

Vertebrate skeletons, which have much more numerous and tangible characters, and approach senility in more varied ways, should afford a clearer view of general principles.

Even among vertebrates the evidence that most concerns the geologist is not always easily interpreted. For instance, the Sparassodonta and horned tortoises of the Argentine Tertiary are so closely similar to the existing Thylacines and the fossil *Miolania* of Australia, that they are still sometimes quoted as proving the former existence of an Antarctic continent uniting the South American and Australian regions. On the other hand, they may be merely survivors of cosmopolitan races at the two extremes of their former range, with certain inevitable (but not altogether similar) marks of senility. In making comparisons, indeed, it is no longer enough to distinguish the fundamental and merely adaptive characters of animals; it is also essential to note separately those characters which depend on the early, mature, or senile position of the particular animals in the evolving series to which they belong.

Hitherto there seems to be only one case in which we have enough materials for forming a judgment as to whether a fundamental advance may occur more than once. Mammal-like reptiles are abundant in the Permian of North America and in the Permian and Trias of South Africa and other parts of the Old World. Recent studies have shown that all specialisations in the North American forms are in the direction of higher reptiles, while all those in the South African forms are in the direction of mammals. Hence, although there is evidence of two possible sources of mammals, only one appears to have produced them.

Among advances of lower degree, the origin of the monkeys or lower Anthropeida may be considered. It is agreed that they arose from the Lemuroidea which were almost universally distributed over the great continents at the beginning of the Tertiary era. They seem to have evolved separately in America and in the Old World, but the two series are very sharply distinguished, although they form one zoological "sub-order." When isolated on the island of Madagascar, some of these same animals acquired a few peculiarities of the American, others of the Old World Anthropeida, but never really advanced beyond the Lemuroid stage, merely becoming senile just before their extinction. Hence, the Lemuroidea evolved in three different ways, and the resulting groups are very easily distinguished.

The study of the Tertiary Ungulata is especially important, because most of the groups arose either in North America or in the Old World, which were united and separated several times. It seems clear that, although each group probably originated but once in one particular area, its members soon diverged into several independently evolving series, each imbued with some definite impulse or momentum towards specialisation in the same way in the course of geological time, only at different rates. There were thus, for example, several distinct lines of horses and rhinoceroses, but all from the same source.

It is now well known that the characteristic South American Tertiary Ungulates arose in an isolated area, and many of their specialisations are curiously similar to some of those observed among European Eocene and Oligocene Ungulata which soon proved abortive or "inadaptive." They are, however, by no means identical.

While so many changes have occurred during the evolution of the vertebrates, the persistence of characters and the strength of heredity in numerous cases are still as perplexing as they were when Huxley first directed special attention to "persistent types."

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—Mr. A. V. Hill, Humphrey Owen Jones lecturer in physical chemistry, and Mr. J. E. Davey have been elected fellows of King's College.

Mr. F. P. White, St. John's, has been elected to an Isaac Newton studentship for three years, and Mr. H. Jeffreys, St. John's, has been re-elected to a studentship for an additional year. The Allen scholarship for research in scientific subjects has been awarded to Mr. Franklin Kidd, St. John's.

LONDON.—Prof. H. Jackson, of King's College, succeeds Prof. A. W. Crossley as one of the representatives of the faculty of science on the Senate.

The report of the Military Education Committee for 1915 has been presented to the Senate. It states that the number of members of the University of London O.T.C. during the training year ended September 30 was 2209, of whom 1068 proceeded to commissions during that year. Up to the end of 1915, 2228 cadets or ex-cadets of the contingent had been granted commissions. Of these eighty-six had fallen in the war, and the honours and distinctions gained were one V.C., twenty-five military crosses, sixty-three mentions in despatches (four mentioned twice), and one *Medaille Militaire*. In addition, 273 commissions had been granted to graduates and students (other than cadets or ex-cadets), and these officers had gained four military crosses and ten mentions in despatches. Since the outbreak of war, eight monthly courses had been held in the officers' school of instruction in connection with the contingent, and more than 900 officers had passed through the school. Lists of officers who have fallen in the war and have gained distinctions are printed as appendices to the report.

OXFORD.—The Herbert Spencer lecture was delivered on March 15 by Prof. J. Mark Baldwin. Taking for his subject "The Super-State and the 'Eternal Values,'" Prof. Baldwin spoke of the distinction, on one hand, between instrumental and eternal or absolute values, and, on the other, between individual and super-individual values. Pointing out that these distinctions are not peculiarly German, he went on to show that with the advent of the present war it became evident that in the German conception the State is not a vehicle of simply individual or instrumental value. It is, according to the Germans, the expression of the full national will; it is value *per se*, summing in itself the two super-individual values. The monarch symbolises this; no concession to the popular will is possible under such a conception, but the populace may be the recipient of free gifts from the State. Natural selection, or the survival of the fittest, is recognised, as, for example, in the victory of Turks over Arabs in the thirteenth century, or of Rome over Greece. Germany recognises two kinds of fitness—military efficiency and organisation. The spiritual and ethical weapon is wielded by the State alone. Military necessity knows no moral law; "might is right," *i.e.* super-individual might makes individual right. The observance of treaties is subordinate to the needs of the State; to be once a German is to be always of super-individual value; "Deutschland über Alles." So much for the German ideal. The opposed point of view makes itself felt in various domains, as in that of naturalisation, where the experience of the war has proved that documentary evidence is useless; in that of arbitration; and in that of cultural relations between peoples. In fine, Germany says that the nation is instrumental to the State; the democratic belligerents opposed to Germany hold that the State

has an instrumental value only, and that it is instrumental to the nation.

SHEFFIELD.—The council of the University has decided to institute a lectureship in Russian. It is understood that in view of the urgency of a knowledge of Russian in the trade of Sheffield, the necessary funds have been secured locally, and that an appointment to the lectureship will shortly be announced.

AMONG the bequests of Mr. J. S. N. Boyd, who died on February 1, leaving estate of the value of 32,646*l.*, are 2,100*l.* to Epsom College, for one foundation scholar, and the ultimate residue of the estate, after the death of his mother and sister, to the University of London for a professorship of pathology in the Medical School of Charing Cross Hospital.

In the fire which, as stated last week (p. 49), destroyed the chemical laboratories of Cornell University, several members of the staff appear to have lost very valuable records and data, the work of years. We learn from *Science* that many notes of experiments and researches, manuscripts, and treasured records have been lost. In a business house such records would be placed in a fire-proof safe every day when not required, but the use of safes in laboratories is very rare. Perhaps the fire at Cornell University will lead to the introduction of fire-proof rooms or safes in all laboratories where records of original work are kept, in order to avoid the destruction of scientific material upon which no monetary value can be placed because it is unique.

It is announced in the issue of *Science* for March 3 that the University of Buffalo has received actual and provisional endowment for the new department of arts and sciences amounting to 150,000*l.*; 20,000*l.* of this sum to be given outright by Mrs. Seymour H. Knox, who, with her children, proposes to increase this eventually to a total of 100,000*l.*; 50,000*l.* is given by General E. Hayes, for the first building upon the University site, provided 200,000*l.* be raised for like purposes before June, 1919. From the same source we learn that President Goodnow, at the commencement exercises of the Johns Hopkins University, on February 22, announced that the Consolidated Gas Company of New York, the American Gas Company of Philadelphia, and the Consolidated Gas Company of Baltimore, had interested themselves in the establishment of a laboratory at the University for research work as to the possibilities of coal-tar products. The purpose is to develop the aniline dye industry and other important branches in the coal-tar field.

THE experiment of holding a "Summer Assembly in Science" at the Scripps Institution for Biological Research at La Jolla, on the sea coast near San Diego, will be tried by the University of California next summer for the first time. The purpose is to disseminate among teachers and others interested in modern science the discoveries and new points of view which are resulting from the investigations of the research department of the University. There will be lectures, conferences, and demonstrations every afternoon of the six weeks by members of the scientific staff of the institution, and Tuesday and Thursday mornings will be devoted to lectures, laboratory, museum, and field work for small groups of students on the characteristic animal and plant life of the ocean waters along the shore of southern California. A course on "Local Coastal Physical Geography" will be conducted by Mr. W. C. Crandall, who as master of the *Alexander Agassiz*, the institution's sea-going scientific collecting vessel, has wide familiarity with the California coast. Half

a mile of ocean frontage, with cliffs, sand beaches, and tide pools inhabited by a wide variety of sea-life, is the ideal locality which the Scripps Institution for Biological Research occupies. Any persons interested in science who wish to attend the assembly at the Scripps Institution from June 25 to August 5 next are requested to write as soon as possible to Prof. William E. Ritter, scientific director of the institution, at La Jolla, so that proper provision may be made.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, March 16.—Sir J. J. Thomson, president, in the chair.—**C. Reid** and **J. Groves**: Preliminary report on the Purbeck Characeæ. The investigations, in aid of which a Government grant was made, relate to the remains of Characeæ found in the cherts and limestones of the Middle Purbeck beds of Dorset. A large amount of new material has been collected, and by treating the limestones to a long-continued drip of slightly acidulated water it has been possible to obtain specimens throwing much additional light on the structure of these plants. The principal results obtained up to the present are:—(1) The discrimination of a new genus, *Clavator*, characterised by (a) the production of remarkable thickened club-like nodes; (b) the presence of a utricle enclosing the oogonium; (c) the production of numerous rosette-like groups of clavate processes on the stem and branchlets. (2) The discovery of a number of different types of fruit and vegetative parts showing that the Chara-flora of the period was rich and varied. The remains found belong to both divisions of the family Characeæ and Nitelleæ.—**Prof. H. G. Plimmer**: Notes on the genus *Toxoplasma*, with a description of three new species. Organisms bearing the above name have been found in the rabbit, gundi, dog, mole, and pigeon during the seven years that have elapsed since their discovery by Splendore in Brazil. Their systematic position is uncertain, but they are widely distributed geographically and as regards hosts. They are found as parasites in the mononuclear leucocytes, in which they occur in large numbers. Those described in the paper were found in a Fossa from Madagascar, in a fruit pigeon from the Aru Islands, and in a Say's snake from Mexico, this latter being the first found in a reptile. The results of the study of these parasites in the above-named animals point rather to their relationship with the *Hæmogregarines* than with the *Leishmania* or the *Yeasts*, as has been suggested.—**F. Sano**. The convolutional pattern of the brains of identical twins, a study on hereditary resemblance in the furrows of the cerebral hemispheres. This monograph is a contribution to the study of the comparative morphology of relative brains inaugurated by Spitzka, Karplus, and Schuster. Its interest lies in the fact that it describes the brains of identical twins. It also includes a study of nerve plexuses and other morphological points of interest, thus serving as a morphological contribution to the observations of the late Sir Francis Galton on the history of twins.

Royal Meteorological Society, March 15.—Major H. G. Lyons, president, in the chair.—Sir Napier Shaw: The meteorology of the globe in 1911. The year 1911 is still remembered for its fine, warm summer. As the sequel of a long series of discussions at meetings of the International Meteorological Committee and its commissions, the International Solar Commission, the International Commission for Maritime Meteorology and Storm Warnings, the International Commission for Réseau Mondial, as well as the Solar Physics