tion in digitalis is absorbed under ordinary conditions, representing only a portion of the activity of digitalis. Thus a difference in absorption may explain the fact that a cat unit of the purified material which we used is about seven times as potent in man by mouth as a cat unit of digitalis. Fig. 5 shows that the dose (1.26 mgm) of digitoxin-like material by intravenous injection is the same as the dose by oral administration. In the case of digitalis, there is a wide spread between the dose by intravenous injection and by oral administration.

Differences in absorption, however, are not the only factors that bring the cat method into question. Several years ago Wyckoff and Goldring[13] made a study at Bellevue Hospital on patients with auricular fibrillation. They gave 0.1 mgm of ouabain intravenously every half hour and found that by the time 1 mgm was given, full effects had developed. In some of our recent experiments with the digitaline we found that the full dose of this material when given by intravenous injection is also between 1 and 1.26 mgm (see Fig. 5). The milligram of ouabain, however, represents 10 cat units, whereas the 1.26 mgm of the digitaline represents only 3 cat units. Since they were both given intravenously, absorption can not be responsible for the difference. The phenomenon must be due to a difference in the way in which the cat and man utilize the two glucosides.

The indications are that neither the frog nor the cat method overcomes all the obstacles to uniformity among digitalis preparations. From the practical standpoint what we need to know is the potency of digitalis preparations in man.

The foregoing observations indicate that the final evaluation of the potency of a preparation of digitalis must be based on determinations in man. We have made experiments[14, 15] which indicate that digitalis can be adequately assayed on humans. The T-wave changes of the electrocardiogram run parallel with the therapeutic actions of the drug and in suitable individuals, with or without heart disease, differences as small as 30 per cent. in the dosage of digitalis can be detected by unequivocal changes.

A more satisfactory solution is the use of purified digitalis glucosides which do not require bio-assay. It appears that there are digitalis glucosides which are well absorbed from the gastrointestinal tract and which can be extracted with reasonable uniformity.

[13] J. Wyckoff and W. Goldring, *Arch. Int. Med.*, 39: 488, April, 1927.

[14] H. Gold, N. T. Kwit and McK. Cattell, *Jour. Pharmacol. and Exp. Therap.*, 69: 177, July, 1940.

[15] N. T. Kwit, H. Gold and McK. Cattell, *Jour. Pharmacol. and Exp. Therap.*, 70: 254, November, 1940.

OBITUARY

FRANK CRAIG JORDAN

THE tragedy which cost the lives of Dr. Frank C. Jordan and his wife, Harriet Roy Jordan, shocked an unusually wide circle of friends and acquaintances.

Frank Craig Jordan was born at Cordova, Ill., on September 24, 1865; the son of John Henry and Louisiana Craig Jordan. Marietta College granted him the following degrees: B.Ph. in 1889; M.A. in 1892, and the honorary degree Sc.D. in 1929. In 1914 the University of Chicago granted him the earned degree Ph.D. His thesis, "The Color Changes of Certain Variable Stars of Short Period," is still an important document for all who are interested in these stars.

Following a number of years spent as instructor in astronomy and mathematics, he received a fellowship at Yerkes Observatory in 1905. He joined the staff of the Allegheny Observatory in 1908 where he was professor of astronomy in the University of Pittsburgh, assistant director, and since 1930, director.

Dr. Jordan's scientific work was divided between radial velocities of early type stars and the photometry of short period variable stars. Fifteen major articles dealing with stellar spectra, including eleven orbits, are found in the Publications of the Allegheny Observatory. One volume of these publications is devoted entirely to Jordan's observations and light curves of twenty-nine Cepheid variables and sixteen eclipsing variables. A number of light curves of additional variables await publication; for still other stars the data are not sufficient to permit the derivation of definitive light curves. These data will be made available to astronomers in a memorial volume.

Dr. Jordan had a number of interests. He was a faithful worker in his church and other community activities. Until recently he engaged in such athletics as swimming and tennis; more recently in golf; he played the organ with fervor and took great delight in music. But of all his interests he found the greatest enjoyment in observing with the telescope, in which occupation none excelled him either in enthusiasm or expertness. In the first decade of the work of the Thaw Refractor the exposures were short and the time required to change from one object to another was of importance. In this period 35,000 plates were secured, 12,000 by Jordan. On the basis of the average of other observers his share would have been 9,000. His great number of plates was not due so much to the enthusiasm with which he watched for breaks in the clouds as to the remarkable efficiency of his unhurried speed.

The American Association for the Advancement of

Science, the American Astronomical Society (treasurer since 1932), the International Astronomical Union, Phi Beta Kappa, Sigma Xi (charter member of the Pittsburgh chapter), Pittsburgh Physical Society, Amateur Astronomers Association, Academy of Arts and Sciences and other local organizations having social or scientific objectives, numbered Dr. Jordan among their members.

Dr. Jordan is survived by his son, John William; by Mrs. Hugh Robert Robertson and Andrew Tod Roy, the children of Mrs. Jordan, and by six grandchildren. Besides these, there are many who will feel the loss of Dr. Jordan's sincere friendliness.

KEIVIN BURNS

ALLEGHENY OBSERVATORY

CLARENCE PRESTON GILLETTE

DR. CLARENCE PRESTON GILLETTE, director emeritus of the Colorado Agricultural Experiment Station and emeritus professor of entomology and zoology at Colorado State College of Agriculture and Mechanical Arts, died at his home in Fort Collins, Colorado, on January 4, 1941, after suffering a stroke the day before. He was born in Ionia County, Michigan, April 7, 1859, received his early education in the Michigan public schools, then attended Michigan State College. The bachelor's degree was received there in 1886 and the master's in 1887. The honorary degree of doctor of science was conferred by the same institution in 1916.

Dr. Gillette was assistant in the department of zoology, Michigan State College, until 1888, when he accepted the position of entomologist of the Iowa State College Experiment Station at Ames, Iowa. This work was left in 1891 to accept the head of a new department of zoology, entomology and physiology at Colorado State College. The date of his death lacked just a few days more than a month of being 50 years from the date of his arrival in Fort Collins. In 1907 he became Colorado's first state entomologist, which position he held for 24 years. In 1910, in addition to the two former positions, he was made director of the Colorado Experiment Station, which position he held until his retirement in 1932.

Dr. Gillette was known best for his work in entomology, although he maintained a deep interest in genetics and eugenics and taught classes in these subjects until his retirement. He was an entomologist of the old school, doing work in many parts of the field. Probably few men were better posted on the western economic insect problems. He was an enthusiastic collector and was responsible for the building of a well-balanced, representative insect collection and published systematic papers in several groups. His papers included a list of the Orthoptera and Hemiptera of Colorado and many articles dealing with the Cynipidae, Cicadellidae and Aphidae. His last important work, the Aphidae of Colorado, published jointly with Miss Miriam A. Palmer, describes and illustrates well over 300 species, many of which were new to science. He was a fellow in the American Association for the Advancement of Science and the Entomological Society of America, a charter member of the American Association of Economic Entomologists and its president in 1901, honorary member of the Iowa Academy of Science, member of the Colorado-Wyoming Academy of Sciences, the American Genetic Association and the American Eugenics Society. He was a member of the honor societies of Sigma Xi, Phi Kappa Phi and Alpha Zeta.

Dr. Gillette was a modest, retiring individual, a wise administrator and a teacher who seemed to strike a responsive chord in almost every student. He was active in civic and church affairs and lived an exceedingly useful and well-rounded life.

GEORGE M. LIST

COLORADO STATE COLLEGE

RECENT DEATHS

SIR FREDERICK BANTING, professor of medical research at the University of Toronto and head of the Banting Institute, was killed in the wreck of a military airplane on February 21. Sir Frederick, jointly with Dr. J. J. R. MacLeod, received the Nobel prize for medicine in 1922 for the discovery of insulin.

DR. DAYTON CLARENCE MILLER, honorary professor of physics emeritus at the Case School of Applied Science at Cleveland, died on February 22 in his sixty-fifth year.

DR. JOHN PRESTON SUTHERLAND, dean emeritus of the Medical School of Boston University, died on February 21. He was eighty-seven years old.

DR. WILLIAM CECIL BOSANQUET, fellow of New College, Oxford, died on January 24 at the age of seventy-four years.

DR. KOLTZOFF NIKOLAI KONSTANTINOVICH died in December, in Moscow, at the age of sixty-nine years. A correspondent writes: "A professor at two universities, director of the Institute of Experimental Biology and a former director of the Central Station of Genetics, he is well known and often cited for his publications on genetical analysis of the physiology of heredity and of the structure of protoplasm and living matter in general, and properties of the blood, as well as for his earlier studies on fish anatomy and embryology." He was editor of the *Journal de Biologie Expérimentale* until 1931 and had been editor of the *Journal de Biologie* since 1932.