

The *St. George* Expedition to the Pacific.

WITH reference to recent newspaper notices of the work being done by the scientific staff of the *St. George* Expedition to the Pacific, the members of the Scientific Expeditionary Research Association will be greatly obliged if you will give the courtesy of your columns to the following brief resume of the results obtained to date.

The expedition reached the Isthmus of Panama on June 9, 1924. After a short stay in the Canal Zone, devoted by the staff to assiduous collecting, the *St. George* carried out a lengthy cruise to the various tropical islands of the Eastern Pacific, including the Pearl Islands in the Gulf of Panama, Gorgona, off Colombia, and the Galapagos; Cocos, Coiba, and Taboga islands were also visited. Very large zoological collections were made at these islands, and it is likely that a considerable number of new species and varieties have been obtained. Small mammals have been captured by Mr. P. H. Johnson at all the islands; these should prove of notable interest, as few specimens have been obtained there previous to our visit. They include numerous rats exhibiting a wide range of variation, particularly in the Galapagos.

Much attention has been given to the birds by Lieut.-Col. Kelsall; up to the present more than 300 specimens have been obtained, a number smaller than expected, due to the difficult but unavoidable conditions that often prevailed.

The entomologists have had conspicuous success, their collections being most extensive. Miss Cheesman's attention has been devoted in the main to those groups not usually collected, and which in consequence are required to fill gaps in the British Museum collections. It is probable that some of the species will prove to be new, but it is impossible to ascertain this until they have been worked through by specialists. Lepidoptera and Coleoptera, collected by Mr. C. L. Collette with the assistance of Miss Longfield, are very well represented; special attention was devoted to the less conspicuous forms as being likely to be of greater interest than the large and showy ones. Early stages have been described and preserved wherever possible; many ecological facts have been recorded and should prove of great interest.

Dr. C. Crossland has made large collections of Polychæta, Nudibranchs, and Polyzoa, and Mr. J. Hornell, extensive series of Mollusca, marine and terrestrial. It is expected that these will afford most useful data for the settlement of synonymy and consequently for better knowledge of geographical distribution. At least five Atlantic species of polychætes have been found in the Panama region, indicating that an appreciable number will be found common to the Atlantic and the Pacific when the collections are systematically examined.

Large numbers of flowering plants were gathered in the principal islands visited; those from Gorgona have been received at home already. We understand from a cable received a few days ago that the authorities at Kew place considerable value upon them; indeed, in consequence of their representations it has been decided to pay a second visit to this interesting island, in order to make the botanical material as complete as possible.

Geology has had adequate attention from Mr. L. J. Chubb, who has amassed an extensive series of notes and rock specimens from the various islands.

The outstanding result of the expedition, so far as can be judged at present, has been the discovery by the undersigned of several series of figures graven upon large boulders lying between tide-marks on the eastern shore of Gorgona. The most numerous were

two series of archaic figures among which are distinguished what seem to be rude representations of sun-gods and a stepped pyramid, together with figures of monkeys, birds, and other animals. Besides these are two comparatively modern sculptured portraits, one perhaps of Incan age, the other referable to the buccaneering days of the eighteenth century.

A number of stone weapons and implements were also found, associated with potsherds of considerable interest. Advantage is to be taken of our pending return visit to search the island thoroughly for further archaeological remains.

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Scientific Director, *St. George* Expedition.
Panama, September 24.

Optical Records and Relativity.

PROF. LLOYD MORGAN, in his interesting and most original and suggestive article, "Optical Records and Relativity" (*NATURE*, October 18, p. 577), sums up his argument in sixteen questions. These raise a variety of problems, but are all directed to the conclusion that we may accept the physics of relativity and yet find that the scientific creed of classical mechanics stands in no need of revision. The crux of his whole position appears to me to lie in the answer to his question 6, which he expects to be affirmative, but which must in my view be emphatically negative. The question is: "May we, on the basal principle of relativity, give primacy in 'reality' to either set of events [optical records and their distant source-events], . . . since each is acknowledged as physically 'real' in the same sense?" Surely the answer is that the source-events are, in the theory of relativity, four-dimensional, while the optical records in any aspect of them are only two-dimensional, and the latter cannot therefore have primacy. To say that it is indifferent which we regard as primary, because both are real in the same physical meaning, is like saying that because the map of a country is physically real in the same meaning as the country of which it is the map, we may therefore give primacy either to the country or to the map?

Can I have misunderstood my friend Prof. Lloyd Morgan? I should have thought he would have agreed that his question had been finally answered in Berkeley's "Theory of Vision."

In directing attention to this one point I have observed the condition laid down in the first paragraph of the article, and have dealt only with the relation of two orders of physical reality. I have not raised any question concerning theory of knowledge.

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SINCE "Theory of Knowledge" opens up very wide issues, I sought to focus one salient point, namely, psychological reference. No doubt we here come down in the long run to the nature of mind and its relation to physiological events in the body. But my aim was to deal with the retinal record as what Prof. Whitehead calls a percipient event or a sensorium, that is, a state of the body. The question I raised is this: What is "the mind" in some way up against in vision? Is it the percipient event as record? Or is it the distant event with which this percipient event is co-related?

Believing that physical relativity is concerned with *this* co-relation, I led up to sundry questions. Prof. Wildon Carr in his courteous letter regards as crucial the answer to one of them (No. 6). The external "source-events" are, he says, four-dimensional; but