ing nearly to the Rockies in the region mentioned. The drift of the northeastern ice sheet overlapped that coming from the mountains, just south of the 49th parallel. This relation of the two bodies of drift shows that the continental ice sheet reached its most advanced position after the valley glaciers from the west had retreated. There is no evidence, however, that the interval between the deposition of the two bodies of drift was considerable. The Sweet Grass Hills, just south of the 49th parallel, and thirty miles back from the edge of the ice sheet, were nunataks. The slope of the surface of the continental ice sheet between its edge and the Sweet Grass Hills is estimated to have been about 50 feet per mile. A long narrow lake existed in front of the Keewatin ice sheet, the standing water resulting from the obstruction of drainage by the ice. The present drainage of the region is in many respects notably different from that which obtained in pre-glacial times.

Messrs. George Garrey and Eliot Blackwelder, partly in company with the writer and partly alone, made a number of determinations with reference to Pleistocene glaciation west of the Rockies and east of the Cascades. The boundaries of the Okanogan or Coulee City (Wash.) ice lobe, south and east of the Columbia River, were traced out. This ice lobe had previously been made known by Russell, and its general limits indicated. Messrs. Garrey and Blackwelder also determined the existence of a great glacier down the valley of the Columbia just west of the 118th meridian. This glacier descended the valley of the Columbia to the point where the Spokane River comes in. The eastern margin of this glacier looped northward around Huckleberry Mountain (Tp. 32, R. 38 E.), and to the east of this point another glacier descended the valley of the Colville River. These two glaciers were, therefore, separated only at their southern ends, becoming continuous to the north. The eastern margin of the Colville glacier, which descended to Springdale, probably connects around Old Dominion Mountain with the ice which descended the Pend d'Oreille valley. The ice of this valley descended southward to a point three miles southwest of Davis Lake. A few data were also gathered concerning glaciation at points farther east.

Extensive deposits of loess were found in eastern Washington and northeastern Oregon. In geographic distribution, the loess corresponds, in a general way, with the wheat-growing areas of these States. Beds of volcanic ash are sometimes interbedded with the loess. Some of the loess, how much was not determined, had an æolian origin.

ROLLIN D. SALISBURY.

RECENT ZOOPALEONTOLOGY.

A FOSSIL CAMEL FROM SOUTHERN RUSSIA.

PROFESSOR NEHRING,* of Berlin, describes the skull of a Pleistocene camel from beds along the Volga, in the same state of preservation as the mammoth, wild horse, reindeer and *Elasmotherium*. From the distribution of this and other Pleistocene camels in Roumania and Algiers, the author agrees with the view expressed by Lehmann (1891) that the dromedary and Bactrian camel originated in two distinct regions, the former being a *subtropical* steppe and desert animal, the latter belonging to the *subarctic* steppes and deserts.

FOSSIL REMAINS OF LAKE CALLABONA.

E. C. STIRLING,† director of the South Australian Museum, opens a series of memoirs on the large deposit of fossil bones discovered in the bed of Lake Callabona, South Australia, first reported in *Nature* in 1894. The present memoir is devoted to the manus and pes of *Diprotodon*, the largest and most abundant marsupial in this remarkable deposit. The salt clay in which the bones were embedded was always wet, the necessary excavations soon filling with water. Nevertheless fourteen feet were removed *en masse* within large balls of the matrix clay. Besides the great difficulties of removal the fossils had to be carried two hundred miles to a railway station, by camel

* 'Ein fossiles Kamel aus Südrufsland, nebst Bemerkungen über die Heimat der Kamele,' *Sonderabdr. aus dem Globus*, Bd. LXXX., Nr. 12, pp. 188–189.

† 'Fossil Remains of Lake Callabona,' Part I. *Mem. Roy. Soc. S. Australia*, Vol. I., Part I., pp. 1–40, Pl. I.–XVIII., 4to. Adelaide, 1899.

transport. The limbs evidently rested chiefly on the carpals and tarsals, the phalanges and metapodials being extraordinarily reduced with the exception of the metatarsal of the fifth digit. The feet as a whole are comparable to those of the wombats, there being evidences of syndactylism and reduction in the second and third digits. A limb of *Genyornis*, the great struthious bird from this deposit, has recently been sent to the American Museum.

TRANSFERENCE OF SECONDARY SEXUAL CHARACTERS FROM MALES TO FEMALES.

In this brief but important paper, Dr. C. I. Forsyth-Major* reviews Darwin's statement in the 'Descent of Man,' as to the probability that horns of all kinds, and canine tusks even when they are equally developed in the two sexes, were *primarily* acquired by the male in order to conquer other males and have been transferred more or less completely to the female. Darwin's inference did not rest upon paleontological evidence, and Dr. Major therefore reviews the evolution of the families of Cervidæ, Giraffidæ, Bovidæ and Suidæ, with the general conclusion that Darwin's inference was correct. He concludes with the remark, "In our own species the modern aspirations of women are to all appearances incipient signs of the same natural law. Physical and mental characters of man, originally acquired in the struggles of the males, are apparently being slowly transferred to women. They only require time for their full evolution."

HOMO NEANDERTHALENSIS A DISTINCT SPECIES.

Professor G. Schwalbe† publishes in the proceedings of the *Anatomische Gesellschaft* an exhaustive study of the famous Neanderthal skull, which he concludes as follows:‡ "I believe I have shown that the Neanderthal skull is distinguished by no small number of characters which in many respects bring it much nearer that of the anthropoid apes than that of man. I therefore regard the position of King and of Cope in designating this as a type of a distinct species as entirely justified. I follow in this respect the modern practice of zoologists and paleontologists. This species is by no means to be included with the Paleolithic or Quaternary man; it is an older form, which is to be compared only with the skull of Spy, and the lower jaw found at Naulette. Very probably these skulls belong to the lowest diluvium, lying near the limits of the Tertiary, although the possibility must be admitted that *H. Neanderthalensis* may represent a persistent lower race contemporary with the newer Pleistocene *Homo sapiens*."

DISTINCTIONS BETWEEN THE SKULLS OF LEMURS AND MONKEYS.

Dr. C. I. Forsyth-Major,* of the British Museum, has recently been comparing in a most exhaustive and critical manner the facial region of the lemurs and monkeys, and has especially shown that the commonly accepted view of the exposure of the lachrymal bone upon the face as a primitive character is probably erroneous. This has been one of the most frequently employed distinctions between lemurs and monkeys. He proves that, on the contrary, even in the supposedly ancestral Insectivora an exposed lachrymal and lachrymal canal are not a common character. In the fossil lemurs, *Adapis* shows the lachrymal bone and duct within the orbit. Among existing types the lachrymal is scarcely more frequent in the lemurs than in the higher groups, and the greatest known reduction of this bone occurs within the lemurs. The author's conclusion is that a great facial expansion of the lachrymal, and particularly its extension beyond the fossa lachrymalis is, in the lemurs, as well as in the monkeys, not a primitive condition, but an extreme specialization; it can always be traced back to an elongation of the facial cranium necessitated by a more powerful dentition. In the reviewer's opinions each elongation is not secondary but primitive.

* *Geol. Mag.*, Dec. IV., Vol. VIII., 1901, pp. 241–245.

† 'Ueber die specifischen Merkmale des Neanderthalschädels,' *Verh. der Anat. Ges.*, XV. versamml. in Bonn., 26–29 Mai, 1901, pp. 44–61, 8vo. Jena.

‡ Translation and abstract.

* 'On some Characters of the Skull in the Lemurs and Monkeys,' *Proc. Zool. Soc.*, Feb. 19, 1901, pp. 129–153, Pl. XI.–XIII.

DISTINCT PHYLA OF RHINOCEROSES.

IN 1900 Osborn attempted to demonstrate that the rhinoceroses, so far from being included in a single genus, should be separated into at least six lines of descent, which have been distinct for so long a period that they are almost entitled to subfamily value, extending back to the Lower Miocene and even probably into the Oligocene. Oldfield Thomas and R. Lydekker, of the British Museum, have recently accepted this conclusion in the main, and the former* proposes to divide the living types into three genera, namely, *Rhinoceros*, the Indian forms *(R. unicornis, R. sondaicus)*, *Dicerorhinus* Gloger, the two-horned Sumatran types (Thomas points out that this name has the priority over *Ceratorhinus* Gray), and *Dicèros* Gray for the African two-horned species (this name taking precedence over *Atelodus* Pomel). It is pointed out that Osborn was in error in describing the smaller African rhinoceros *(D. bicornis)* as dolichocephalic since its head is much shorter than that of *D. simus*, the white rhinoceros. Professor A. Nehring, of Berlin, also dwells in a recent paper upon the extraordinary dolichocephaly of the white rhinoceros, showing that the skull surpasses in length even the longest recorded skull of the woolly rhinoceros (*D. tichorhinus*). H. F. O.

THE BOTANICAL SECTION OF THE CONCILIUM BIBLIOGRAPHICUM IN ZÜRICH.

FOR some years past the increasing success of the Concilium Bibliographicum in the zoological part of its work induced a number of botanists to urge this institute to undertake a botanical bibliography on similar lines to those followed in zoology. Such a course was also recommended by the chief of the Swiss 'Department of Interior' in awarding the government subsidy to the work. Such wishes have always found a sympathetic echo with the committee in charge of the Concilium, as well as with the founder of the Institution. It seemed, however, unwise to extend the enterprise to other branches, until the finances had become quite satisfactory. For this reason, no public statement of our intention in this regard has been made, save such general allusions as are to be found, for example, in the presidential address to the Botanical Section of the American Association meeting in 1900.

Recently, however, the committee of the new 'Association Internationale des Botanistes' has offered us means for organizing such a section of the Concilium without involving the latter in financial liabilities greater than it could with safety assume. The negotiations which were begun by telegraph late in January have been carried on with great rapidity, and we are now able to announce the organization of a botanical section comprising two energetic Zürich botanists, Dr. Stephan Bruneis and Mr. Emil Schoch-Etzensperger. For the year 1902 it is of course out of the question to issue a card catalogue. The year will be spent in preparation, so that the difficulties encountered in the first two years of the zoological card bibliography may be entirely avoided. Also no attempt will yet be made to record new species and genera, as is done in zoology. For the present merely the well-known bibliography of the *Centralblatt* will be continued, with certain minor improvements. The main object of this announcement is to make a direct personal appeal to all those who publish botanical papers, urging them to send copies to the *Concilium Bibliographicum, Zürich-Neumünster, Switzerland.* It is particularly important that this appeal should be brought home to editors and publishers of periodicals containing botanical notices; for the journals are far easier to excerpt than authors' reprints. Journals already reaching a Zürich library need not be sent; but we hope that all botanists will assure themselves of this fact before assuming that their collaboration in the matter of securing a given publication is unnecessary. The response that zoologists in America have given to our former appeals justifies the hope that their botanical brethren will show similar public spirit.

HERBERT HAVILAND FIELD.

ZÜRICH.

* 'Notes on the Type Specimen of *Rhinoceros lasiotis* Scalter; with Remarks on the Generic Position of the Living Species of Rhinoceros.' *Proc. Zool. Soc.*, June 4, 1901, pp. 154–158.