

lowest human cranium which has yet been described. It presents many Neanderthaloid characters, but stands very nearly as much below the Neanderthal skull as the latter does below the ordinary European skull. The similarity in form which it presents to the microcephalic cranium, with which it has been compared, is undoubtedly interesting, but on this account we are not to conclude that it belonged to a person of feebler intellect than others of the same race. The Neanderthal skull was supposed by certain observers at one time to have been that of an idiot, but this idea was disposed of when other crania, presumably belonging to the same geological period, and possessing similar characters, were discovered. That the fossil cranium should in many respects resemble certain microcephalic skulls, is not surprising: indeed, to some extent it was to have been expected, seeing that a considerable number of this class of idiots present undoubted atavistic characters in so far as brain and cranium are concerned.

Dubois, in his description of the fossil cranium, institutes a close comparison between it and the crania of the higher apes, and only incidentally touches upon its relationship with the human cranium. He asserts that no good could arise from a comparison between it and the Neanderthal and Spy remains, seeing that the latter are pathological. It is not within the scope of an abstract, such as this, to take up the gauntlet on a question of this kind. It will be sufficient to assert an entire accordance with the views so ably advocated by Prof. Huxley, viz. that the Neanderthal and Spy crania are typical of the earliest human race with which we are acquainted.

It is not necessary to delay over the femur. That it is human in every respect, no one could for a single moment doubt. Further, it is curious to note that its form and proportions are more those of a modern than of a prehistoric thigh-bone. It presents none of the characters which distinguish the Spy femora. Its length is 455 m. m., therefore the height of the individual to whom it belonged must have been 1654 m. m., or, in other words, about the same as that of an average Frenchman.¹ From the fact of the femur being found at a distance of from 12 to 15 m. from the place where the cranium was discovered, as well as from other considerations, it is very unlikely that the two specimens belonged to the same individual.

The tooth is undoubtedly a very remarkable specimen. Its great size and strong divergent fangs are characters which at first sight appear to separate it widely from an ordinary human upper wisdom tooth. But we know that in low races, such as the Australian and the Negro, and also in the ancient Neanderthaloid race, the wisdom tooth has not undergone the same retrograde changes which we observe in the European and other mesognathic or orthognathic people. If we take the mean of the antero-posterior and the transverse diameters of the crown of the fossil tooth, we get a result of 13.3. A right upper third molar extracted from the jaw of a negro, treated in the same way, yields a result of 11.5, whilst three Irish upper wisdom teeth, selected at random, give an average of 9. The negro tooth is thus seen, in point of size, to be as far removed from the European tooth as the fossil tooth is from it, and the same may be said for the condition of the fangs. The fossil tooth, so far as one can judge from the figure, is fashioned more after the human model than the simian. The variability of an upper wisdom tooth in man is very remarkable, not only in regard to size, but also in the disposition of its cusps and fangs.²

From what has been said, it will be seen that the skull and the tooth, even granting that they are from the same individual, present no such characters as would warrant the formation of a new family. The cranium at least is undoubtedly human. Most certainly they are not derived from a transition form between any of the existing anthropoid apes and man; such a form does not and cannot exist, seeing that the divarication of the ape and man has taken place low down in the genealogical tree, and each has followed, for good or bad, its own path. The so-called Pithecanthropus is in the direct human line, although it occupies a place on this considerably lower than any human form at present known.

¹ Topinard gives the average height of the French as 1650 m. m.

² In the museum of the Dublin School of Dental Anatomy there is an upper wisdom tooth extracted from the maxilla of an Irishman, the crown of which presents a transverse diameter of 13 m. m., and an antero-posterior diameter of 12 m. m. (mean result 12.5); which possesses seven cusps and four stout fangs: two of the latter being partially fused. This tooth is very little smaller than the wisdom tooth of the fossil form, and is more remarkable in the way of cusps and fangs.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

OXFORD.—The Biological Club held its jubilee meeting on Saturday last, when the professors of the biological faculties in the University were entertained to a commemorative dinner given in Merton College. The ravages of influenza unfortunately deprived the Club of the presence of several familiar members and of more than one expected guest; but the presence in Oxford of Prof. Bayley Balfour gave the Club an opportunity of extending its welcome to an old friend and an additional distinguished visitor. In the absence of Mr. G. C. Bourne, the presidential chair was taken by Mr. Henry Balfour, of Trinity. Profs. Bayley Balfour and Lankester replied for the guests.

In accordance with a recommendation from the Board of Faculty of Natural Science, the Council has approved of the subject of Astronomy being added to the list of subjects which may be offered in the Honour School of Natural Science. For a reason which is not very obvious at first sight, a candidate who offers Astronomy as a final subject must have obtained honours in the first or second public examination, but need not have passed any of the preliminary science examinations; and a candidate who has passed the science preliminaries is not eligible to compete in the Honour School of Astronomy unless he has obtained honours in the first or second public examination. The object of this rule, which places the School of Astronomy in a position different to that of any other science school, is to compel candidates to take Honours either in Mathematical Moderations or Finals before entering on Astronomy. But the object is not attained, for as the statute now runs, a man who has taken honours in Classical Moderations or in any Final Honour School may enter for the Astronomical School, whilst a man scientifically trained cannot. It may be hoped that the rule, which as it stands is absurd, may soon be rectified. The subject of Astronomy has long been an optional or additional subject in the Honour School of Natural Science, but like other additional subjects, has not attracted students. Astronomy having asserted its claims to recognition, Anthropology has followed its lead, and the Faculty of Natural Science has by a large majority sent up a recommendation to Council that the subject of Anthropology should be added to the Final School. The answer of Council has not yet been received.

In a Congregation held last week, the Curators of the University Chest were empowered to make sundry payments to the Curators of the Botanic Garden, to bring up the whole income of the Garden during each of the next four years to a sum sufficient to defray its expenses.

Mr. G. C. Bourne, Fellow of New College, has been elected a Delegate of the University Museum, in place of Mr. E. Chapman, Fellow of Magdalen College, resigned.

CAMBRIDGE.—The vacancy in the Sadlerian Professorship, caused by the death of Dr. Cayley, has been filled up by the election of Dr. A. R. Forsyth, F.R.S., University Lecturer in Pure Mathematics. Dr. Forsyth is well known as the author of standard text-books on Differential Equations and the Theory of Functions, and of many papers on the higher branches of pure mathematics. He is a Fellow of Trinity, and a member of the Council of the Senate.

Dr. Charles Waldstein, Reader in Classical Archæology, has been elected to the Slade Professorship of Fine Art, vacant by the retirement of Prof. Middleton.

A shower of "fly-sheets" has fallen on the University on the question of requiring further evidence of power to write essays in the various degree examinations. The questions will be decided by the vote of the Senate on Thursday afternoon.

SINCE 1892 there has been a decrease in the number of candidates for entrance into the Central Technical College at South Kensington. But though fewer candidates have presented themselves, the number admitted is about the same, indicating either that the examiners lowered the matriculation standard, or that candidates were better prepared for the examination. In the report of the work of the College during the session 1893-94, various causes are given to account for the diminution of candidates. One is the great increase of facilities for obtaining technical education in London and in the provinces since the College opened. To what extent this in-

crease of schools for technical education may help or hinder the development of the Central Technical College remains to be seen. If to some extent it increases the competition for students, on the other hand it may, in the long run, more than compensate for this by increasing the public appreciation of the value of technical education. It is also suggested that probably the falling off in the number of candidates for admission is chiefly due to the continued commercial depression, and happily this is a disadvantageous condition which may be expected to pass away.

A copy of the programme of the College, received at the same time as the report, shows that the College is far and away in advance of similar institutions in London, and is in the highest degree competent to provide "for the higher technical education, in which advanced instruction shall be provided in those kinds of knowledge which bear upon the different branches of productive industry, whether manufactures or arts."

SCIENTIFIC SERIALS

American Journal of Science, February.—On the relation of gravity to continental elevation, by T. C. Mendenhall. Determinations of the intensity of gravitation made by the Coast and Geodetic Survey, and by Commander Defforges, and extending across the North American continent, bring out the fact that the deviations from the values of gravitation as deduced from the theoretical shape of the earth's spheroid, are in a direct relation to the elevation of the observing station above sea-level. An explanation based upon differences in the density of the surface layers is difficult to find, but the fact is undoubted.—Glacial phenomena of Newfoundland, Labrador, and Southern Greenland, by G. F. Wright. The ice-sheet of Southern Greenland formerly sent glaciers down through all the fiords, filling them to a height of about 2000 feet, and pushing even to the very margin of the continent. Greenland, therefore, like the rest of the world, has had its ice age, which has already partially passed away. During the maximum of the ice extension, the mountains bordering the sea in Southern Greenland formed innumerable "nunataks." The ice was not thick enough to cover them in solid mass, and there is no probability that the ice extended far out into Davis Straits. In Labrador and Newfoundland, on the other hand, all the mountains were completely covered with glacial ice, which extended far out over the bordering continental plateau. The facts point to considerable preglacial elevations of land, followed in Labrador, at least, by a period of extensive depression below the present level, and subsequent gradual elevation. There is evidence of the recent date of the glacial period, while the indications of recent changes of level point to terrestrial rather than astronomical causes to account for the vicissitudes of the glacial period.—The *Pithecanthropus erectus*, Dubois, from Java, by O. C. Marsh (see pp. 428-29).

Bulletin of the American Mathematical Society, vol. i. 4 (New York, January 1895)—A pathetic interest is attached to the second article, "Note on a memoir in Smith's collected papers," as it must have been amongst the last pieces of work done by Prof. Cayley. The memoir is that on the Theta and Omega Functions (Smith papers, vol. ii. pp. 415-623). The notice is a very slight one, and gives an abstract of the contents of the memoir.—The opening paper is a presidential address, delivered before the American Mathematical Society at its annual meeting, December 28, 1894, of which the title is, "The Past and Future of the Society." Dr. McClintock traces the growth of the Society from its origin in 1888 as a small mathematical club, meeting at Columbia College, whose first meeting was called by a circular signed by three young men, up to its present membership of 251. A paragraph points out that the pioneer of all these mathematical societies which have subsequently sprung up was the London Mathematical Society. "There had been no previous example of a similar organisation, and fears were felt and expressed that its management might naturally drift into the hands of a few having time and energy to give to its affairs, and that there might thus be serious danger of its falling into the control of a clique. The lapse of time has developed the fact that the leading members of that Society have been men of broad views, unusually free from personal prejudice, and quick to recognise talent wherever displayed. We may almost

conclude from the history of that Society that proficiency in the science of mathematics is distinct evidence of a well-balanced mind." We repeat the wish we have previously expressed for the continued success of this flourishing young branch. In the Notes the new officers and Council are given, the new President being Dr. George W. Hill.—A long list of new publications closes the number.†

In the numbers of the *Journal of Botany* for January and February, new plants are described by Mr. A. Fryer from Scotland (a new hybrid *Potamogeton*); by Mr. R. P. Murray, from Teneriffe; by Mr. W. Fawcett, from Jamaica; and by Mr. H. N. Ridley, from the Malay Peninsula. Mr. A. Bennett discusses the claims of *Juncus tenuis* to rank as a British species.

SOCIETIES AND ACADEMIES.

LONDON

Chemical Society, February 7.—Dr. H. E. Armstrong, President, in the chair.—The following papers were read: The action of heat on ethylic β -amidocrotonate; Part ii., by J. N. Collie. During the destructive distillation of this salt, α , γ -dimethyl α^1 -ethoxy-pyridine, a dimethylpyrrol and a pyridine derivative, $C_6H_8N_2O$, are produced together with ethylic lutidone monocarboxylate.—The acidimetry of hydrogen fluoride, by T. Haga and Y. Osaka. Phenolphthalein is the best indicator to use in the titration of hydrofluoric acid. The authors' experiments with litmus suggest that the molecular composition of hydrogen fluoride is H_3F_3 or H_4F_4 .—Composition of ancient silver ornaments from Peru, by Miss C. Walker.—Molecular change in a silver amalgam, by Miss F. T. Littleton.—On heating silver amalgam, preferably of the composition $Ag Hg_4$, considerable swelling occurs; this can only be attributed to molecular change, inasmuch as gas is not evolved.—Sulphocamphylic acid II., by W. H. Perkin, jun. Further evidence has been obtained indicating that this acid has the composition $C_8H_{12}(SO_3H).COOH$; the acid yields two isomeric acids $C_8H_{11}.COOH$ on fusion with potash. Other new derivatives have been obtained.—Derivatives of ethylor-thotoluidine, by W. MacCallum, jun.—Acetyl derivatives of benzaconine and aconitine, by W. R. Dunstan and F. H. Carr. A number of unsuccessful attempts have been made to convert benzaconine into aconitine by introducing an acetyl group; two isomeric triacetylbenzaconines and a tetracetylbenzaconine are obtained on acetylation. The authors have also prepared di- and tri-acetylaconitine and triacetylpyraconitine.—Aconitine aurichlorides, by W. R. Dunstan and H. A. D. Jowett. A new examination of the three modifications of aconitine aurichloride confirms the authors' previous assertions as to the existence and nature of these compounds. The alcoholate of aconitine aurichloride described by Freund and Beck is the β -aurichloride containing a little alcohol.

Entomological Society, February 6.—Prof. Raphael Meldola, F.R.S., President, in the chair.—The President announced that he had nominated the Right Hon. Lord Walsingham, F.R.S., Mr. Henry John Elwes, and Prof. Edward B. Poulton, F.R.S., Vice-Presidents of the Society for the Session 1895-96.—Mr. W. F. H. Blandford made some remarks regarding Mons. Brongniart's donation to the library, of his monograph entitled "Recherches pour servir à l'histoire des Insectes Fossiles des Temps Primaires." Mr. Blandford also called attention to figures of pupæ of species of *Spalgis* (Lycenidæ), in the *Journal of the Bombay Natural History Society*. A discussion followed, in which Mr. Hampson and Mr. McLachlan took part.—Canon Fowler exhibited, on behalf of Mr. C. A. Myers, an unusually fine specimen of *Sphæria robertsi*, growing from the prothorax of an underground larva of a *Hepialus*, supposed to be *H. virescens*, from New Zealand. Mr. McLachlan said that there was a doubt whether the caterpillar should be referred to this species. Mr. Blandford stated that the French Government had set aside a sect on of the Pasteur Institute at Paris for the study of entomophagous fungi.—Prof. L. C. Miall, F.R.S., and Mr. N. Walker, communicated a paper entitled "On the Life History of *Pricoma canescens* (Psychodidæ)," with an Appendix by Baron Osten-Sacken.—Herr Jacoby read a paper entitled "Contributions to our knowledge of African Phytophagous Coleoptera." Dr. D. Sharp, F.R.S., remarked that Erichsen began the "In-