As in all pioneer work such as this, initial delays and disappointments must serve only to spur on its sponsors. The importance of increasing our geophysical knowledge of the Polar regions is so great in every sense that the delay in the realization of the plans of the society will doubtless be compensated for in the greater achievement which must come with any effective realization of these plans in 1931.

JNO. A. FLEMING
Acting Vice-president, American Section, Aeroarctic
WASHINGTON, D. C.
FEBRUARY 28, 1930

SCIENTIFIC NOTES AND NEWS

DR. CHRISTINE LADD-FRANKLIN, lecturer in psychology and logic at Columbia University, died on March 5, in her eighty-third year.

DR. ROBERT W. WOOD, professor of experimental physics and chairman of the department of physics of the Johns Hopkins University, has been elected an honorary member of the Academy of Sciences of Leningrad.

THE Franklin Institute has awarded Franklin medals for the year 1930 to Sir William Bragg, director of the Davy-Faraday Research Laboratory of the Royal Institution of Great Britain, in recognition of his original and valuable contributions to the knowledge of atomic structures and of his inspiring leadership of the Royal Institution; and to Dr. John F. Stevens, because of his solutions of the engineering problems involved in making the plans and effecting the engineering organization for construction of the Panama Canal, and because of his distinguished success in the location, erection and administration of railroads, both in the United States and in foreign lands. The medals will be presented at the annual medal-day exercises of The Franklin Institute, to be held in the hall of the institute in Philadelphia on the afternoon of May 21. Both Sir William and Dr. Stevens will be present to receive their medals and will read papers before the meeting.

THE Brooklyn Polytechnic Institute, which has never given an honorary degree since it was founded seventy-five years ago, will break its custom to confer upon Rear Admiral Richard E. Byrd the title of doctor of science at the annual commencement exercises in June. The people of Virginia will present a sword of honor to Rear Admiral Byrd under a resolution passed by the General Assembly.

THE George Montefiore prize for the year 1929 has been awarded to R. D. Evans and C. F. Wagner, Westinghouse engineers, in conjunction with three other engineers—Algeri Marino, of Rome, and H. Parodi and Pestarine, of Paris. This triennial prize presented by the Fondation George Montefiore of Liége, Belgium, for the best original work contributing to scientific advancement in the technical applications of electricity was given to Messrs. Evans and Wagner for their papers on "Studies of Transmission Stability" and "Static Stability Limits and the Intermediate Condenser Station." The amount awarded to Messrs. Evans and Wagner was 3,000 Belgian francs. The two previous Montefiore prizes of 1925 and 1922 were awarded to Dr. J. B. Whitehead, professor of electrical engineering and dean of the faculty of engineering of the Johns Hopkins University, for his papers on "Gaseous Ionization in Built-up Insulation" and "The Corona Voltmeter and the Electric Strength of Air."

THE Colorado Engineering Council on January 23 presented its gold medal of award to A. J. Weinig for meritorious engineering service in the field of metallurgy, "in recognition of his valuable services to the mining industry of Colorado and the whole nation, for his application of the theoretical to the practical in metallurgical practices and for his contributions to improvements in the flotation method of concentrating ores."

SIR ALFRED YARROW has been elected an honorary member of the British Institution of Civil Engineers.

GEORGE STUART GORDON, president of Magdalen College and honorary fellow of Merton College, Oxford; Professor Owen Willans Richardson, director of research in physics, King's College, London; Mr. Henry Thomas Tizard, rector of the Imperial College of Science and Technology, have been elected members of the Athenæum Club, under the provision which empowers the annual election by the committee of a certain number of persons of distinguished eminence in science, literature or the arts, or for public service.

DR. A. C. D. CROMMELIN has been elected president of the Royal Astronomical Society, London.

DR. WILLIAM H. ROBEY, clinical professor of medicine at the Harvard Medical School, has been re-elected president of the American Heart Association. He is also president of the New England Heart Association.

AT Harvard University Dr. L. W. Collett has resigned the professorship of geology which he has

held since 1928; Dr. George Bogdan Kistiakowsky, of Princeton University, has become assistant professor of chemistry.

DR. CHARLES W. M. POYNTER, who has been acting dean of the University of Nebraska College of Medicine, Omaha, since September 1, 1929, has been made dean of the college and superintendent of the medical college hospital. He joined the university faculty in 1905 as professor of anatomy.

DR. T. J. J. SEE, who, as a captain in the navy, has been in charge of the naval chronometer and time station at Mare Island, California, for the past twenty-seven years, has retired from active service, having reached the statutory age of sixty-four years.

WE learn from *Nature* that the Medical Research Council has appointed Air Vice-marshal David Munro, on his retirement as director of medical services, Royal Air Force, to be secretary of the Industrial Health Research Board in succession to Mr. D. R. Wilson, lately appointed deputy chief inspector of factories at the Home Office.

DR. GUSTAV KLEIN, who, as successor to Professor Molisch at the University of Vienna, holds the chair of plant physiology, has been asked by the I. G. Farben-Industrie in Ludwigshafen, manufacturers of chemicals, to take over the direction of its newly created cancer institute, which is said to be the largest in Europe. His special field will be researches on the etiology of cancer.

DR. C. B. JOLLIFFE, of the Bureau of Standards, on March 1 took office as chief engineer of the Federal Radio Commission.

ROBERT P. HERWICK, assistant in pharmacology in the University of Wisconsin, has been appointed acting state toxicologist, to succeed Dr. Clarence W. Muehlberger, who is joining the Scientific Crime Detection Laboratory at Northwestern University.

DR. LOUIS COHEN has been appointed superintendent of the Otisville Sanitarium, Otisville, New York, the New York City tuberculosis institution.

W. H. MONSSON, chemist on the pulp and paper staff at the U. S. Forest Products Laboratory at Madison, Wisconsin, has left the laboratory to join the Munising Paper Company.

DR. IRA L. KAPLAN has been appointed director of the New York City Cancer Institute, to succeed Dr. Isaac Levin, in a general reorganization of the medical board of the institute. The post of assistant director, newly created, was filled by Dr. Robert P. Wadhams, a colonel in the medical unit of the National Guard. He also is a teacher at the New York University Medical School and a visiting surgeon at Bellevue Hospital.

AFTER visiting most of the countries of Central Europe and working their way well into Asia, H. L. Westover and W. E. Whitehouse, plant explorers of the Bureau of Plant Industry, have returned to the United States, bringing several hundred new plant varieties, principally alfalfa and fruits.

PROFESSOR SAMUEL J. HOLMES, of the department of zoology of the University of California, who is now spending his sabbatical year studying in Europe, recently lectured by special invitation before the Eugenics Society of England, at the Royal Society headquarters in London. The subject of his lecture was "Family Resemblances in Mental Traits and the Weakness of the Environmental Explanation."

DR. CARL STØRMER, of the University of Oslo, known for his work on the aurora polaris, is visiting the University of London.

DR. JON ALFRED MJOEN, director of the Norwegian Government Laboratory at Oslo and chairman of the Consultive Eugenics Commission of Norway, gave on March 6 an illustrated lecture on "Why Nations Rise and Fall" at the University of California under the auspices of the American Eugenics Society and the University of California Extension Division. Dr. Mjoen plans to spend some time on the Pacific Coast making a special study of race and immigration problems.

DR. HARLOW SHAPLEY, director of the Harvard College Observatory, delivered the annual Sigma Xi lectures at the University of North Carolina on February 13 and 14. The titles of the lectures were "Order Among Star Clusters and Nebulae" and "From Electrons to Galaxies."

THE Gehrmann Lectures for 1929–30 at the University of Illinois College of Medicine will be delivered on March 27 and 28 at 4:30 p. m. by Dr. Simon Flexner, director of the Rockefeller Institute of New York City. The titles of the lectures will be, respectively, "The Epidemiology of Poliomyelitis" and "Epidemic and Post Vaccinal Encephalitis and Allied Conditions."

DR. WILLIAM H. PARK, professor of bacteriology and hygiene at the University and Bellevue Hospital Medical College, New York City, lectured on March 14 before the New York University Chapter of Sigma Xi on "The Etiology and Prevention of Respiratory Diseases."

DR. K. LARK-HOROVITZ, professor of physics and director of the physical laboratory at Purdue University, addressed the local chapter of the Sigma Xi on

March 1 on "Recent Progress in the Art of Glass-making."

PROFESSOR EDWARD L. THORNDIKE, of Teachers College, Columbia University, will be the second lecturer during the current year on the George Slocum Bennett Foundation at Wesleyan University. The subject of the first lecture will be "The Psychology of Learning by Repetition," and of the second "The Psychology of Learning by Rewards and Punishments."

PROFESSOR G. H. PARKER, of Harvard University, addressed the American Academy of Dental Science on March 5 on "Certain Aspects of Evolution and Heredity."

DR. ESMOND R. LONG, professor of pathology in the University of Chicago School of Medicine, will deliver the sixth Harvey Society Lecture at the New York Academy of Medicine, on the evening of March 20. His subject will be "A Chemical View of the Pathogenesis of Tuberculosis."

DR. DONALD C. BARTON, consulting geologist of Houston, Texas, completed on February 28 a series of lectures on geophysical methods for the department of geology of Columbia University.

A. L. KIMBALL, of the General Electric Company, spoke to the students and teachers of the department of physics at Amherst College on February 19. His subject was "Elastic Properties of Matter." Mr. James J. Lamb, technical editor of *Q. S. T.*, the official organ of the American Radio Relay League, spoke recently before a group of Amherst College students interested in radio communication. Through the generosity of an alumnus the department of physics is to be equipped with modern apparatus for work in this field.

THE forty-second annual meeting of the American Physiological Society will be held at the University of Chicago from March 26 to 29, with other societies forming the Federation of American Societies for Experimental Biology.

THE seventy-seventh annual meeting of the American Pharmaceutical Association will be held in Baltimore from May 5 to 10. This includes the meetings of the National Association of Boards of Pharmacy, the American Association of Colleges of Pharmacy, the Conference of Pharmaceutical Association Secretaries and the Conference of Pharmaceutical Law Enforcement Officials.

THE sixty-second annual meeting of the Kansas Academy of Science will be held at the Kansas State Teachers College at Hays on April 18 and 19. Papers will be presented in two general sessions on Friday, April 18, and one on Saturday, April 19. There probably will be a section meeting in chemistry and physics and another in psychology. The presidential address by Dr. W. B. Wilson, of Ottawa University, will be given following the banquet on Friday evening. His address will be on the value of an academy of science to the state. Later in the evening Dr. T. D. A. Cockerell, of the Department of Biology of the University of Colorado, will deliver an address under the joint auspices of the academy and the college on "A Naturalist Around the World." Dr. Cockerell will act as a representative of the American Association for the Advancement of Science. A trip to the Hays Branch Experiment Station of the Kansas State Agricultural College is being planned by the local committee of the academy at Hays.

THE entire colony of 700 to 800 experimental animals of the Food Research Laboratories, Inc., of New York City, was recently destroyed by asphyxiation due to the improper functioning of special gas radiators. Having been informed by experts that the catastrophe must have been precipitated by some human agency, a reward of five thousand dollars has been offered by Dr. Philip B. Hawk, the president of the corporation, for the arrest and conviction of the guilty person or persons. Detectives are actively investigating the matter.

THE residue of the estate of the late Elizabeth R. Stevens, of Swansea, Massachusetts, said to amount to $5,000,000, will be divided among the Union Hospital, Wellesley College, Mount Holyoke College, Massachusetts Institute of Technology, Massachusetts Eye and Ear infirmary and the Joseph Case High School of Swansea.

IT is announced at Swarthmore College that only $175,000 must be raised to complete the endowment fund of $2,000,000. The list of large donations is headed by one of $675,000 from the Rockefeller Foundation, which brought its total contribution to $1,350,000 within a year. Edward S. Harkness, of New York, contributed another $250,000, after having given a similar amount last spring. A conditional promise for a gift of $335,000 was obtained from the Julius Rosenwald fund. Another foundation has given an informal assurance of $150,000. Lessing J. Rosenwald, of Philadelphia, contributed $15,000, which can be used, principal or interest, at the discretion of the president of the college. From an anonymous donor came $400,000 for the endowment of the department of biology in the name of Dr. Edward Martin, and another $200,000 for a building in which it can be housed. This same donor previously had given $300,000 for the same purpose.

MR. GEORGE F. BAKER, of New York, who several years ago made a gift of $1,100,000 to Dartmouth College for construction of the Baker Memorial Library, has given an additional $1,000,000 for the maintenance and operation of the library. The library was dedicated in June, 1928, as a memorial to Mr. Baker's uncle, Fisher Ames Baker, a Dartmouth alumnus of the class of 1859.

THE vice-chancellor of the University of Cambridge has announced that the Royal Society, in virtue of its reversionary interest in the residue of the estate of the late Mr. E. W. Smithson, holds a sum yielding about £1,200 a year, and that the regulations now published have been adopted by the Royal Society after consultation with the council of the senate in order to give effect to the terms of the bequest. The Regent House will be asked to pass a grace to the effect that Professor Seward, master of Downing; Mr. W. H. Mills, of Jesus College, and Mr. R. H. Fowler, of Trinity College, be appointed members of the committee for the administration of the Smithson Research Fund. The Royal Society will appoint four members of the committee. The committee will devote the income of the fund, or such part of it as may be necessary, to the establishment and support of a fellowship for research in natural science, with a view to the discovery of new laws and principles. It is to be called the Smithson research fellowship.

Industrial and Engineering Chemistry states that Mr. Francis P. Garvan has come to the aid of the American Chemical Society, and has enabled the directors to vote a budget for 1930 which is $95,000 in excess of its normal income, thus enabling the *Journal of the American Chemical Society* to publish promptly all accepted articles, which had accumulated to the extent of some six regular issues, and to meet the normal increase of the year. The foundation will also meet the increased needs of *Chemical Abstracts* and the *Analytical Edition of Industrial and Engineering Chemistry* for the coming year.

THROUGH the generosity of Merck and Company, of Rahway, New Jersey, a fellowship in analytical chemistry with a stipend of $1,000 has been established at Princeton University for the academic year 1930–1931. The purpose of the fellowship grant is to foster fundamental research in the development of new or improved qualitative and quantitative analytical methods.

THE University of Pennsylvania has received from Mr. Eldridge R. Johnson, a trustee, $250,000 for the further endowment of the Eldridge R. Johnson Foundation for Research in Medical Physics. Mr. Johnson's gift formed part of a $500,000 contribution which he made in connection with the effort of the university's trustees to meet deficits incurred by the university and to provide it with the nucleus of an adequate endowment fund. His latest gift raises the total endowment of the foundation to $850,000.

THE Jordan-Eigenmann collection of fishes recently secured from Indiana University for the California Academy of Sciences by Dr. Evermann has now arrived at San Francisco where it is temporarily stored in the basement of the Steinhart Aquarium of the academy. Dr. Evermann, Mr. Alvin Seale, superintendent of the aquarium, and Mr. H. Walton Clark, assistant curator of fishes in the academy museum, together with several student assistants, spent the entire month of October in packing the collection and loading it in a box car for shipment west. The collection is one of the largest and most valuable in America. It contains more than 220,000 carefully selected specimens representing an unusually large percentage of the known species of North, Middle and South America. The shipment was made in about 100 large earthen jars, 13 large boxes and about 500 large cartons made especially for the purpose. The total weight of the shipment, including containers, was 36,000 pounds. The packing was done under the immediate supervision of Messrs. Seale and Clark and the loading of the car under Mr. Seale's supervision. The fact that the shipment reached its destination without the lose or injury of a single specimen speaks well for the care and excellent judgment shown by Mr. Seale and Mr. Clark. Such a shipment so eminently successful is probably without parallel in this country. The collection is now being opened up and placed on temporary shelving in a fire-proof room where it will be available for study and from which it will be transferred in the near future to permanent quarters especially constructed for the academy's ichthyological collections in the east wing of the academy's museum now under construction. This Jordan-Eigenmann collection, together with the very rich and valuable Jordan collection of about 100,000 specimens at Stanford University, will make this the ichthyological center for the entire Pacific area.

THE *Journal* of the American Medical Association reports that the establishment of a department of medical and surgical research is being arranged by the Ohio State University. Creation of the department was authorized by the Board of Trustees as an expansion of the work of the college of medicine. The purpose will be "to coordinate the medical research in medical and surgical fields in the college, to work with the clinical members of the present staff and to inaugurate a program of scientific investigations that should be very fruitful of results." The personnel

will include a professor, an assistant, technician and clerical assistants. According to the dean, the new department "promises to greatly enhance the usefulness of the college of medicine in scientific and clinical medical fields." The college of medicine is the oldest unit of the Ohio State University.

THE New York *Times* writes editorially as follows: "To further the interests and usefulness of science the Association of Scientific Workers was organized in Great Britain two years ago. Small though it be, the association has made its influence felt on both Lords and Commons. Major Arthur Church, its energetic secretary and a doctor of science himself, stood for the House, was elected and promptly proceeded to organize no fewer than seventy of his fellow-members into what is merely the nucleus of a parliamentary science committee through which the association will endeavor to apply science in the service of the empire. Far from being an upstart, the parliamentary science committee, like most things British, has a respectable ancestry. Until 1866 the British Association for the Advancement of Science championed the cause of the physicist, biologist and chemist through a small parliamentary committee and thus succeeded in improving navigation and the weather-forecasting service; determining the conditions under which civil list pensions were to be awarded to scientists; raising the standard of scientific teaching; furthering the exploration of Africa by Livingstone, Speke and Grant, and inducing Tyndall and Huxley to express their opinions on the best method of introducing physical science into the curricula of the public schools. The example thus set may well be considered by Congress and American men of science. No government in the world conducts so much industrial and purely scientific research, through its bureaus, as ours. Yet the scientist plays no conspicuous part in our legislative halls."

DISCUSSION

THE PROPORTIONS OF THE GREAT PYRAMID OF GIZEH

IN a recent most interesting address on "Mathematics before the Greeks,"[1] Professor Archibald incidentally enumerates various "mystical" interpretations of the proportions of the Great Pyramid. This reminded me of an explanation suggested by the photograph which hangs before me in my office.

Whatever the reason for the choice of dimensions, the proportions seem artistically perfect. Is this a delusion due to familiarity or is there a mathematical basis for such a conclusion?

The apparent angle φ between the opposite inclined edges of a pyramid varies, as the spectator travels around the pyramid, from $2\tan^{-1}(d/h)$ to $2\tan^{-1}(.707\ d/h)$, where h is the height and d is half the diagonal of the base. Now the dimensions of the Great Pyramid are such that the ratio of the apparent width of the base ($2d\cos\theta$) to the height varies from a maximum of 2.222 to a minimum of 1.572. If these values are plotted as a function of the angle θ, the average value is exactly 2, which is the value which corresponds to a right triangle. This means that if the pyramid were rotated in front of a distant observer, the apparent angle between the opposite edges at the apex would vary between 96° and 76.3°, but the average value would be the angle 90°. This follows mathematically from the fact that the ratio of h (481 feet) to d (534.4 feet) is exactly the ratio of $\sin\pi/4$ to $\pi/4$, that is 0.900.

Now let us consider the vertical section of the pyramid perpendicular to two faces, the section any architect would draw. According to the Encyclopaedia Britannica, the angle between each face and the base has the following values, for the four pyramids of Medum and Gizeh.

	Name	King	Angle
1.	Medum	Sneferu	51° 52′
2.	Great Pyramid of Gizeh	Khufu	51° 52′
3.	Second " " "	Khafra	53° 10′
4.	Upper " " "	Menkaura	51° 10′

Why did the architect in each case choose an angle of about 52° instead of 45° or 60°? It is an interesting fact that for a right triangle having a lower angle of 51° 49.6′, the height is the geometric mean between the base and the hypothenuse, that is, the ratio of hypothenuse to height is equal to the ratio of height to base, giving a right triangle with perfect proportions. In the case of the first two pyramids the angle approximates this ideal angle within one part in a thousand. However, the fact that the third and fourth pyramids depart from this angle, one being slightly more and the other slightly less, suggests that the design was not controlled entirely by a mathematical formula, but was subject to modification according to artistic judgment, which, however, oscillated about the value given by the formula.

GORDON S. FULCHER
CORNING GLASS WORKS

THE NEW MADRID EARTHQUAKE—AN UNPUBLISHED CONTEMPORANEOUS ACCOUNT

I RECENTLY came upon the following record of observations of the New Madrid earthquake in an old

[1] SCIENCE, 71: 115, January 31, 1930.