Dr. F. W. Kinard, Medical College of the State of South Carolina; *Vice-president,* Dr. Velma D. Matthews, Coker College; *Secretary-treasurer,* Dr. Charles F. Poole, U. S. Regional Vegetable Breeding Laboratory; *Executive Committee,* E. B. Chamberlain, Dr. G. G. Naudain, H. E. Sturgeon, C. D. Riddle and Dr. H. L. Hunter; *Curator,* Dr. James E. Copenhaver; *Representative to the American Association for the Advancement of Science,* Dr. Gilbeart H. Collings. The meeting will be held in Charleston in 1942.

CEREMONIES at the laying of the cornerstone of the Langley Porter Clinics, San Francisco, were held on April 5. The exercises included addresses by the Honorable Culbert L. Olson, governor of California, Dr. Robert G. Sproul, president of the University of California, and Dr. Langley Porter, dean emeritus of the School of Medicine. Dr. Aaron J. Rosanoff, director of the Department of Institutions of the State of California, was master of ceremonies. The Langley Porter Clinics, a part of the Department of Institutions, is being constructed at the Medical Center of the university. It will have approximately one hundred beds and an out-patient department for use in the care, study and treatment of acute psychiatric cases.

AN ornithological expedition to southern Texas, Arizona, New Mexico and Colorado, to collect material for proposed new exhibits, was sent out by the Field Museum of Natural History early in April. Emmet R. Blake, assistant curator of birds, and Melvin S. Traylor, Jr., associate in ornithology, are conducting the expedition. They are traveling by automobile and will camp in collecting regions. Collections of reptiles and small mammals are also being made. The expedition, after working in localities ranging from the plains of the deep Southwest to the high Rocky Mountains, is expected to return to Chicago late in July.

AT the meeting of the Board of Directors of the Finney-Howell Research Foundation, Inc., the following annual fellowships were awarded: Dr. Glenn Horner, Algire, to work at the National Cancer Institute, Bethesda, Md.; Dr. Earl Leroy Green, to work at the Jackson Memorial Laboratory, Bar Harbor, Me.; Dr. Joseph Gilbert Hamilton, to work at the Radiation Laboratory, University of California, Berkeley, and Dr. Rose I. Shukoff, to work at the Glasgow Royal Cancer Hospital, Glasgow, Scotland. Fellowships were renewed for a year for Drs. Margaret Nast Lewis, Bernard E. Kline, Julius Charles Abels, Alfred Marshak, John F. Menke and Paul C. Zamecnik. Fellowships carrying an annual stipend of $2,000 are awarded for the period of one year, with the possibility of renewal up to three years, at the annual meeting of the Board of Directors, helt at the end of February. Applications must be made on the blank forms furnished by the secretary, and must be filed in the office of the foundation before January 1 of each year. Fellowships are awarded only for research into the cause or causes and the treatment of cancer.

THE regular annual meeting of the Trustees of the Elizabeth Thompson Science Fund was held on April 21. Grants were awarded as follows: $500 to Dr. Rose L. Mooney, H. Sophie Newcomb Memorial College, for a study of the structure of the monosaccharides; $250 to Dr. Edward Girden, Brooklyn College, for a study of pupillary changes in human subjects who have been subject to the process of conditioned reflexes; $150 to Dr. Philip Wright, Montana State University, for a study of the relation of color change to the reproductive cycle in the weasel; $154 to Dr. Clinton M. Osborn, the Ohio State University, for physiological and chemical studies on the formation of melanin; $145 to Dr. Robert H. Williams, Boston City Hospital, for a study of some of the pharmacologic effects of the thyrotropic hormone. The following trustees and officers of the fund were reelected: *President,* Gregory Baxter; *Treasurer,* C. P. Curtis, Jr.; *Secretary,* Jeffries Wyman, Jr.; *Trustees,* G. B. Wislocki, A. C. Redfield, J. C. Slater.

DISCUSSION

HEAVY CARBON PRODUCTION BY THERMAL DIFFUSION

CONSIDERABLE experience has now been gained in the concentration of C^{13} using methane gas in a multistage thermal diffusion apparatus of the type already described.[1,2] In view of the interest in this heavy carbon for tracer-atom work, a brief statement of these results would seem to be of value.

To obtain a larger separation factor, at the "heavy" end of the six-unit all-copper apparatus[2] a 3-meter glass column has been attached by means of a pair of glass convective coupling tubes. The hot surface of this last unit is 6 mm in diameter, heated by a single tungsten wire along its axis. The annular space between hot and cold surfaces is 4.7 mm in width, and at the lower end a collecting volume of from ½ to 2-liter capacity is convectively attached. All hot surfaces have been held at 350° C., the power consumption being about 6½ kw with a gallon of water per minute to cool the outer surfaces. The total length

[1] W. W. Watson, *Phys. Rev.,* 56: 703 (L), 1939; 57: 899, 1940.

[2] H. L. Schultz and W. W. Watson, *Phys. Rev.,* 58: 1047, 1940.

of working column is 15 meters, with the "staggering" of the annular spaces of successive columns approximately producing the desirable balancing of transport of the rare isotope throughout the apparatus. The volume of all the columns plus coupling pipes is about 9 liters. At the "light" end the gas is maintained at the normal isotope ratio. Samples of the gas enriched in C^{13} are burned to CO_2 and analyzed in a mass spectrometer similar to the one described by Nier.[3]

Using a collecting volume of 500 cm³ it was found that the gas increased in C^{13} content at a fairly uniform rate for 68 days, the separation factor (ratio of the isotope ratios at the two ends of the apparatus) then being 31.8. Operation for the next 21 days produced no further increase in C^{13} concentration. The continuance of these observations was for the purpose of seeing whether the leveling-off did not originate in incorrect "staggering" of column sizes, for in that case another concentration wave of gas would eventually arrive at the "heavy" end.[4] At the end of this time this end-volume was isolated from the last diffusion column, cut off and replaced by a 2-liter volume. After evacuation connection of this volume with the last column was reestablished, the enriched gas in the last columns going into this end-volume while fresh methane at the same time entered at the "light" end.

Although according to the theory[5] the rate of increase of concentration of the heavy isotope should be nearly proportional to the mass of gas in the end-volume, the time rate of increase of separation factor was now found to be reduced only from 0.447 units per day to 0.304 units per day when this volume was quadrupled. Apparently for most efficient operation the collecting end-volume must not be smaller than the volume of the last column or two, for in reality the last portion of the thermal diffusion apparatus is part of the end-volume. The last 3-liter glass column has a volume of about one liter.

This better production rate amounts to 67 cm³ per day of methane, 20 per cent. of whose carbon is the heavy variety, or 268 cm³ per day of 5 per cent. C^{13}, which would perhaps be enough initial concentration for many tracer-atom experiments. This is a transport of a little over 7 mg of C^{13} per day, just 1/20 of the production rate reported by Hutchison, Stewart and Urey[6] for the chemical exchange method using HCN gas. This thermal diffusion apparatus consumes 156 kw hours per day, and at this rate the production of a gram of C^{13} in CH_4 at 20 per cent. C^{13} concentration would take about 22,000 kw hours. The consumption of dollars depends upon your power cost. I compute that the cost to us would be about $300, exclusive of labor charges.

The thermal diffusion method for the concentration of C^{13} obviously can not compete with the chemical exchange method. It does have certain advantages, however, such as elimination of a very poisonous substance, compactness of apparatus, minimum time required for servicing once it is set into operation, and freedom from breakdowns (this apparatus has now been running continuously for 5½ months). My biochemical friends tell me that their tracer-atom experiments are done with a few mgs of material, not grams. It is thus clear that a thermal diffusion apparatus such as this could be operated in the corner of any biochemical laboratory, serviced by an assistant in a small fraction of his working time, and would produce at reasonable cost sufficient heavy carbon for a considerable amount of tracer-atom experimentation.

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[3] A. O. Nier, *Rev. Sci. Inst.*, 11: 212, 1940.

[4] S. B. Welles, *Bull. Am. Physical Soc.*, 16: 12, 1941, has discovered that a step-wise increase of concentration with time occurs if the transport of the rare isotope in the different portions of the apparatus is not balanced by proper "staggering" of successive columns.

[5] W. H. Furry, R. C. Jones and L. Onsager, *Phys. Rev.*, 55: 1083, 1939.

[6] C. A. Hutchison, D. W. Stewart and H. C. Urey, *Jour. Chem. Physics*, 8: 532, 1940.

A GIANT RODENT FROM THE OLIGOCENE

AN unusual discovery of the 1940 field season was an Oligocene rodent remarkable not only as the largest known rodent of such antiquity but also as a survivor of a group, the Paramyinae, hitherto believed to have become extinct at about the end of the Eocene. The unique specimen was found by Mr. Kenneth Briggs, of Baker, Montana, who kindly presented it to the American Museum of Natural History, and consists of fairly complete skull and jaws, most of a fore limb and other fragments. The animal is also remarkable as a wholly new and individually large element in the White River fauna, which has been longer and more intensively worked than any other in the American Tertiary. A revision of this great fauna is now being completed by Professor W. B. Scott and colleagues, and the present preliminary note is published at his request in order that this striking form may be cited by name in the addenda to that revision. A full, illustrated description of the new rodent will be published later this year in *American Museum Novitates*.

Manitsha tanka, new genus and species

Type.—Amer. Mus. No. 39081.

Horizon and Locality.—Middle Oligocene, White River Group, Slim Buttes, Harding County, South Dakota.

Definition.—A paramyine rodent resembling *Ischyrotomus;* incisors relatively larger and less compressed; infraorbital foramen lower and smaller; rostrum deeper; anterior zygomatic root high, nearly vertical; digits of manus relatively stout, unguals elongate and compressed as in *Ischyrotomus* but notably deeper and