

1906, 529-539), Mrs. Leonidas Hubbard, Jr., notes that during her trip in June-August, 1905, the weather was very fine. The maximum temperature was 77°. In the higher lake country the clear nights were frosty, and on August 10 a coating of ice an eighth of an inch thick formed on a basin of water outdoors. Snow flurries occurred on three days. Thunderstorms were rare and very mild. Passing showers gave rise to remarkably beautiful rainbows. The clearness of the atmosphere made objects miles away seem very near. The plague of flies and mosquitoes, which is a well-known characteristic of some northern lands in summer, is noted as one of the disagreeable features of the trip.

AFRICA AND THE WHITE MAN.

REPORTS from Africa note the increase of the white populations in regions which have hitherto been occupied by natives only. Boer farmers are immigrating into the northern part of German East Africa, which is described as an 'elevated and healthful region.' These Boers are chiefly cattle-raisers. Mr. H. Buttengach, a mining engineer who has spent two years in Katanga, the southeastern province of the Congo Free State, is convinced that European colonization is warranted by the climate of this high plateau (*Bull. Soc. Belge d'Etudes Coloniales*, No. 6, 1906), and that agriculture may have great development on these wide alluvial plains. M. Auguste Chevalier believes that the cultivation of cacao will have enormous growth in French West Africa. The seventh report on the German cotton experiments in German Africa (*Der Tropenpflanzer*, No. 6, 1906) shows that the natives are making good progress under German tuition. The prospects in the Cameroons are encouraging in certain districts, as they are in the northern part of German Southwest Africa.

R. DE C. WARD.

PALEONTOLOGICAL NOTES.

FOSSIL CHRYSOCHLORIDÆ IN NORTH AMERICA.

THE Chrysochloridæ, or golden moles, are one of the several mole-like types which take the place of the true moles in the southern

continents. True moles (family Talpidæ) are found in the subarctic and temperate zones of all the northern continents, but not in or south of the tropics. But in the south temperate zone several animals are known which have adopted mole-like habits, and superficially resemble the true moles to a greater or less degree. In Australia there is a marsupial mole, *Notoryctes*; in Madagascar certain members of the Centetidæ are mole-like; and in South Africa we have the Chrysochloridæ. The latter two families are, like the true moles, included in the order Insectivora, but belong to the primitive or archaic division of Zalambdodonta, while the true moles belong to the more progressive, modernized and dominant group of Dilambdodonta. In South America there are at present no mole-like Insectivores or Marsupials, but in the Upper Miocene (Santa Cruz formation) of Patagonia have been found remains of an extinct mole, *Necrolestes*, of the Chrysochlorid family, most nearly related to the modern Golden Mole of South Africa.

The geographical range of these Chrysochloridæ, limited to the southern extremities of the two southern continents, and their supposed absence from any of the modern or fossil faunas of the northern continents, is not easily explained with the present distribution of land and water on the earth's surface. They form one of several peculiar elements common to the fauna and flora of the two continents which have suggested former land connection, probably *via* the Antarctic continent at a time when the polar climate was comparatively warm and Antarctica a habitable region. There is a considerable weight of evidence for the former connection of Australia and South America *via* Antarctica, but the evidence that South Africa was formerly connected is much weaker, and the geological and physiographic difficulties in the way are much more serious, as a much broader ocean intervenes, of abyssal depth and every indication of long permanency.

The discovery of Chrysochlorid moles in a Lower Miocene formation in North America,

and their probable presence in earlier formations in this country, is therefore of interest in paleogeography, as it further weakens the evidence for the former connection of South Africa with the other southern land masses, by subtracting this family from the common faunal elements peculiar to the two southern continents.

The specimen which enables us to positively identify Chrysochlorid moles from this country was found by Mr. Albert Thomson, of the American Museum Expedition of 1906, in the Arickaree formation (Rosebud beds) south of White River, South Dakota. It consists of a humerus, complete and well preserved but without any other parts of the skeleton. The humerus of *Chrysochloris* is, however, so peculiar and characteristic in form, as described by Dobson (Monograph of the Insectivora) and shown in the figures and specimens with which comparison has been made, that there can be no doubt that the fossil specimen belongs to the family, although somewhat less specialized than the modern genus. Dobson's detailed description (p. 116) of the humerus of the modern *Chrysochloris* applies word for word to the fossil; but his figure and those in de Blainville's 'Osteographie,' as well as the actual skeleton, show a less degree of specialization in several parts. The associated fossils make its age equally certain. Only a small part of the collection has been examined in the museum as yet, but this is amply sufficient to fix the fauna as intermediate between the John Day (Upper Oligocene) and the Deep River (Middle Miocene), and of nearly the same age as the magnificent fossil fauna recently obtained by the Carnegie Museum at the Agate Springs Quarry in Nebraska.

I have for some time suspected that the skull described by Mr. Douglass in 1906 as *Xenotherium* from the Lower Oligocene of Montana, belonged in or near the Chrysochloridæ, which it resembles in a much more significant manner than it does the Monotremes to which it was provisionally referred by the describer. The proof that Chrysochloridæ did inhabit North America in the Middle Tertiary makes it reasonable to refer *Xenotherium* definitely to the same family.

Apternodus Matthew, from the same formation and region as *Xenotherium*, is probably the lower jaw of that genus or some closely related form. It is possible also that one or more of the Insectivora described by Marsh in 1872 from the Bridger formation (Middle Eocene) may prove to be ancestral types of Chrysochloridæ.

The distribution of this rare and interesting family of Insectivora as now known is:

Modern—South Africa.

Upper Miocene—South America (Patagonia).

Lower Miocene—North America (South Dakota).

Lower Oligocene—North America (Montana).

(?) Middle Eocene—North America (Wyoming).

Insectivora are exceedingly rare as fossils, and this is no doubt but a small fraction of the real distribution of the family during the Tertiary. We can not regard the South American representative in the Upper Miocene as descended from the North American species of the Middle Tertiary, for South America, during the Middle Tertiary at least, was an insular continent, and its mammal faunæ from the early Eocene until the beginning of the Pliocene, contain no elements of northern origin, but develop on entirely independent lines of evolution. It would appear rather that the North and South American chrysochlorids are descended from a common pre-Tertiary ancestor. The modern South African form, on the other hand, may be more nearly related to the North American genera if we suppose that the middle or early Tertiary range of the family extended to Europe and Asia, whence it might readily have reached its present home. All authorities are agreed that Asia and North America were united during most of the Tertiary, and Africa was united to the northern land in the Oligocene and subsequently. Hence there are no geographic difficulties in the way of this supposed wider distribution—nor adequate evidence to take it out of the region of conjecture. In fact, until the mutual relationships of the Chrysochloridæ

of the three continents are determined by exact and thorough comparison of their structure, any explanation of their curious geographical distribution is highly conjectural. It is clear, however, that, as now known, they can no longer be regarded as an exclusively southern group, nor is there any necessity for believing that the South African genus is derived from South America *via* Antarctica. The most reasonable conjecture appears to be that we have here the scattered remnants of a group of very early specialization and wide distribution in pre-Tertiary times, which with the rest of the zalambdodont insectivores and many other archaic types, disappearing before more progressive competitors, found its last place of refuge in the southern continents and the greater tropical islands.

W. D. MATTHEW.

AMERICAN MUSEUM OF NATURAL HISTORY,
October 25, 1906.

SCIENTIFIC NOTES AND NEWS.

THE Nobel prizes were on December 10 awarded as follows: Physics, Professor J. J. Thomson, of Cambridge; chemistry, M. Moissan, of Paris; medicine, Professor S. Ramón y Cajal, of Madrid, and Professor Camillo Golgi, of Pavia; literature, Professor Giosuè Carducci, of Bologna; for the promotion of peace among nations, President Roosevelt.

MRS. SHALER is preparing to write a life of the late Nathaniel Southgate Shaler, which is to be published in the near future. She has made an appeal for letters or reminiscences that would be useful and has asked that these be sent to her at 1775 Massachusetts Avenue, Washington, D. C.

UNDER the auspices of the Peary Arctic Club, Commander Robert E. Peary gave an account of the voyage of the *Roosevelt* and his expedition 'furthest north' at the American Museum of Natural History on Saturday afternoon, December 8. Commander Peary was introduced by Mr. Morris K. Jesup, president of the Peary Arctic Club and of the museum. It is said that some thirty thousand people tried to obtain entrance to the hall and to the informal reception which was held after the address. A dinner was given by the Peary

Arctic Club to Commander Peary at the University Club on December 12.

M. MASCART will retire from the directorship of the Central Bureau of Meteorology in Paris on January 1. He will be succeeded by M. Angot.

PROFESSOR GARIEL has resigned the secretaryship of the council of the French Association for the Advancement of Science, a position which he has held for the past thirty years.

DR. WILLIAM H. BROOKS, director of Smith Observatory and professor of astronomy at Hobart College, Geneva, N. Y., has received a medal from the Astronomical Society of Mexico, for his discoveries of twenty-five comets.

MR. L. A. PERINGUEY has been appointed to the directorship of the South African Museum, Cape Town, to fill the vacancy caused by the resignation of Mr. W. L. Selater.

AT the recent meeting of the Association of Teachers of Mathematics of the Middle States and Maryland, Professor Edwin S. Crawley, of the University of Pennsylvania, was re-elected president.

DR. WILLIAM J. MAYO, of Rochester, Minn., retiring president of the American Medical Association, has recently been visiting Philadelphia as a guest of the dean of the medical department of the University of Pennsylvania.

THE fifth lecture in the Harvey Society course will be given by Dr. S. J. Meltzer, of New York, on Saturday evening, December 15, at 8:30 P.M., at the New York Academy of Medicine, on 'The Factors of Safety in Animal Structure and Animal Economy.' All interested are cordially invited to be present.

PROFESSOR PIERRE JANET, of the University of France, has delivered three lectures in the Johns Hopkins University on 'Mind and Medicine.'

DR. HUGO MÜNSTERBERG, professor of psychology at Harvard University, has received leave of absence from November 21, 1906, to January 12, 1907, for a visit to Germany.