in words which would apply to all these people, "Mister, I might give up my house, or even the old woman, but I ain't going to give up the divining rod. Some day it will make me rich!"

WARREN K. MOOREHEAD

PHILLIPS ACADEMY,
ANDOVER, MASS.

THE VISIT OF DR. JAKOB E. LANGE

DR. JAKOB E. LANGE, well-known Danish student of the mushrooms, will arrive in New York the middle of August for several weeks of collecting in the northeastern United States and eastern Canada. He wishes to study especially the parallelism and identity of American and European species of Agaricaceae. A definite itinerary has been arranged. Inquiries regarding its details may be directed to Dr. C. W. Dodge at Pawlet, Vermont.

From August 28 to September 2 inclusive Dr. Lange will be at Ithaca, New York. The region about Ithaca is especially interesting to him because Atkinson published over a period of years on locally collected materials. Fungus forays will be made daily to near-by points of interest in the effort to see a large number of species.

In order that the conceptions of species as held by Peck, Atkinson, Kauffman and other older American workers in the group may be clearly understood, it is imperative that Dr. Lange be enabled to exchange ideas in the field with their students. To this end American mycologists, especially those interested in mushrooms, are urged to come to Ithaca and cooperate in making these forays a success. Students with only a minor interest in the Agaricaceae will also be welcomed, and the forays will be arranged in such a manner that collecting in other groups will be fruitful. Incidentally, the Atkinson herbarium has been put in good order in recent years, and is now available for consultation in the new Plant Science Building at Cornell University.

Those who plan to attend the Ithaca forays are asked to notify the undersigned at as early a date as possible. Arrangements will be made for lodging, meals and transportation at reasonable rates. Information concerning these items, or other features of the plans for the forays will be gladly given.

H. M. FITZPATRICK

CORNELL UNIVERSITY,
ITHACA, N. Y.

REPORTS

UNITED STATES GEOLOGICAL SURVEY UNPUBLISHED LITHOGRAPHIC PLATES OF VERTEBRATE FOSSILS FOR DISTRIBUTION

Two hundred and thirteen of the lithographic plates prepared under the direction of Professor Othniel C. Marsh are now being assembled to distribute for research and educational purposes to the principal active centers and libraries of geology, paleontology and comparative anatomy in this country and abroad. The distribution is by permission of the director of the United States Geological Survey through the agency of the Department of Vertebrate Paleontology in the American Museum of Natural History. There are also the original Cope lithographic plates, some from "The Vertebrata of the Tertiary Formations of the West," some from the Cope-Matthew volume, some which have never been published.

Seventy-one sets of these assembled plates have already been sent out to various institutions in this country, seventy have been prepared for distribution abroad and three hundred and fifty are to be kept in reserve. Applications by libraries and laboratories for plates from this reserve supply should be addressed to the Curator of the Department of Vertebrate Paleontology of the American Museum.

In this connection it seems of interest and importance to review briefly the circumstances surrounding the long history of these lithographic plates which began probably as early as 1878 when Marsh was working for the King Survey and just prior to his appointment as vertebrate paleontologist of the United States Geological Survey, formed in 1879. The Marsh-Cope plates drawn on stone by Mr. F. E. Berger under the direction of Professor Marsh are masterpieces of the art of lithography which had reached a culminating point in England, Germany, France and America during the great foundation period of Leidy, Cope and Marsh, between the year 1850 when Leidy began his work and 1899 when Marsh's work was terminated by his death. No modern reproductions can compare with the beauty of Berger's original plates, so that this opportunity of securing the originals will, it is expected, be eagerly availed of, and prompt response will be given to any application.

The enumeration of the plates available for distribution and research is as follows:

The Stegosauria, 63 plates
The Brontotheriidae, 60 plates
The Sauropoda, 90 plates

On the death of Professor Marsh in 1899, Director

Walcott, of the United States Geological Survey, invited the writer to supervise the preparation of Marsh's four incomplete monographs. The materials were found to consist of over 200 carefully prepared lithographic plates, of drawings and wood engravings, some bibliographies and about one hundred pages of rough pencil notes and memoranda. There was no manuscript; the entire text of the four monographs remained to be written. It was obviously appropriate to assign the Ceratopsia Monograph to John Bell Hatcher, because the discovery and collection of these animals was the greatest single achievement of his remarkable life; he had devoted four arduous years to bringing together these magnificent horned dinosaurs for Yale University and the National Museum. Hatcher entered upon this research in July, 1902, with his usual ardor and thoroughness; on July 3, 1904, when he was stricken down the work was taken up and completed in a most admirable manner by Professor Richard S. Lull, of Yale University; it was published in 1907 as United States Geological Survey Monograph 49.

The next volume, the Stegosauria, was assigned to Mr. Charles W. Gilmore, of the United States National Museum, who began work in 1906 and, although the monograph as originally projected was not finished, he published in 1914, as United States National Museum Bulletin 89, the work entitled "Osteology of the Armored Dinosauria in the United States National Museum, with Special Reference to the Genus Stegosaurus," which covers only the material in the United States National Museum, but which established its author as a leading authority on these armor-plated dinosaurs.

Under the name "The Titanotheres of Western North America," research on the Brontotheriidae was begun by the present writer in the year 1900 and with the masterly aid of William K. Gregory was completed and published as United States Geological Survey Monograph 55 under the full title of "The Titanotheres of Ancient Wyoming, Dakota and Nebraska" in the year 1929.

Meanwhile research on the remaining monograph, the Sauropoda, was independently begun by the present writer about 1902 with Mrs. J. K. Mosenthal and, in 1912, with the aid of Dr. Charles C. Mook, of the American Museum staff. The title of this volume, if the plan for its issue can be carried out, will probably be "The Sauropoda of the World."

The problem of preparing "The Sauropoda of the World" differs radically from the problems involved in "The Titanotheres of Ancient Wyoming, Dakota and Nebraska": first, in the fact that we have little or no antecedent history of this remarkable group. The Sauropoda suddenly flash into being, to our present knowledge, towards the close of Jurassic time, fully formed and widely differentiated into a number of very distinct types, all of gigantic size and well fitted by their long limbs for the world-wide migrations which carried them to every continent, even including Australia. The central problem in the Sauropoda Monograph will, therefore, be the distinction of five or six outstanding generic or sub-family types together with the more or less speculative problem of their origin and the intensely interesting problem of the causes and means of their world-wide distribution and finally their extraordinary explosive extinction. Remarkable additions to our knowledge have been made since the superb Marsh lithographic plates, and very clear diagnoses of Sauropod characters were given by Marsh. Valuable collections have been made principally by the Carnegie Museum of Pittsburgh, by Wortman, Hatcher and Peterson under the direction of Dr. W. J. Holland.

The discovery in East Africa of the magnificent Tendaguru deposits explored by Eberhard Fraas, of Stuttgart, and others have been given preliminary descriptions by Dr. Werner Janensch, Dr. Hans Reck and Dr. J. G. Pompeckj, of Berlin. Dr. F. von Huene, of Tubingen, has recently revised Richard Lydekker's monographic work on the Sauropods of South America. Of great significance is the discovery of scattered remains in the Desert of Gobi by the Central Asiatic Expedition under Andrews and Granger, revealing what may have been the central or ancestral region in which these great animals enjoyed their original evolution. It is planned, now that the Titanothere Monograph has been completed, to renew the researches on the Sauropoda with the attempt of coordinating this great mass of new material with the original ground material made in the discoveries and writings of Marsh and of Cope.

HENRY FAIRFIELD OSBORN

SCIENTIFIC APPARATUS AND LABORATORY METHODS

A SIMPLE ULTRA-CENTRIFUGE

IT is hardly necessary to emphasize the value of the centrifuge to science in general. Its numerous uses in so many fields of experimental investigation have made it almost a necessary laboratory tool. As a consequence of this wide usage considerable energy has been directed toward the development of centrifuges with our modern high speed machines as a result. However, there is still very much to be desired in the way of improvement. Many problems of ut-