of biochemistry of the College of Medicine. Lloyd H. Newman, head of that department, and Lawrence M. Marshall and Felix Friedberg, members of the biochemistry faculty, will participate in the new curriculum of the chemistry department by offering advanced courses in special topics of biochemistry and by supervising the research undertaken by graduate students working toward advanced degrees. Together with Victor J. Tulane, associate professor of biological chemistry in the chemistry department, the four men will constitute the biochemical division of the department of chemistry.

■ *The Superior Pupil in Junior High School Mathematics* is the name of a new Office of Education bulletin by Earl M. McWilliams and Kenneth E. Brown. To secure data for this new publication, the authors visited classrooms in 140 junior high schools from Maine to California. Schools were selected because of their educational provisions for the superior pupil. These provisions are described.

The use of class activities such as mathematics clubs, contests, various conferences, and so forth are discussed. Ways of identifying superior students are presented. The publication may be obtained for 25 cents from the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C.

■ Lowell Technological Institute has established a new 4-year course leading to the B.S. degree in general engineering. The course will train graduates who wish to cut across the traditional lines of engineering specialization; it will be available to incoming freshmen in September. It does not require the introduction of new subjects or equipment but primarily regroups present engineering courses.

■ A nurse-midwife school, perhaps the first to be offered in a university obstetrical clinic, will be resumed at Johns Hopkins University, Baltimore, with the aid of a $75,000 grant from the China Medical Board of New York, Inc. The object is to train as many foreign students as possible, as well as American nurses planning to serve abroad, in this field of special importance in underdeveloped regions.

The board's work in China, which was primarily support of the Peking Union Medical College, has had to be discontinued since 1950 because of the prevailing political conditions. It now concerns itself with problems of medical education in all of Southeast Asia. Grants to institutions in the United States have been made primarily to further this policy.

■ A series of television programs demonstrating a fundamental medical teaching technique, the grand-rounds tour of hospital wards with discussions of significant cases by outstanding clinicians, will be telecast from Boston, Mass., on a series of closed circuits to some 50 cities throughout the country. The series will originate at the New England Medical Center and at Tufts University School of Medicine. It is being sponsored by the Upjohn Company and is a part of the Bingham Associates Program of Postgraduate Medical Education at the New England Medical Center.

The first telecast, which will take place on the evening of 18 Jan., will give physicians who view it an opportunity to watch a group of specialists participate in the "Management of acute abdominal emergencies." This program will be devoted to abdominal problems that occur in everyday practice—for example, massive gastrointestinal hemorrhage, acute appendicitis, perforated viscus, and acute gall bladder.

Grants, Fellowships, and Awards

■ The Alfred P. Sloan Foundation, Inc., has awarded the first group of a series of grants that will be made in the future from the foundation's fund for basic research in the physical sciences. This fund, which was established earlier this year, was made possible by a personal gift of $5 millon from Mr. and Mrs. Alfred P.