

Geology of Cephalonia

IN answer to the inquiry of your correspondent in the last number of NATURE (p. 173) I beg to inform him that the shells of the Pliocene formation in the Morea have been long since investigated, as is shown by the great and well-known work of Hômes. And Dr. Fischer has published a list of the fossil shells from the same formation at Rhodes. These subapennine beds extend over the whole of the south of Europe. For many of those species which are still living I have given the localities of the Morea and Rhodes as fossil in the *Proceedings of the Zoological Society*.

J. GWYN JEFFREYS

June 25

On the Chemical Characters of the Venom of Serpents

DR. WEIR MITCHELL calls my attention to an error in the brief notice which I wrote in NATURE recently (vol. xxviii. p. 114), on the researches into the chemical characters of snake poison conducted by him and Dr. Reichart. It is that instead of "They are unable to confirm the statement of Gautier of Paris that an alkaloid resembling a ptomaine exists in cobra poison; or that of Prof. Wolcott Gibbs, that the poison of *Crotalus* yields an alkaloid," it should be, "Prof. Wolcott Gibbs was unable to find an alkaloid."

J. FAYRER

53, Wimpole Street, W., June 26

Earthquake in South-West England

I HAVE just felt and heard the shock of an earthquake. The trembling of the earth was very great and the accompanying noise very loud, comparing it with one or two other slight shocks which I have before experienced in this district. I found the time to be 1.38 p.m. The time it lasted was several seconds. It was longer and louder than an ordinary clap of thunder when the lightning is not far off. A man reports that the slates of the cow-house were made to rattle.

As I now write (2.7 p.m.) a second shock has been felt, a little less severe. The weather is very calm, sky cloudy. This place is close to Dartmoor, on the westward side, about 500 feet above the sea-level.

W. F. COLLIER

Woodtown, Horrabridge, S. Devon, June 25

I BEG to inform you of the occurrence of two slight earthquake shocks here to-day, one shortly before 2 p.m., the other near half an hour later. The direction of progress seemed to be from north-west to south-east—that is along the line of the deep and narrow valley. The tremor was sufficient to cause jangling of glass and earthenware, and of the slates covering the house. The usual rumbling noise accompanied the shocks.

SAMUEL DREW

Penalla Terrace, Boscastle, Cornwall, June 25

ON WHALES, PAST AND PRESENT, AND THEIR PROBABLE ORIGIN¹

FEW natural groups present so many remarkable, very obvious, and easily appreciated illustrations of several of the most important general laws which appear to have determined the structure of animal bodies, as those selected for my lecture this evening. We shall find the effects of the two opposing forces—that of heredity or conformation to ancestral characters, and that of adaptation to changed environment, whether brought about by the method of natural selection or otherwise—distinctly written in almost every part of their structure. Scarcely anywhere in the animal kingdom do we see so many cases of the persistence of rudimentary and apparently useless organs, those marvellous and suggestive phenomena which at one time seemed hopeless enigmas, causing despair to those who tried to unravel their meaning, looked upon as mere will-of-the-wisps, but now eagerly welcomed as beacons of true light, casting illuminating beams upon the dark and otherwise impenetrable paths through which the organism has travelled on its way to reach the goal of its present condition of existence.

Lecture delivered at the Royal Institution on the evening of Friday, May 25, 1883, by Prof. Flower, LL.D., F.R.S., P.Z.S., &c.

It is chiefly to these rudimentary organs of the Cetacea and to what we may learn from them that I propose to call your attention. In each case the question may well be asked, granted that they are, as they appear to be, useless, or nearly so, to their present possessors, insignificant, imperfect, in fact *rudimentary*, as compared with the corresponding or homologous parts of other animals, are they survivals, remnants of a past condition, become useless owing to change of circumstances and environment, and undergoing the process of gradual degeneration, preparatory to their final removal from an organism to which they are only, in however small a degree, an incumbrance, or are they incipient structures, beginnings of what may in future become functional and important parts of the economy? These questions will call for an attempt at least at solution in each case as we proceed.

Before entering upon details, it will be necessary to give some general idea of the position, limits, and principal modifications of the group of animals from which the special illustrations will be drawn. The term "whale" is commonly but vaguely applied to all the larger and middle-sized Cetacea, and though such smaller species as the dolphins and porpoises are not usually spoken of as whales, they may to all intents and purposes of zoological science be included in the term, and will come within the range of the present subject. Taken all together the Cetacea constitute a perfectly distinct and natural order of mammals, characterised by their purely aquatic mode of life and external fishlike form. The body is fusiform, passing anteriorly into the head without any distinct constriction or neck, and posteriorly tapering off gradually towards the extremity of the tail, which is provided with a pair of lateral pointed expansions of skin supported by dense fibrous tissue, called "flukes," forming together a horizontally-placed, triangular propelling organ. The forelimbs are reduced to the condition of flattened ovoid paddles, incased in a continuous integument, showing no external sign of division into arm, forearm, and hand, or of separate digits, and without any trace of nails. There are no vestiges of hind-limbs visible externally. The general surface of the body is smooth and glistening, and devoid of hair. In nearly all species a compressed median dorsal fin is present. The nostrils open separately or by a single crescentic valvular aperture, not at the extremity of the snout, but near the vertex.

Animals of the order Cetacea abound in all known seas, and some species are inhabitants of the larger rivers of South America and Asia. Their organisation necessitates their life being passed entirely in the water, as on the land they are absolutely helpless; but they have to rise very frequently to the surface for the purpose of respiration. They are all predaceous, subsisting on living animal food of some kind. One genus alone (*Orca*) eats other warm-blooded animals, as seals and even members of its own order, both large and small. Some feed on fish, others on small floating crustacea, pteropods, and medusæ, while the staple food of many is constituted of the various species of Cephalopods, chiefly *Loligo* and other *Teuthida*, which must abound in some seas in vast numbers, as they form almost the entire support of some of the largest members of the order. With some exceptions the Cetacea generally are timid, inoffensive animals, active in their movements, sociable and gregarious in their habits.

Among the existing members of the order there are two very distinct types—the Toothed Whales, or *Odontoceti*, and the Baleen Whales, or *Mystacoceti*, which present throughout their organisation most markedly distinct structural characters, and have in the existing state of nature no transitional forms. The extinct *Zeuglodon*, so far as its characters are known, does not fall into either of these groups as now constituted, but is in some respects intermediate, and in others more resembles the generalised mammalian type.