

Centenary of the Landing of Charles Darwin on the Galapagos Islands

CHARLES DARWIN landed on the Galapagos Islands on September 16, 1835, and spent about five weeks observing and collecting in the archipelago. His observations, especially on the differences presented by the finches and the giant tortoises found on the different islands, provided the basis for the new line of thought which resulted in the hypothesis of the "Origin of Species".

The committee of Section D (Zoology) of the British Association arranged that the centenary of his landing should be commemorated by a series of communications occupying the afternoon meeting at Norwich on September 6.

Sir Edward Poulton, in an opening address, reminded the audience that Darwin sailed in the *Beagle* in December, 1831, when he was not yet twenty-three years of age. Nearly four years later the ship reached the Galapagos Islands, and Darwin observed how every kind of animal, and particularly the finches and the giant tortoises, on each island differed slightly from those on the other islands. He realised that these observations, if well founded, "would undermine the stability of species"; that, in fact, he must abandon the idea of the separate creation of species, though he was entirely unable to account for their origin. The solution of this problem became the great work of his life.

Sir Edward Poulton divided the past century of evolutionary thought into three periods. First came a time of inactivity for nearly everyone except Darwin, who began his first notebook on evolution in 1837. In the following year he read Malthus "On Population", and "in a sudden flash of insight" came the idea of natural selection as the great motive force of evolutionary progress, and on this he worked and pondered for twenty years. The second period opened in June 1858, when Darwin received Wallace's letter and manuscript, written at Ternate, in the Moluccas, which showed that Wallace had reached an identical position. Their views were placed before the Linnean Society on July 8, and Darwin's "Origin of Species" was published in the following year. The third period began with the rediscovery in 1900 of the work of Mendel, at first supposed by many to be opposed to Darwinism, but which threw new light on inheritance, led to many new facts consistent with natural selection and solved the difficulty, which Darwin had felt to be the greatest of all—the supposed "swamping effect of intercrossing". Sir Edward Poulton

reaffirmed his strong belief in the value of the theory of natural selection.

Prof. J. H. Ashworth gave an account of Charles Darwin as a student in Edinburgh from October, 1825 until April, 1827. The sources of information on this period were the minute book of the Plinian Society of Natural History of the University of Edinburgh, of which Darwin was a member during his second academic session, and a notebook begun by Darwin in March, 1827. The minute book is of interest as showing the range of subjects discussed in the students' natural history society in Edinburgh one hundred years ago, and as containing the record of Darwin's presentation to the Society on March 27, 1827 of his original observations on the 'ova', which were in fact larvae, of the polyzoan *Flustra* and on the 'ovum' or egg-case of the marine leech *Pontobdella muricata*. Darwin's observations on these two subjects occupy four and a half pages in his notebook, which also contains notes on other marine animals, which he collected in the Firth of Forth and examined in Edinburgh.

Prof. Ashworth referred to other papers found among Darwin's Edinburgh notes, and to a few of Darwin's friends, of whom the most important were Robert Grant, a very energetic collector and investigator of sponges and other marine invertebrates, who left Edinburgh in 1827 to be the first professor of zoology in University College, London, and William Macgillivray, then assistant keeper of the Natural History Museum of the University of Edinburgh, who was well known for his special knowledge of birds. Prof. Ashworth concluded that in Edinburgh Darwin laid the foundation of his knowledge of the science of natural history.

Prof. G. D. Hale Carpenter, who was asked to speak on Darwin and entomology, pointed out that Darwin's early interest in entomology was overshadowed in later years as other subjects became more absorbing. He proceeded to refer to one aspect of entomology which has been much aided by the principle of natural selection, namely, the study of the coloration of insects. Prof. Carpenter held that concealing coloration, warning coloration and mimicry could all be accounted for by natural selection, and not by any other explanation which has yet been brought forward. Before Darwin's day, conspicuousness could not be satisfactorily explained except by appeals to anthropocentric ideas or terminology.

Prof. E. W. MacBride said that if Darwin had produced no other book than his journal of researches during the voyage round the world of H.M.S. *Beagle*, he would have shown himself to be one of the finest naturalists that ever lived, and his description in this work of the Galapagos Islands and of their fauna is a most masterly production. Prof. MacBride proceeded to refer to the giant tortoises, the lizards and the birds, and said that Darwin was at an utter loss to account for the prodigality of creative power which had resulted in the different islands having distinct species of tortoises and birds. Later Darwin applied his theory of natural selection to the explanation of the occurrence of the variety of species in the different islands. Prof. MacBride expressed his strong dissent from this explanation and from Sir Edward Poulton's views, and concluded by stating that in his opinion the ultimate cause of difference in species is difference in habits and in reaction.

Mr. H. W. Parker recalled Darwin's statement that the reptiles of the Galapagos gave "the most striking character to the zoology of these islands". During the last century, the number of species of reptiles was found to be greater than Darwin

had realised, but the increased knowledge emphasises what he considered "by far the most remarkable feature in the natural history of this archipelago—that the different islands to a considerable extent are inhabited by a different set of beings". Mr. Parker, in giving an account of the present distribution of the reptiles in the islands, stated that of the fourteen species of giant tortoises, three are probably extinct and most of the others exceedingly rare. The curious marine lizards (*Amblyrhynchus*) and the land lizards (*Conolophus*) are also in grave danger of extermination. Man has been the principal destructive agent in the past, but the future of all species, large and small, is jeopardised by the presence on the islands of introduced pigs, dogs, rats and cats which have run wild. That the remnants of the fauna are in imminent danger has been realised by the Government of Ecuador, which has passed decrees proclaiming certain of the islands as 'asilos reservados', and also giving protection to all the interesting indigenous species throughout the archipelago. Mr. Parker urged that only international co-operation could make this legislation effective, and that the British Association should initiate action to this end.

An Early Stone Age Culture of America

REFERENCE to the discovery of 'Folsom points' and to 'Folsom man' in the archaeological literature of the United States from time to time within the last decade has given rise to an expectation that it might be possible, within a comparatively short time, to construct some sure and certain foundation for the claim to a relatively high antiquity for early man in America, which has often been advanced, but never satisfactorily substantiated. Since the Folsom point was first recognised in 1927 as an early and specific stone age industry of North America, occurring on occasion in association with a presumed early fauna, later discoveries and further study of its characteristics and distribution have given clearer definition to the archaeological problem and indicated the direction of intensive search for the geological and palæontological data upon which the solution of the chronological problem ultimately will depend.

Passing reference has been made in the columns of NATURE from time to time to the discovery of evidence relating to Folsom man. Such evidence was by no means always such as to carry conviction, nor did it give, although the 'point' itself

is sufficiently characteristic, any clear impression of a specific cultural phase. Such uncertainties, however, are now to a great extent removed by the recent examination and partial excavation by Frank H. H. Roberts, Jr., archæologist of the Bureau of American Ethnology, of a Folsom midden in a locality now particularised as the Lindenmeier Site, twenty-eight miles north of Fort Collins, in northern Colorado. His report* has not only made important and substantial additions to knowledge of the Folsom culture and technique, but it has also crystallised previous evidence and affords opportunity for review of the data relating to the Folsom culture as a whole.

It may not be out of place to point out that, while it is now possible, thanks to Mr. Roberts's new evidence, to form a fairly clear conception of the Folsom phase of culture, Folsom man is unknown. No human skeletal remains have been discovered in association with Folsom artefacts as yet.

In the light of the evidence from the Lindenmeier Site, as will appear later, there is now justification

* "A Folsom Complex: Preliminary Report on Investigations at the Lindenmeier Site in Northern Colorado". *Smithsonian Misc. Collect.*, 94, No. 4.