PROF. AUGUST WEISMANN.

THERE is a strange and peculiar pathos in the death of this great man, formerly the friend, we may hope to the last the friend, of so many English naturalists, and in the thought that the gulf which had opened between us can never be bridged. For Weismann was among those who publicly renounced the marks of distinction which had been conferred upon them in this country.

In the limited space which is available, it is only possible to touch upon the main subjects of Weismann's scientific career. His earliest researches were physiological and histological, the first publication, on hippuric acid (1858), being followed by a series of six papers on the nervous and contractile tissues (1859–1862). Abandoning this subject, except for a single paper on muscle published in 1865, he threw himself with the utmost energy into his classical work upon the embryonic and post-embryonic development and metamorphosis of insects, producing five memoirs between 1862 and 1864, and a sixth in 1866. In the great monograph on the post-embryonic development of the Muscidæ (1864) the building up of the perfect form in the pupa is studied in detail, and it is shown that, in insects with a complete metamorphosis, the tissues undergo a breaking down or histolysis into an apparently simple and primitive mass, from which the imago is built up afresh by, as it were, a second embryonic development. Thus the long series of slightly modified progressive steps by which, in the more ancestral groups, the earliest stage is transformed into the latest, has been shortened, in the more recent forms, into a single intermediate stage in which everything is broken down and built up again from the beginning, establishing the truth of Aristotle's statement that "the chrysalis has the potentiality of the egg."

Insect development was followed by a great series of memoirs (1874–1880) on the minute Crustacea—Daphnids and Ostracods—and these again by the epoch-making researches into the sexual cells of the Hydrozoa, published in four papers between 1880 and 1882, and, in 1883, in the great quarto monograph, "Die Entstehung der Sexualzellen bei den Hydromedusen." With the appearance of this work Weismann's eyesight became too weak for prolonged microscopic research, and he turned to other and more general problems of thought and inquiry.

Weismann was attracted early in his career towards the problems of the history and causes of evolution. "The Origin of Species" appeared in the year following the publication of his first paper, and in 1868 he brought out "Ueber die Berechtigung der Darwin'schen Theorie," followed in 1873 by his paper on the influence of isolation, written in answer to Wagner. The "Studien zur Descendenz-Theorie" (1875) included a variety of subjects treated from the evolutionary point of view—the seasonal dimorphism of butterflies, the markings of caterpillars, phyletic parallelism, the transformation of the Mexican axolotl, and the mechanical conception of nature. This important and stimulating work, translated into English with many additional notes by Raphael Meldola, and with a preface by Charles Darwin, was published in 1882. The present writer well remembers the interest with which he looked forward to the parts as they successively appeared, and the instant resolution to continue some of the lines of work.

The central thought which branched forth so luxuriantly during the last thirty years of Weismann's life sprang from his researches on the sexual cells of the Hydrozoa. By these he was led to conclude that, however ordinary their appearance, the germ-cells contain something essential for the species, something which must be carefully preserved and passed on from one generation to another. It was this conclusion, so Weismann told the present writer in 1887, which led directly to the hypothesis of "The Continuity of the Germ-plasm," with all its far-reaching consequences. In Darwin's pangenesis the germ-cells are derived from the body-cells, whereas in Weismann's contrasted hypothesis the body is an outgrowth from the germ. From this conception Weismann was led to contrast the mortal soma with the potentially immortal germ, and to question the hereditary transmission of acquired characters. Excluded from the Darwinian interpretation of germinal variation as a consequence of gemmules dispatched to the germ by environmentally modified body-cells, Weismann looked for the origin of variation in the kaleidoscopic combination of innumerable ancestral factors brought about by sexual reproduction. He thus sought to explain the meaning of sexual reproduction itself as well as the events which lead up to the fusion of the male and female germ-cells.

The subjects thus briefly enumerated, treated in eight memoirs published between 1881 and 1888, were translated and appeared in a collected form in this country as "Essays upon Heredity and Kindred Biological Problems" (1889). The translation of four additional memoirs (1886–1891) was published as a second volume in 1892, the year in which he produced "The Germplasm," translated by Prof. W. Newton Parker, and published in this country in 1893. An elaborate and remarkable hypothesis, "Germinal Selection" (1896) was followed by the comprehensive treatise on the evolution theory, which brought his long and fruitful life-work to a close. The two volumes passed through three editions between 1902 and 1913, the English translation by Prof. and Mrs. J. Arthur Thomson appearing in 1904, the year of the Festschrift, which celebrated Weismann's seventieth birthday.

Weismann was a naturalist keenly interested in living nature, as may be inferred from "Das Thierleben im Bodensee" (1877), the fruit of many a holiday spent in the study of aquatic life. He was a delightful and sympathetic companion, possessed of a noble simplicity. To younger men he was generous and sympathetic, and many will remember the encouragement they received from

his kindly appreciation. Apart from scientific work Weismann found his chief recreation in music, and with Huxley he could quote Landor's line—

I warmed both hands before the fire of life.

Throughout a long and energetic life Weismann worked with enthusiasm and success at the subjects nearest to his heart. Many have done the same, but there are few whose chosen labours have done so much to stimulate the work and the thought of others. E. B. P.

NOTES.

THE collections made by the well-known naturalist and sportsman, Mr. C. V. A. Peel, during the travels and hunting expeditions of twenty-four years, have for long formed a centre of attraction in the city of Oxford. They are housed in a specially-built museum in the Woodstock Road, and include many objects of considerable scientific interest. Among the mammals preserved in the collection are well-mounted examples of the African and Indian elephants, a fine head of the so-called "white" rhinoceros, and a good specimen of the Somaliland eland. Many other species of African antelopes are well represented. The collections are also rich in birds, reptiles, and fishes, the latter including some fine and well-preserved examples of the Salmonidæ. The insects and arachnida, several of which were new to science, collected by Mr. Peel in the "horn" of Africa during the years 1895 and 1897, formed the subject of a paper in the Zoological Society's Proceedings for 1900. His adventurous journeys in that region were fully described by him in his book, "Somaliland," published in 1899. The more important invertebrate captures have been lodged in the Hope Collection at Oxford, and in the British Museum (Natural History), but the remainder, together with the extensive series of vertebrates above referred to, and the building in which they are displayed, have now been generously presented by Mr. Peel to the city of Oxford.

IN reply to a question as to British manufacture of synthetic dyes asked in the House of Commons on Monday, November 23, Mr. Runciman said:—"Since the beginning of the war the earnest attention of his Majesty's Government has been given to the best means of averting the grave danger of stoppage of employment in the textile and other industries which depend upon a supply of colours owing to the interruption of imports from Germany. Emergency measures are already being taken to secure for the time being the continuity of supply of dyestuffs by encouraging the immediate development of existing sources in the United Kingdom and elsewhere. In addition, however, the inquiries of the Government have led them to the conclusion that the excessive dependence of this country on a single foreign country for materials of such vital importance to industries in which millions of our workpeople are employed constitutes a permanent danger which can only be remedied by a combined national effort on a scale which requires and justifies an exceptional measure of State encouragement. Accordingly the Board of Trade has entered into consultations with the principal interests concerned with a view to the elaboration of a scheme for the establishment of an undertaking for the production of synthetic dyes and colours. In the main it is hoped that the capital required will be forthcoming from the industries by which dyes and colours are mainly used, but the Treasury is prepared within certain limits, and subject to certain conditions, to afford financial support to a well-considered scheme which will be permanently under British control. I am not prepared at the moment to enter into fuller details, because several matters are still the subject of confidential negotiations, but further information will be made public as soon as practicable."

THE death is announced, at sixty-six years of age, of Dr. G. F. W. Thibaut, registrar of the University of Calcutta since 1906, and formerly assistant to Prof. Max Müller, in the preparation of the later volumes of the great edition of the "Rig Veda," as well as the smaller text edition, and principal of the Muir Central College, Allahabad.

WE regret to see the announcement of the death on November 20 of Dr. J. Burney Yeo, Emeritus Professor of Medicine, King's College, London, and author of "A Manual of Medical Treatment," "Food in Health and Disease," "The Therapeutics of Mineral Springs and Climates," and numerous articles and papers published in medical and other journals.

THE death is announced from Bulawayo of Mr. R. N. Hall, author of "Prehistoric Rhodesia" and a number of papers on South African races and traditions. Mr. Hall arrived at the conclusion that the old mines and ruined temples of Rhodesia, including the Zimbabwe temple, date from ancient times, and were due to Semitic immigrants—a view opposed to that reached by Dr. R. Maciver in "Mediæval Rhodesia," in which it is held that the buildings at Zimbabwe are the work of a native race of comparatively modern times.

THE most important contribution to the August issue of the *National Geographic Magazine* is an account by Messrs. Ellsworth and Emery Kolb of their experiences in the Grand Cañon of Arizona. The writers have lived for twelve years at the head of the Bright Angel trail, and from this point have made repeated excursions into this stupendous gorge. The first part of the article describes a trip to what is considered the most beautiful of the tributary cañons, that of Cataract Creek; the second an exploration of the cañon of the Little Colorado; the third a repetition of Major Powell's famous journey down the Green and Colorado rivers. The article is illustrated by a splendid collection of photographs procured at imminent risk to life and limb. The monograph fully describes the geography, scenery, and geological features of this remarkable gorge.

IN the issues of the *National Geographic Magazine* for September and October, the immense stock of photographs at the disposal of the National Geo-