

of St. Andrews. Mr. de Barri Crawshay, Mr. Rolfe, and Prof. Pfützer spoke on orchids; Mr. Chittenden and Dr. Tschermak dilated on questions of heredity. Prof. Rosenberg, of Stockholm, had a most important paper showing the behaviour of the chromosomes in hybrid plants. M. Noel Bernard spoke of the symbiosis existing between the roots of orchids and the hyphæ of certain fungi.

Miss Saunders, in a very lucid manner, explained the complex results she had obtained in crossing stocks, a paper the comprehension of which was much facilitated by the numerous specimens exhibited in the hall. Mr. Biffen contributed a remarkable paper on the application of Mendel's laws to the improvement of cultivated wheats, and various communications from raisers of carnations, potatoes, bulbs, roses, amaryllids, and other plants were read. The entire programme, with very few exceptions, was worked through under trying conditions of heat and street noises, and those who participated in the hard work honestly earned the recreation that was furnished them by garden-parties at Burford and Gunnersbury, to say nothing of the banquets offered to the foreign guests and other visitors by the Royal Horticultural Society and the Horticultural Club. The success of the conference was marked, and congratulations may be tendered to all who took part in its organisation.

MAN AND THE GLACIAL PERIOD.¹

THE correlation of the successive occupation of Europe by various races of mankind with the successive events of the Glacial period has been greatly facilitated by the successful investigations of Prof. Albrecht Penck into the Quaternary history of the eastern Alps. Four well-defined terraces can be traced up the valleys of this region, each of them taking its origin in a terminal moraine. They represent the deposits of rivers issuing from the front of the ice during a glacial episode. Between the terraces the valleys show evidence of deepening by erosion during periods which correspond to genial intervals, the last of which, in order of time, is represented by the breccia of Hötting, when the temperature at Innsbruck, as shown by the included leaves and bracts of *Rhododendron ponticum*, was 3° C. higher than the average at the present day.

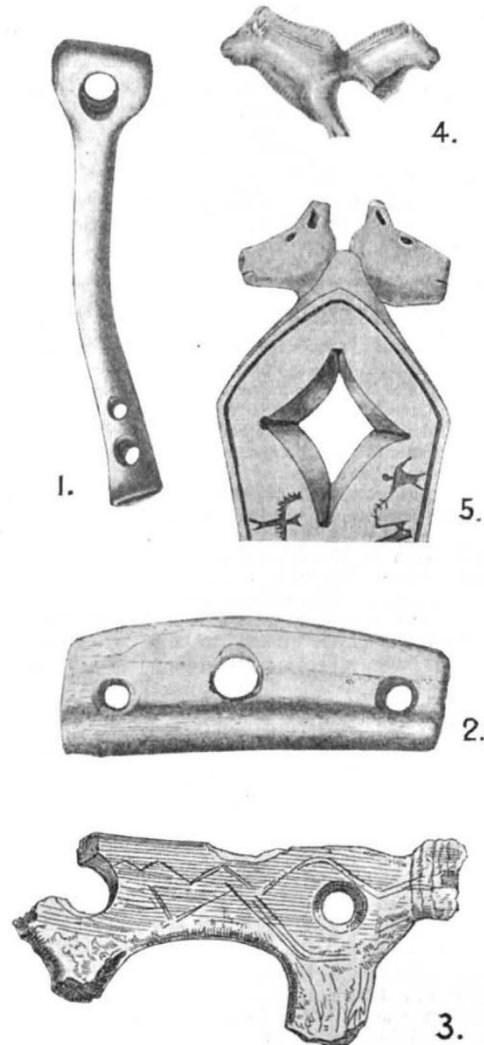
The earliest remains of the human family are afforded by *Pithecanthropus erectus* of Upper Pliocene age; the skull of this creature, while singularly simian in form, is shown to be human by its capacity (850 c.c.). Evidence supposed to indicate an even earlier existence of man-like species is afforded by the so-called "eoliths," but these it is now scarcely necessary to consider seriously, especially after the observations recently made on the eolithic forms which occur as a by-product in the manufacture of cement at Mantès. Probably 99 per cent. of the supposed implements obtained from the plateau gravels of southern England are of a doubtful character, but there is a small remainder, comprising forms distinguished by a notch, almost semi-circular in outline, which so closely resemble the scrapers once used among the Tasmanians for making their wooden spears that it seems most natural to regard them as of human origin.

The Tasmanians were the most unprogressive race in the world, and probably the oldest within the Australian region; their cranial capacity was 1160 c.c., and they were ulotrichous. It would hence appear that the cleavage between the Ulotrichi and the rest of the human species must have occurred at a very remote period.

The Chelléan stage of culture is represented by stone implements, which occur in the third fluvio-glacial terrace of southern France at the foot of the Pyrenees, and in possibly corresponding gravels in the valley of the Thames. The numerous skulls of Chelléan age which have been met with in cave deposits (Neanderthal, Spy, Krapina) agree in all essential features, and evidently belonged to a single race (*Homo primigenius* of Schwalbe), now most

nearly represented by the Australians. In cranial capacity there is a close agreement between the recent and extinct races (1250 c.c.).

The Solutrian stage follows upon the Chelléan, and implements representing it are found in the löss of the Danube, which occurs between the third and fourth fluvio-glacial terraces, and thus occupies an horizon corresponding to that of the Höttinger breccia. The Solutrian, or löss man, as the Germans sometimes call him, lived in a warm or genial climate. To the artists of this race are to be ascribed the drawings and paintings left upon the walls of numerous caves in France and Spain, which recall by their spirit and technique the work of the Bush-



1 and 2. Arrow straighteners used by Eskimos of Baffin Bay, after Boas.
3. Arrow straightener of Magdalenian age, from the Kesslerloch, near Thayngen, after Merk, from Hoernes. 4. Head of a Magdalenian arrow straightener, after Lartet. 5. Head of an Eskimo arrow straightener, after Dawkins.

men in South Africa. The associated figurines carved in various material present two remarkable anatomical features (steatopygy and elongated labia minora) which are peculiar to South African races, so that, even without the evidence afforded by the Grimaldi skeletons in the Grotte des Enfants, Mentone, we might safely regard the Solutrian race as ancestral to the Bushmen or some allied

¹ An abstract of three lectures delivered at the Royal Institution on May 24, 31, June 7, by Prof. Sollas, F. R. S.

race. Stow, in his excellent account of the South African races, has furnished the key to much of Solutrian history, and it is of particular interest to observe that this author was led by independent evidence to conclude that the original home of the Bushmen lay far to the north of the area they occupied at the time we first became acquainted with them. The cranial capacity of the Bushmen was 1330 c.c.; that of the Grimaldi skeletons has not yet been made known.

The Magdalenian race, or the reindeer hunters, the last of the definitely Palæolithic tribes, evidently lived under somewhat severe conditions of climate. A study of their implements and mode of life certainly suggests, as Prof. Boyd Dawkins first pointed out, some connection with the Eskimos, but this is a view which has not commended itself to the majority of investigators. The so-called "batons de commandement" may be selected as affording the crux of the problem; these have been compared by Prof. Dawkins with the Eskimo arrow straighteners, an explanation rejected by Hoernes and others on the ground that the Magdalenian people were unacquainted with the use of the bow. This, however, is a pure assumption, unsupported by facts. A stronger objection may be found in the shape of the perforation which characterises the Eskimo straightener as represented by Prof. Dawkins; this is lozenge-shaped, as it is in all the examples I have seen preserved in our museums; in the "baton," on the other hand, the form is invariably circular. Some of my archaeological friends have gone so far as to assert that this form is incompatible with use as an arrow straightener, though I have myself made perforated "batons" out of deer's horn which serve to straighten a crooked stick very effectually. But, what is more to the point, Dr. Boas has figured recently an arrow straightener actually used by the Eskimos of Baffin Bay, which not only resembles many "batons de commandement" in general form, but more particularly in the shape of the aperture, since it is drilled with a round hole. These two implements, the arrow straightener of the Eskimos and the "baton" of Magdalenian man, are in this case so nearly identical that no manner of doubt can exist as to the truth of Prof. Dawkins's explanation. Additional interest is thus acquired by a curious resemblance in detail which characterises the arrow straighteners of the two races, otherwise very different both in form of the perforation and in certain artistic qualities; this is to be found in the carved end, which sometimes represents two heads placed back to back, an unusual design, repeated, curiously enough, among a tribe of American Indians in their "topos" or hair-pins, which are similarly terminated by two heads (*llamas*) *adossé*. These facts, taken in conjunction with numerous other resemblances in detail between the implements at present used by the Eskimos and those of Magdalenian man, cannot fail to suggest some ethnic connection.

As regards the skeletal remains of the period, attention may first be directed to those of the Cro-Magnon type, including the skeleton of the seventh interment in the Grotte des Enfants; the skulls of this type, while resembling those of the Eskimos in some respects, especially in the narrowness of the nose, differ widely in others, such as the length of the face and the height of the orbits; the limb bones indicate a race of tall stature (1800 mm. or 1900 mm.), very different in this respect to the short Eskimos (1646 mm.). In the skeleton of La Chancelade these differences disappear; the skull is remarkably Eskimo-like, the stature deficient (1500 mm.). The osteological evidence would seem to point to the contemporaneous existence of two allied races during the Magdalenian age, one now represented by the Eskimos and the other by neighbouring North American tribes, both possibly inhabiting a large part of Europe and Asia, whence they overflowed into North America either by the Icelandic or the Alaskan route, perhaps by both. The existing Eskimo cult has to a large extent been evolved since the race entered North America. The distribution of Magdalenian remains suggests that the occupation of Europe occurred during the closing phases of the last glacial episode.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—The committee for the study of special diseases announces that Dr. R. C. Brown, of Preston, Lancashire, has promised the sum of 150*l.* per annum for two years for a pathological scholarship in connection with the investigations being carried out by the committee on rheumatoid arthritis and allied diseases. This scholarship will be known as the R. C. Brown Scholarship in Special Pathology, and will be open to all recently qualified men. The scholar will be required to work under the direction of the Huddersfield lecturer in special pathology at Cambridge, and to assist in the research the committee have undertaken on the pathology and bacteriology of the above diseases.

The Frank Smart studentship in botany will be awarded during the present month. The studentship (the yearly value of which is about 100*l.*) is ordinarily tenable for two years, and the student is in special cases eligible for reappointment for a third year. The successful candidate must devote himself to research in botany under the direction of the professor of botany, who shall determine the conditions under which the research is to be conducted and the place or places in which it is to be carried on. Applications must reach the Vice-Chancellor, Trinity Hall Lodge, on or before Saturday, August 25.

PROF. UHLENHUTH, of Greifswald, has been appointed director of the newly established department of bacteriology in connection with the Imperial Bureau of Health, Berlin.

DR. G. D. HARRIS, of Cornell University, has been appointed to the chair of geology in the Louisiana State University; he will also direct the Geological Survey of Louisiana.

PROF. E. A. MINCHIN, professor of protozoology to the University of London, will deliver his inaugural lecture on "The Scope and Problems of Protozoology" on November 15.

MISS ETHEL HURLBATT, principal of Bedford College for Women, London, has accepted the post of warden of the Royal Victoria College, McGill University, Montreal. Her successor will shortly be appointed, and will, it is hoped, go into residence at the beginning of the Lent term.

MR. R. L. WILLS has been appointed by the Kent Education Committee director of technical instruction in the Chatham, Rochester, and Gillingham district, and Mr. J. Quick has been appointed by the same committee director of technical instruction in the Folkestone, Ashford, and Hythe district.

ON Saturday last Prof. T. Clifford Allbutt, F.R.S., and Prof. H. H. Turner, F.R.S., had the degree of D.Sc. conferred upon them by the University of Leeds; the degrees in connection with the British Association meeting and the celebration of the jubilee of the coal-tar industry, to which attention was directed in our last number, were also conferred.

THANKS to the aid afforded by the Drapers' Company, the work of the statistical laboratory at University College, London, under Prof. Karl Pearson, has been considerably extended. The laboratory, which possesses a large collection of statistical models and diagrams and of mechanical integrators and calculators, provides a complete course of training in the theory and practice of statistics, and instruction is given in exhibition calculation (mechanical and arithmetical) and the use of statistical quantities.

THE Senate of the University of London has accepted from Mr. Martin White two further donations, one to provide a salary of 200*l.* a year for Dr. Edward Westermarck, university lecturer in sociology, for a further period of five years, the other an additional sum of 700*l.* for the establishment for five years of two scholarships a year each of the annual value of 35*l.* and tenable for two years. In connection with Mr. White's benefaction, special courses will be delivered during the session 1906-7 on ethnology, by Dr. A. C. Haddon, F.R.S., and on psychology, by Dr. J. W. Slaughter.