

highest order of mammalia. An allied species is also said to exist in the Philippines. Now this occurrence of quadrumana in the Australian region proves nothing whatever as regards a transition to the western islands, which, among their numerous monkeys and apes, have nothing at all resembling them. The species of Celebes and Batchian have the high superorbital ridge, the long nasal bone, the dog-like figure, the minute erect tail, the predaceous habits and the fearless disposition of the true Baboons, and find their allies nowhere nearer than in tropical Africa. The *Anoa* seems also to point towards the same region, so rich in varied forms of Antelopes.

In the class of birds, Celebes possesses a peculiar genus of Parrots (*Prioniturus*), said to occur also in the Philippines; *Meropogon*, intermediate between an Indian and an African form of Bee-eaters; and the anomalous *Scissirostrum*, which Prince Bonaparte places next to a Madagascar bird, and forms a distinct subfamily for the reception of the two. Celebes also contains a species of *Coracias*, which is here quite out of its normal area, the genus being otherwise confined to Africa and continental India, not occurring in any other part of the Archipelago. The Celebes bird is placed, in Bonaparte's "Conspectus," between two African species, to which therefore I presume it is more nearly allied than to those of India. Having just received Mr. Smith's Catalogue of the Hymenoptera collected during my first residence in Celebes, I find in it some facts of an equally singular nature. Of 103 species, only 16 are known to inhabit any of the western islands of the Archipelago, while 18 are identical with species of continental India, China, and

the Philippine Islands, two are stated to be identical with insects hitherto known only from tropical Africa, and another is said to be most closely allied to one from the Cape.

These phenomena of distribution are, I believe, the most anomalous yet known, and in fact altogether unique. I am aware of no other spot upon the earth which contains a number of species, in several distinct classes of animals, the nearest allies to which do not exist in any of the countries which on every side surround it, but which are to be found only in another primary division of the globe, separated from them all by a vast expanse of ocean. In no other case are the species of a genus or the genera of a family distributed in two distinct areas separated by countries in which they do not exist; so that it has come to be considered a law in geographical distribution, "that both species and groups inhabit continuous areas."

Facts such as these can only be explained by a bold acceptance of vast changes in the surface of the earth. They teach us that this island of Celebes is more ancient than most of the islands now surrounding it, and obtained some part of its fauna before they came into existence. They point to the time when a great continent occupied a portion at least of what is now the Indian Ocean, of which the islands of Mauritius, Bourbon, &c., may be fragments, while the Chagos Bank and the Keeling Atolls indicate its former extension eastward to the vicinity of what is now the Malayan Archipelago. The Celebes group remains the last eastern fragment of this now submerged land, or of some of its adjacent islands, indicating its peculiar origin by its zoological isolation, and by still retaining a marked affinity with the African fauna.

Science News Letter, July 15, 1933

ENGINEERING

30,000-Ton Rock Worried Prehistoric Engineers

A 30,000-TON rock that worried prehistoric Indians in Chaco Canyon 900 years ago has been examined by modern engineers and pronounced safe enough not to worry about. It is too late to help the Indians, but modern tourists who come to see the Indian ruins can feel safe.

A towering rock 100 feet high stood at the back wall of Pueblo Bonito, one of the larger and more important pueblos of about 1000 A. D., and the people of the town evidently thought it precariously unstable. Using primitive engineering tactics, they tried to brace it with a masonry wall along the foot.

Discussing the engineering problems involved, in a report to the *Engineering News-Record*, J. B. Hamilton and F. A. Kittredge, engineers of the National Park Service, say that the Indian tactics would never have stopped the tall rock from overturning, had it been really unstable. However, the wall they built did ably protect the base of the rock from eroding away by wind action.

The engineers of the Park Service have surveyed the place and find that, while the rock is extensively undercut, it is so stable that only an earthquake

could be expected to dislodge it. The problem, they concluded, is to protect it against wind erosion and frost action. Their tactics will be to build a masonry wall, the same remedy that the Indian engineers decided on, back in 1000 A. D.

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BOTANY

Warms Sap to Find Its Rate of Flow

HOW fast sap rises in trees and smaller plants has always been one of the toughest of the botanists' problems. And it is of great practical importance, too, in all applications of the science, from forestry to farming under irrigation. All methods hitherto in use have involved injuring the plant in some way, by boring holes in it or injecting foreign substances, and to that extent introducing unnatural conditions with the risk of falsifying the result.

But now Prof. Bruno Huber, of the Darmstadt Technical University, has devised a way to measure the speed of the transpiration stream in plants without injuring them. He wraps a wire

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R an address by

Dr. Gladys H. Dick

The McCormick Institute for
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