An additional grant of $300 to Philip B. King, to cover cost of fossil collecting in connection with studies on the Permian rocks of the Trans-Pecos, Texas.

This recent action brings the total number of grants made by the Geological Society to 100, and the total sum to $103,078.35. These grants are made possible through the bequest of the late Dr. R. A. F. Penrose, Jr., who left approximately four million dollars to the society as an endowment. Full information concerning grants has been distributed to members of the society in Information Circular No. 12, copies of which may be had by others on request.

SCIENTIFIC NOTES AND NEWS

THE Penrose Medal of the Geological Society of America has been awarded to Dr. Charles Schuchert, emeritus professor of invertebrate paleontology at Yale University. The medal, which was established in 1926 by the late Dr. R. A. F. Penrose, Jr., is given for distinguished service and fundamental contribution to the advancement of geologic science. It will be presented to Dr. Schuchert at Rochester, N. Y., on the occasion of the annual dinner of the society on December 28.

A PORTRAIT of Dr. Hugh D. Reed, since 1906 professor of vertebrate zoology at Cornell University, was presented to the university on November 17 by his graduate students and colleagues in the department. It was formally presented by Dr. Julian D. Corrington, of Rochester, who was one of Dr. Reed's students, and officially accepted for the university by President Farrand. Professor Simon H. Gage described the early history and development of the department of zoology and the methods of teaching that were used before 1900, when Dr. Reed joined it as assistant. Professor Benjamin F. Kingsbury told of their acquaintance and of Dr. Reed's work as a student, graduate and member of the faculty of the university. The presentation was followed by an informal reception.

DR. HARRY M. SELDIN, who recently won the International Anesthesia Research Society's silver trophy shield, was the guest of honor on November 7 at a dinner given in New York City by friends and colleagues. The speakers were: Dr. A. T. Newman, dean of the New York University Dental School; Dr. F. R. Brophy, president of the First District Dental Society; Dr. C. Raymond Wells, president of the Second District Dental Society; Dr. Alfred Walker, chairman of the judicial council of the American Dental Association, and Dr. John T. Hanks, FERA dental adviser.

THE *Journal* of the American Medical Association reports that Dr. Elizabeth A. Woodworth, bacteriologist of the Minneapolis health department since 1913, was honorably retired on her seventieth birthday. She had been connected with the department since 1901. Associates presented her with a wrist watch. The Hennepin County Medical Society also honored Dr. Woodworth with a gift of a silver bowl bearing the following inscription: "Dr. Elizabeth A. Woodworth, for thirty-three years of unusual service to humanity." Dr. Woodworth is a graduate of the Minneapolis College of Physicians and Surgeons.

DR. FRANK A. WAUGH, head of the department of landscape architecture at the Massachusetts State College, has been elected an honorary member of the New England Park Association in recognition of his accomplishments in furthering the aims of the association.

THEIR eightieth birthday has been celebrated by the following scientific men: Dr. William Temple Hornaday, director of the New York Zoological Park from 1896 until his retirement as emeritus in 1926; Dr. Edward B. Gleason, professor of otology at the Graduate School of Medicine of the University of Pennsylvania, and Dr. Edward Bausch, president of the Bausch and Lomb Optical Company, responsible for the invention and construction of optical apparatus.

PROFESSOR IRA EUGENE CUTLER, chairman of the division of biological sciences and professor of zoology at the University of Denver, has been made professor emeritus. Professor Cutler has been connected with the university for thirty-six years, first as professor of both botany and zoology, and later of zoology. He is succeeded as chairman of the division by Humphrey Gray Owen, associate professor of zoology.

ACCORDING to the London *Times*, a chair of national health was inaugurated on November 1 at Munich by Dr. Gerhart Wagner, the head of the German Medical Association, who stated that the new chair would form the model for others. The first professor of the new faculty is Dr. Schultze, the Bavarian State Commissar for Health.

DR. THOMAS J. COLLIER, of Atlanta, Ga., was elected president of the Associated Anesthetists of the United States and Canada at its recent Boston meeting.

SIR JOHN CADMAN has been elected president of the British Institution of Petroleum Technologists for the session 1935–36.

SIR HARRY MCGOWAN was installed as president of the British Institute of Fuel at a meeting on Novem-

ber 12. The title of his presidential address was "An Appreciation of the Value of Research to the Fuel Industries."

DR. PHILIP J. DARLINGTON, JR., assistant curator of insects at the Museum of Comparative Zoology, Harvard University, has reported to the museum that he climbed this fall to the summit of Mount La Hotte, 8,000 feet high, the least known and most difficult peak in Haiti.

DR. OLIVER R. MCCOY, assistant professor of anatomy at the University of Rochester, who has been consultant at the Gorgas Memorial Laboratory, has returned from Panama, where he has been engaged for the past three months in the study of filariasis in wild monkeys.

THE assignment of Dr. Paul F. Russell, of the International Health Division of the Rockefeller Foundation, to the All-India Institute of Hygiene, Calcutta, has been cancelled and he will be stationed elsewhere in India, at first in Kasauli, Punjab. Correspondence should, however, be addressed in care of the institute, 21 Central Avenue, Calcutta.

DR. BERNARD MYERS, president of the clinical section of the Royal College of Physicians of London, is visiting the United States. During his visit he planned to lecture at the College of Physicians and Surgeons of Columbia University and at the Medical School of the University of California. He will sail from San Francisco for New Zealand on December 12, where he will represent the British Medical Society at the meeting of its New Zealand branch.

GEORGE J. AZIMOV, professor of animal husbandry of the All-Union Institute of Animal Husbandry, Moscow, U.S.S.R., is planning to visit the United States within the next few months. He proposes to make a study of methods of training and research in animal husbandry.

DR. ROBERT F. LOEB, associate professor of medicine at the College of Physicians and Surgeons of Columbia University, recently conducted a clinic on diabetic acidosis before the faculty and students of the University of California Medical School.

DR. HARVEY CUSHING, Sterling professor of neurology at Yale University and formerly Moseley professor of surgery at the Harvard Medical School, recently gave the foundation lecture on neurosurgery at the dedication ceremonies marking the opening of the Neurological Institute at McGill University.

DR. LOUIS TRENCHARD MORE, dean and fellow of the Graduate School of Arts and Sciences of the University of Cincinnati, addressed the University of Cincinnati Section of Sigma Xi, on November 22, on "The Determination of the Scientific Method by Newton."

DR. HERBERT GROVE DORSEY, principal electrical engineer of the U. S. Coast and Geodetic Survey, gave an illustrated lecture on November 16 on "Modern Hydrographic Surveying" before the Lecture Club of Wells College.

DR. J. B. S. HALDANE, professor of genetics in the University of London, delivered the tenth annual Norman Lockyer lecture of the British Science Guild on November 28. His subject was "Human Biology and Its Applications."

PROFESSOR DEXTER S. KIMBALL, dean of the College of Engineering at Cornell University; Dr. John Johnston, director of research of the U. S. Steel Corporation, and Dr. John H. Finley, associate editor of *The New York Times*, have been appointed to the 1934 lectureships of the American Society of Mechanical Engineers. Dr. Finley delivered the Calvin W. Rice Memorial lecture on December 5. The title of the lecture was "International Friendliness." Dr. Rice was secretary of the society from 1906 until his death.

THE *Journal* of the American Medical Association reports that at the recent meeting of the Washington chapter of the Pan American Medical Association, the speakers were Col. Fielding H. Garrison, Baltimore; Dr. Fred H. Albee, New York, and Dr. Robert Gutierrez, New York. A one minute period of silence opened the meeting in commemoration of the late Dr. Santiago Ramón y Cajal of Madrid.

DR. KARL T. COMPTON, president of the Massachusetts Institute of Technology; Dr. Walter Rautenstrauch, professor of industrial engineering, Columbia University, and Dr. M. L. Crossley, chief chemist of the Calco Chemical Company, will take part on December 14 at 8:30 P. M. in a symposium on "Science in Relation to Social Growth and Economic Development," to be given under the auspices of the American Institute at the American Museum of Natural History.

THE annual meeting of the American Astronomical Society will be held in Philadelphia from December 27 to 29. On the first evening Dr. Walter S. Adams, director of the Mt. Wilson Observatory, will give an address before a joint meeting with the Rittenhouse Astronomical Society at the Franklin Institute. The address will be followed by a reception given by the Rittenhouse Astronomical Society to the national organization. The annual dinner of the American Astronomical Society will take place on December 28 at the Hotel Sylvania.

THE Northwest Scientific Association will hold its annual meeting at the Davenport Hotel in Spokane, Washington, on December 28 and 29, under the presidency of Thomas Large, of Spokane. A special symposium will be held on Friday, December 28, on the migrations of salmon and other fish in the Columbia River and the effect on such migrations of the high Bonneville and Grand Coulee dams. At the annual dinner on Friday night the retiring president, Howard Flint, of the U. S. Forest Experiment Station at Missoula, Montana, will speak on "Scientific Relations in the Life of a Forest." Program meetings during the two days will be held by eight sections as follows: botany-zoology, chemistry-physics-mathematics, education, forestry, geography-geology, engineering, medicine and social science.

ACCORDING to *Nature,* with the object of the promotion of biochemical studies and research, a Biochemical Society has recently been formed at Calcutta. The society was formally inaugurated on July 6, 1934, at the All-India Institute of Hygiene. The first committee of the society is constituted as follows: Professor N. M. Basu, Lieut.-Col. T. C. Boyd, Professor S. Ghosh, Professor J. N. Mukherjee, Dr. B. B. Sen, Professor H. K. Sen, Professor H. E. C. Wilson, with Dr. B. C. Guha as honorary secretary and Dr. B. Ahmad as honorary treasurer. It has been arranged to hold monthly meetings for biochemical discussions and reading of original papers, reviews, etc. Four meetings have already been held.

TO commemorate its fiftieth anniversary the Association of Official Agricultural Chemists has issued as No. 4 of its current volume of the *Journal of the Association of Official Agricultural Chemists* a fifty-year index of its publications. This index includes all entries from the Proceedings published in the Department of Agriculture bulletins, the journal of the association, and in the 1920, 1925 and 1930 editions of the "Book of Methods." The association plans to issue a supplementary index each ten years covering subsequent work.

THE Harvard-African Expedition, under the auspices of the department of tropical medicine of Harvard University, has recently returned to this country. This expedition, which left in April, 1934, under the direction of Dr. Richard P. Strong, particularly carried on medical and biological investigations on onchocerciasis, in the regions of the Belgian Congo. Further research on the material brought back from the expedition will be completed in the laboratories of the department by Dr. Strong and Dr. J. H. Sandground. The expedition obtained also some 226 bird skins and some 25 mammal skins, collected and prepared by S. Pierrepont, Jr. A herbarium of some 125 plants was made for the Gray Herbarium by Dr. J. Bequaert, who also collected numerous specimens of miscellaneous insects, mollusks and other invertebrates which will be additions to the collections of the Museum of Comparative Zoology. A collection of photographs was made by Henry Mallinckrodt and Byron L. Bennett.

THE expedition conducted by the Scripps Institution of Oceanography at the University of California in conjunction with the U. S. Hydrographic Office, directed by Dr. Roger R. Revelle, research assistant, aboard the *U. S. S. Bushnell,* the flagship of Admiral C. W. Cole, has collected data to explain the state's "unusual weather" and to aid in forecasting seasonal rainfall and fisheries production. Dr. Revelle was accompanied by fourteen assistants. The expedition started in the extreme of the North Pacific, at the Aleutian Islands, cut across the Japan current, or "western wind drift," and to the tropical waters of Pearl Harbor. Eighteen stations were established, at each of which tests of water composition and temperature were made at various depths from the surface to two miles below sea level.

AN Associated Press dispatch dated November 26 states that in a seven-hour flight Admiral Richard E. Byrd brought back with him conclusive evidence that Marie Byrd Land runs in an unbroken line from the Antarctic coast to the South Pole and that a trans-arctic strait does not exist. It is stated that Admiral Byrd has expressed certainty that there is no water passage east of the 150th meridian, from the 75th parallel to the Pole, a stretch of 1,000 miles.

PLANS for a study of cosmic rays from Mount Tupungato, a 19,680 foot Andean peak on the Argentine frontier, have been announced, according to *The New York Times,* by Director Julio Bustos of El Salto Observatory. The directors of the Bureau of Standards and the Astrophysical Observatory, Washington, are expected to aid the Chilean expedition.

THE regents of the University of Wisconsin, Madison, have appointed a committee to work out plans for using a $450,000 bequest left to the university by Miss Jennie Bowman earlier in this year for the establishment of a cancer institute. Members of the committee are Dr. Glenn Frank, president of the university; Dr. Charles R. Bardeen, dean of the medical school, and Dr. Edwin B. Fred, dean of the graduate school.

LARGE woodlands near Ithaca covering approximately 620 acres have been given to Cornell University by the Lloyd Library and Museum of Cincinnati, Ohio, for the exclusive use of biologists as a natural out-of-door laboratory. They are a memorial to the

indirect donor, C. G. Lloyd, who was the father of John T. Lloyd. For many years a resident of Ithaca, Mr. Lloyd stipulated that when the deeds of the property were turned over to Cornell no trees or undergrowth were to be cut. The woods are to be allowed to follow their natural course of growth, death and decay. They have for years been protected property and now form primeval wildwood.

THE New York Botanical Garden is the recipient of a bequest of ten thousand dollars from the will of Kenneth E. Mackenzie, member of the Board of Managers, who died on October 22. In addition, Mr. Mackenzie bequeathed all his remaining plant specimens and nearly 1,000 drawings which had been made for him by H. C. Creutzberg. A collection of 43,000 plant specimens had been presented to the garden two years ago. Mr. Mackenzie, who was an attorney in New York, had become an authority on the Cyperaceae, or sedges. The legacy of ten thousand dollars, it was stipulated, is for the publication of the illustrations mentioned above.

THE Carnegie Corporation has made a grant to the University of Oregon, sufficient to conduct a thorough search of the region near Bonham Falls in the Deschutes section of Oregon for more evidence of a prehistoric race of men. The work is being carried out by Dr. L. S. Crossman, professor of anthropology at the university.

THE Foundation for the Advancement of Researches on Encephalitis of the University of Berne has offered a prize of one thousand Swiss francs for the best work on the diagnosis and treatment of encephalitis. Competitors should communicate with the dean of the Faculty of Medicine of Berne.

UNDER the will of the widow of Frank Hutchison, formerly the manager of the Canadian Pacific hotel system, the faculty of medicine at McGill University will receive a bequest of about £20,000.

SANTA CRUZ COUNTY has been approved by the Federal Soil Erosion Service as the site for the state's third soil erosion control demonstration project. It will cover an area of 67,000 acres, will carry with it an allotment of $200,000 from the $15,000,000 appropriated by Congress for the purpose of demonstrating methods of erosion control to owners and operators of farm properties, and will be known as the Corralitos Project. The other two project areas in California are near Arroyo Grande, San Luis Obispo County, and in the Los Posas Valley, Ventura County. Sites for the three projects were selected primarily on recommendations made by Walter W. Weir, associate drainage engineer in the Agricultural Experiment Station, University of California, whose studies of erosion were responsible in a large measure for obtaining the appropriation to establish the work in California.

Museum News reports that the Museum of Natural History at Springfield, Mass., of which Mrs. Grace P. Johnson is director, opened its new building to the public on October 13. The structure is of Indiana limestone, two stories and basement, with a ground area 132 by 88 feet. It is adjacent to and connected with the old Natural History building on the northeast corner of the City Library Association quadrangle. The main entrance is on the west, from the interior of the quadrangle. The three floors provide 18,343 square feet of exhibition space and 4,900 square feet for storage. In the basement are a large gallery for Indian material, two classrooms, a transformer room and a workshop. On the ground floor, the main entrance hall, 68 by 18 feet, houses habitat groups of bear, beaver, deer and Antarctic birds; a second large hall is devoted to a life-sized Indian group, the Indian basket collection and other related material; the south gallery to mammals, and the north gallery to birds. On the second floor is the aquarium hall with 15 large tanks, a junior room, galleries for geological and botanical exhibits, and the astronomical department including a planetarium. The planetarium room is 38 feet in diameter with a dome 34 feet in diameter and 23 feet high. The projector is of the compound stereopticon type and was constructed by Frank D. Korkoss, of the museum staff. The seating capacity of the room is about 150. The building was designed by Tilton and Githens and erected at a cost of $25,000. Funds were provided from a bequest of the late Stephen E. Seymour.

A CORRESPONDENT of the *Journal* of the American Medical Association writes: "The Gesellschaft Deutscher Naturforscher und Aerzte held its ninety-third meeting from September 16 to 20 in Hanover, well-known as the home of Leibniz. The attendance of some four thousand found a wide range of topics awaiting their consideration, for thirty allied societies also took part in the proceedings. Among these may be mentioned the Deutsche Chemische Gesellschaft, which contributed half a dozen papers, including one from Professor The Svedberg on the applications of the ultra-centrifuge, and the Kolloid-Gesellschaft, which for its tenth general meeting devoted two very full days to 'Röntgenoskopie und Elektronoskopie von dispersen Systemen, Fäden, Filmen und Grenzschichten.' In addition to the more specialized discussions within the two main divisions of natural science and medicine, there were combined discussions and discourses of wider appeal addressed to the meeting as a whole, after the manner of the British Association. Among the last-mentioned, particular interest

was aroused by Professor W. Heisenberg's lecture, 'Wandlungen der Grundlagen der exakten Naturwissenschaften in jüngster Zeit,' in much the same field as that covered by Sir James Jeans's address at Aberdeen. An exhibition of apparatus, preparations and scientific books was held in the Ausstellungshalle, one of scientific films in the Tierärztliche Hochschule, and another, the traveling exhibition of the Dresden Museum of Hygiene, 'Leben und Gesundheit,' in the Künstlerhaus, while lighter moments were provided for by the Opera House and theater and the usual excursions to neighboring centers of attraction."

DISCUSSION

THE DISTRIBUTION OF FUNDS FOR RESEARCH

MY attention has been called to the possibility of misinterpretation of a phrase in which reference was made to the Land Grant Colleges in my article on "Science and Prosperity" published in the issue of SCIENCE for November 2. I was discussing the possibility of government support of scientific work on a national scale and the particular question of efficient administration of such funds if they were available. In this connection appeared the sentence: "Perhaps the worst way to carry on research is to distribute funds according to some formula such as that followed in the support of Land Grant Colleges, $50,000 to each State in the Union, or so much to every research laboratory."

Being myself an administrative officer of a land grant college, and believing that the land grant colleges are the backbone of our American system of higher education, I certainly did not intend to imply a criticism of the land grant colleges or of the basis on which they receive federal support. This support was intended to stimulate the program of higher education throughout the country, and particular reference was made to agriculture and mechanic arts. It is true that land grant colleges in less populous states receive the same federal aid as do those in the more populous states, but on the other hand their need of such support is generally greater. However this may be, my statement on the subject was not a criticism of the land grant method of supporting the educational programs in land grant colleges, but was a statement of my judgment that a similar basis would not be an efficient one for the support of a research program whose objective is to secure the maximum scientific and technical development for a given expenditure of time and money. The reasons for this are obvious to those acquainted with the geographical distribution of scientifically trained men.

Perhaps the point which I was trying to make would be illustrated by the following example: Suppose the objective were to shoot as many ducks as possible with a given amount of ammunition. The way to proceed would not be to fire so many volleys in each state of the Union or a volley over each lake in the country, but rather would be first to locate the ducks and then fire at them. Similarly, the objectives of a program like that which I was discussing would best be attained by first locating the big ideas wherever they may be, and then allocating the necessary funds to put these ideas to work.

The only reason for mentioning the land grant college situation explicitly was because some corresponding plan of geographical or proportional distribution of funds might be the first thought regarding its administration, and such a procedure would, I believe, be fatal to the success of any plan aimed at quick and efficient stimulation of scientific work.

KARL T. COMPTON

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

THE MOTION OF GLACIERS

IN SCIENCE for November 2, 1934, is a discussion by O. D. von Engeln, entitled "The Motion of Glaciers," to which objection should be raised. Its final paragraph reads:

> The above quotation, together with the one given in a preceding paragraph, are enough to permit appreciation of the correspondence of the two interpretations of glacier motion and of the special significance of the salt solution to the required lubrication for inter-grain shifts. They will also serve to make clear how different this concept is from the shear theory, in which it is postulated that glacier motion is: solid flow by idiomolecular exchange between ice crystals, solid shearing of aggregates of granules, intermittent slip along well-developed thrust planes and sliding of the whole body of ice over the rock beneath. Such shear concept Hess, now, and the present author, earlier, hold to be fundamentally and completely erroneous.

The last sentence contains a rather sweeping statement. Let us consider the four sorts of movement which are held to be "fundamentally and completely erroneous."

(1) Sliding of the whole body of ice over the rock beneath. What else could cause the striation, grooving and fluting found on the underlying rock surface? The length and depth of some of the individual scratches would seem to indicate that the rock frag-