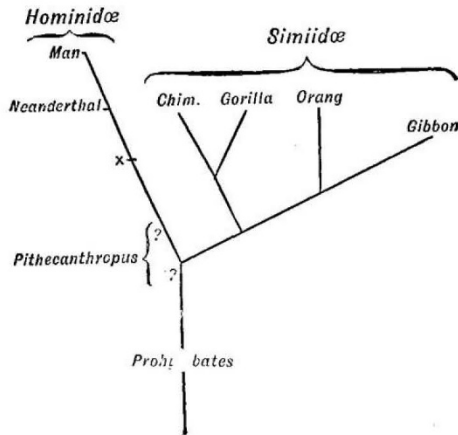


Such a supposition would necessarily involve the assumption that the anthropoid apes were a degenerated branch from the common stem. This view he explained by means of the accompanying diagram.



Prof. Haddon said: Ever since the evolution hypothesis had shed such an illumination upon nature, biologists had believed in the previous existence of forms intermediate between man and the lower animals; and it was with a fearful joy that they heard of Dr. Dubois' discovery, and then they subjected the remains to a searching criticism, with the result that all agreed that the individual to whom the cranium belonged was transitional in character between the apes and man—some thinking him more ape-like, and others more human; balancing the one set of opinions against the other, they could only come to the opinion that it was an intercalated type. Whilst agreeing with Dr. Dubois in all his statements of fact, he concurred with Prof. Cunningham in thinking that the size of the cranium was an insuperable difficulty in the way of placing the individual to which it belonged below the point in the genealogical tree where the anthropoids branched off. Paleontological evidence points to the fact that in the evolution of any series of mammals the brain tends to increase in size; at all events, there is no known case of a brain decreasing to less than half its original dimensions. Nor did it appear to him to meet the case to suppose that by doubling the body of a gibbon the brain would be equally doubled in size; there was no such proportion between body growth and brain growth.

Dr. Pearsall, a leading dental surgeon in Dublin, made some remarks about the teeth, and said that the human characters of the teeth were very striking.

Prof. Sollas agreed with the preceding speakers as to the invaluable evidence afforded by these fossil remains. They indicated an organism which was either a pithecoïd man or a remarkably human ape; which of these alternatives might prove to be true was a matter of secondary importance, the fact remained that we had before us traces of the most simian ancestor of the human race yet known.

The materials for determining its geological age were abundant, but not yet fully worked out. Dr. Dubois, however, stated that the associated mammalian fauna stood in close relation to that of the Nerbadá beds and the Upper Siwaliks of India; and so far as it might be possible to correlate the Javan deposits with those of Europe, they would appear to be older than our river-drifts, and possibly on the same horizon as the forest-bed of Norfolk. In this case the intervals in time, and the differences of structure which separate the Javan fossils from the race of Spy, and this from existing man would be, so to speak, proportional.

In the Miocene times we first meet with a few modern genera struggling to the front from a crowd of competitors; and in the Pliocene a few modern species emerge, and thus, in the case of the human race, we might expect to find the existing species *Homo sapiens* replaced by some earlier representative, say *Homo innocens* in the Pliocene, and the genus *Homo* by allied though different genera of the family *Hominidae* in the Miocene. While, however, *Hominidae* are not yet known from the Miocene, remains of anthropoid apes (*Dryopithecus*) are, and thus what palæontological evidence exists lends no favour to the view that

the anthropoids are degenerate descendants from the human stem. Thus Prof. Sollas was less inclined to agree with Dr. Dubois than with Prof. Cunningham in estimating the human characters of the Javan fossils.

Dr. Dubois thanked the Society for the honour they had done him and for their kindness. He explained why he placed Pithecanthropus in a different position in the genealogical tree from that assigned to him by Prof. Cunningham. They knew very little about the laws of evolution, which in some cases proceeded slowly and in others quickly.

The proceedings then terminated.

SCIENCE IN THE MAGAZINES.

SEVERAL articles on more and less scientific topics appear in the *Contemporary*. Mr. Herbert Spencer contributes the seventh of his series of articles on the development of professional institutions, the subject this month being the teacher. It is shown that the primitive conception of the teacher is the conception of one who gives instruction in sacred matters, so that the priest and teacher were identical. The priesthood is, for a long time, the sole source of knowledge, but in the course of evolution the teaching functions of the priest are shared by a non-priestly class, and thus the secular educator comes into existence. Mr. Spencer quotes, in support of this theory of development, extracts from the records of peoples, past and present, in various parts of the world. The evidence adduced goes to show "how teaching was in the beginning exclusively concerned with religious doctrines and rites, and how there eventually began to rise a teaching which, in some measure detached from the religious institutions, at the same time entered upon other subjects than the religious." In some cases, the normal genesis of teachers from priests was interfered with, but that does not alter the general fact of such development. The differentiation of the teaching class from the priestly class is even now incomplete, for a large number of the private schools in our own kingdom are carried on by clergymen. Finally, as in other professions, segregation and consolidation into unions and associations have followed upon differentiation.

M. Berthelot, the renowned chemist, lately appointed French Minister for Foreign Affairs, was a close friend of Renan. A few incidents referring to that friendship, and what Renan might have thought of the appointment, are given in the *Contemporary* by Mr. Albert D. Vandam. The same review contains the first instalment of an article on "Physics and Sociology," by Mr. W. H. Mallock. The character of the article is sufficiently indicated by the following headings of the sections. (1) On the application to social phenomena of the methods and principles derived from physical science; (2) on the crucial difference between the subject-matter of physical science and that of social science, which render the method of study proper to the first inadequate when applied to the second; (3) on the deliberate rejection by contemporary sociologists of the methods by which, in social science, the methods of physical science must be supplemented; (4) on the nearness with which contemporary sociologists have approached the methods of study, which they have nevertheless missed or rejected. The *Contemporary* also contains articles on the Secondary Education Report, by Prof. J. Massie; Mr. Balfour's philosophic writings, by Mr. Norman Haggood; and a reply, by Prof. A. A. Bevan, to an article in which Prof. Sayce dealt with Biblical criticism from an archaeological point of view.

The first number of the English series of the *Popular Science Monthly* contains a large amount of readable matter on scientific topics. Accompanying a description, by Mr. H. P. Fitzgerald Marriott, of the Palæolithic skeletons discovered near Mentone in 1892 and 1894, are three good illustrations reproduced from photographs of the remains. Prof. Sully contributes an interesting paper entitled "Studies of Childhood," and there are also popular articles on consumption, the saltiness of the sea, and other subjects. We notice a letter entitled "Are Animals Left-handed?" by Mr. D. S. Jordan. Several observers have stated that parrots grasp and hold food with the left claw, but Mr. Jordan concludes from his observations that "the appearance of left-footedness is due entirely to the fact that those who offer the finger or food to parrots do so as a rule with the right hand. Repetition of this process makes the parrot more or less left-footed in time."

Lieut. B. Baden Powell describes his "Air-Car, or Mail-

ifting Kite" in the *National*, and expatiates upon its superiorities over the balloon. The machine consists of a varying number (usually four or five) of sails of a flattened hexagonal shape. These are connected, one behind the other, to the ground-line, from which latter is suspended a basket-car, which has a parachute spread out above it in case of accident. The number of kites required to lift the car depends upon the wind. Lieut. Powell has tried his kites on several occasions, once during the meeting of the British Association at Ipswich, and though the result has in a few cases been disappointing, yet on the whole they have been very successful. To sum up, he remarks: "We have here a machine capable of lifting a man safely to a height, which has many advantages over a balloon. It is infinitely more portable; it is infinitely less costly. It requires no reserve supplies, and is not precluded from ascending by too much wind. It is practically invulnerable, and it promises to be of use in many circumstances rendering a balloon impracticable." What Lieut. Baden Powell specially wants is that the War Department, or the Treasury, should thoroughly investigate his invention and completely put it to the test. Our present Army Balloon establishment costs £3000 a year, and Lieut. Powell thinks most of this would be saved if the air-car were used, and with no loss of efficiency.

In a long paper contributed to the same *Review*, Mr. Mortimer Granville gives to the world "A New Theory of Gout." It is for students of chemical physiology and pathology to estimate the value of the evidence brought forward; all we need do is to indicate the kind of conclusions arrived at, viz.: (1) That gout is not a malady having for its cause an over-production of uric acid. (2) Gout is a malady which has for its cause the presence in the organism of an undue proportion of leucocytes, not necessarily in the blood, but in the organs and tissues generally. (3) If this view of gout be the true one, the treatment of the malady must be the treatment of leucæmia or anæmia. In other words, efforts should be made, by means of a meat diet, to multiply the red corpuscles in the blood, and so assist in bringing about a reduction of the white corpuscles—uric acid makers—within normal limits.

In *Scribner's Magazine*, under the title "Wild Beasts as they Live," Captain C. J. Melliss, a well-known authority on lion and tiger hunting, describes those animals from a sportsman's point of view, his article being illustrated by reproductions from a remarkable series of etchings of wild animals, by Evert van Muyden. Among the articles in *Knowledge*, we notice "The Filtration of Water," by Dr. S. Rideal; "Whip Scorpions and their Ways," by Mr. R. I. Pocock; and "New Stars," by Dr. A. Brester.

A passing reference must suffice for the remaining articles on scientific subjects in the magazines received by us. A paper on "The Limits of Natural Selection," contributed to the *Humanitarian* by Prof. C. Lloyd Morgan, is accompanied by a portrait of the author. A description of the arrangements made for the International Exhibition of 1900, with a plan showing where the exhibition will be placed, how the grounds will be divided, and what will be the names of the principal buildings, is given in the *Century*. Mrs. Lecky has in *Longman's* a very interesting account of the Institute of France, and the recent centenary celebrations. Among the subjects of popular articles in *Chambers's Journal*, we notice "The Metal Platinum," "Living Barometers," "Ivory," "Our Simian Cousins," "The Ancient Incas of Peru."

In addition to the magazines mentioned in the foregoing, we have received the *Fortnightly Review*, *Strand Magazine*, *Good Words*, and the *Sunday Magazine*, but no articles in them call for comment here.

SCIENTIFIC INVESTIGATIONS OF THE FISHERY BOARD FOR SCOTLAND.

THE part of the thirteenth annual report of the Fishery Board for Scotland, dealing with the principal scientific investigations carried on in 1894, in connection with the sea fisheries under the charge of the Board, has recently been issued. An idea of the scope and value of the work done may be obtained from the following summary:—

In the course of the year, the investigations, which were carried out under the supervision of Dr. T. Wemyss Fulton, were prosecuted on the same general lines as in previous years, and have resulted in further extensions of knowledge respecting the life-histories and habits of the fishes which form the basis of

the fishing industry, and of the operation of certain methods of fishing in relation to the food supply. Besides such inquiries, which are necessary for the proper conservation and regulation of sea fisheries, the operations in the hatching and artificial propagation of some of the more important food fishes have been continued at Dunbar Marine Hatchery, which was completed last year, and which have resulted in the addition of over forty-five millions of the fry of plaice, turbot and cod to the fishing-grounds along the neighbouring coast. Similar establishments are now in operation in the United States, Canada, Newfoundland and Norway, and others are in process of being formed in France and in Lancashire.

As in previous years a large part of the scientific inquiries, both biological and physical, have been carried on or rendered possible by means of the *Garland*, the small steamer obtained by the Board for this work; but, as has been mentioned in previous reports, her small size has curtailed the extent and usefulness of the investigations.

Part of the scientific work was also carried on at the marine laboratories at St. Andrews and Dunbar.

THE HATCHING AND REARING OF FOOD FISHES.

In last year's report the reasons which induced the Board to establish a hatchery for sea-fishes at Dunbar were given, together with a detailed description and plans of the building, and an account of the work during the first season it was in operation. The present report contains an account by Mr. Harald Dannevig, who is in charge of the hatching work, of what has been accomplished during the current season, and of the work now in progress. It is satisfactory to be able to note that the various pumping and incubating apparatus have continued to work well and without any hitch, and that the number of fry of the food fishes which have been successfully dealt with this season considerably exceeds the number turned out last year.

The great majority of the young food fishes which have been propagated have consisted of plaice, of which 44,085,000 eggs were obtained from the spawning pond, yielding 38,615,000 fry. The number of cod hatched numbered 2,760,000, and the number of turbot 3,800,000. This seems to be the first time that the eggs of the turbot have been hatched at any hatchery, and the success in this respect has enabled the development of this important fish to be studied and described by Prof. M'Intosh.

In regard to the practical results of marine pisciculture in adding to the fish supply, it may be stated that in the United States, Newfoundland and Norway—where cod alone has been propagated on a large scale—according to the official reports published in these countries the abundance of young cod has been materially increased. In the neighbourhood of the hatchery on Dildo Island, Newfoundland, the shoals of this fish were so numerous during the past season that they were described as a "solid thick mass covering the bottom for long distances on both sides of the island," and it is stated that fishermen from other parts, on hearing of the abundance of cod, came to Dildo to fish. Sufficient time has not, of course, elapsed since active operations were begun at Dunbar to afford any indication as to the influence of the work in increasing the fish supply, but there are some points of importance that may be considered in connection with the subject. There can be no doubt that the great majority of the fry distributed on the fishing grounds are destroyed from natural causes; but if only a fraction of one per cent. survive, the resulting benefit would far exceed the expenditure upon the work. If one in a hundred of the fry distributed from the hatchery survived, and if the price of the marketable fish be placed at sixpence, the resulting value to the fisheries would be about £18,000. It would require the survival of only one in a thousand, and the marketable fish to be sold at only one penny each, to cover the expenses of the work.

THE INFLUENCE OF MARINE CURRENTS IN TRANSPORTING FLOATING EGGS AND LARVÆ FROM OFFSHORE SPAWNING AREAS.

Previous investigations have shown that the inshore waters are destitute of spawning grounds for the great majority of the food fishes, and that they receive their supplies from the spawning areas situated at some distance from shore. In the present report a preliminary account is given, by Dr. T. Wemyss Fulton, of experiments which have been made to determine the influence of marine currents in transporting the floating eggs and young fishes to various parts of the coast. It is shown that they may be carried in the course of their development long distances in a