map. Peacock suggests that a continuation of cleft-making erosion would eventually transform the narrow goes into open, steep-walled fiords, and therefore explains the existing fiords by long-continued ordinary erosion now advanced to early maturity on an inferred, earlier system of northwest-southeast fractures, when the plateau stood higher than now. This explanation, in which glacial erosion is minimized, is difficult to accept in view of the abundant evidence for strong glacial erosion found in various deglaciated mountains; and as Peacock's paper proposes to discuss "the theories of fiord formation," his summary rejection of their glacial origin is unsatisfying. It may be fairly urged that the small amount of erosion by side streams in the walls of the Faeroe fiords, noted below, is of itself strongly suggestive of their excavation by ice; for had the fiords gained their present width by ordinary weathering and washing of fracture-guided goes, the abundant side streams would have cut equally abundant side valleys, because side-stream erosion is more rapid than interstream weathering; but side valleys are practically wanting in these massive islands. In this respect the Faeroes are very unlike the Pescadores in the China Sea, which also consist of nearly horizontal lava flows, but which in the absence of glacial erosion are now reduced by ordinary erosion to elaborately dissected, ragged residual masses. Ancient fractures systems, trending northwest-southeast, may truly, if they ever existed, have guided stream erosion in excavating normal valleys below the initial basalt surface in Preglacial time, but the present form of the islands appears to be much more largely due to the widening and deepening of shallow Preglacial valleys of whatever origin by energetic glacial erosion than to any other agency.

Peacock's reasons for dismissing glacial erosion as incompetent to sculpture the Faeroes appear to be as follows: First, because glacial erosion has never, to his knowledge, been invoked as the main agent for the production of the Faeroe fiords; yet over a quarter century ago it was concisely said, on the basis of the large-scale maps, that the Faeroe fiord-trough slopes "are notably smooth, unravined by the numerous streams that descend from the uplands, and hence it may be concluded that much of the dissection of the lava plateau was accomplished by ice action."[2] Second, because James Geikie concluded in 1883 (before the more recent understanding of glacial erosion had been reached) that the Faeroe glaciers faithfully followed the Preglacial topography of the islands; but this conclusion can not be now regarded as well supported, in so far as it excludes strong glacial modification of the Preglacial valleys. Third, because Professor J. W. Gregory, of Glasgow University, regards the Faeroe and other fiords as of Preglacial date, and as "having their ultimate origin in networks of fractures, produced by the upheaval of the earth's crust in late Miocene and Pliocene times;" but this view, although accepted by Peacock as "firmly established," has not found general acceptance among students of deglaciated highlands. And perhaps fourth, because Peacock himself is not familiar, as far as one may judge by his essay, with the enlarged and over-deepened valleys of the Alps and other deglaciated mountains, or with the compelling evidence by which the enlargement and over-deepening of such valleys is ascribed to glacial erosion.

It may be added that, if glacial erosion be accepted as the chief process of fiord production in the Faeroes, the east-west fractures that are now followed by the cleft-like goes need not be regarded as of Postglacial date, although the goes themselves are evidently enough due to Postglacial erosion localized by fractures in the strongly ice-carved island masses; also, that as glacial erosion is competent to excavate fiords well below sea-level, the Postglacial subsidence of the archipelago, assumed by J. Geikie and accepted by Peacock, is not necessary in accounting for the present separation of the islands.

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[2] SCIENCE, xvi, 1902, 915.

SCIENTIFIC EVENTS

THE FAUNA OF THE BRITISH EMPIRE

THE need for the provision of more reserves for the protection of wild animal life was emphasized at the general meeting of the Society for the Preservation of the Fauna of the Empire, which was held on October 9 at the offices of the Zoological Society, Regent's Park. According to the report in the London *Times*, Lord Onslow, who presided, said that the membership had doubled during the past two years.

Mrs. Mary L. Jobe Akeley, widow of Mr. Carl Akeley, the American naturalist and explorer, who accompanied her husband to Africa in 1926 as secretary of the expedition of the American Museum of Natural History, showed a number of lantern slides of scenes in the Kivu Parc National in the Belgian Congo, which, she said, was due to the initiative of King Albert. The park comprised an area of uneconomic territory of about 6,000 square miles, half of it consisting of a mountainous region of active volcanoes, and half of sand and swamp, abutting on the Uganda border. It was a realm of exceptional

variety in flora and fauna, and of extraordinary geological and geographic interest, and it provided an almost unique opportunity of saving some of the primitive African pygmies, a race now threatened with extinction, as well as the gorillas that inhabited some portions of it, the latter sometimes found at altitudes in the snow areas. The park in the Belgian Congo and the Kruger National Park, South Africa, were only the first links in what they hoped would become a chain of nature sanctuaries extending throughout Africa.

Dr. J. M. Derscheid, secretary of the Belgian Committee for Nature Protection, describing life in the Belgian Congo reservation, said that there were only about 300 pygmies left in that region, some 200 of whom he had seen. They were braver than negroes and not as treacherous as bushmen, and he had accompanied groups of them on their elephant hunts with spears. He added that he would like attention directed to the undue slaughter of elephants throughout Africa.

Mr. T. R. Hubback, honorary game warden in Malay, said there were three reservations in the Federated Malay States; Gunong Tahan, 360,000 acres; Krau, 130,000 acres; Sungei Lui and Serting, 110,000 acres. It was proposed to extend the first of these by incorporating a part of the adjacent mountainous region. All forms of fauna found sanctuary within those reserves, where also refuge had been found for a wild aboriginal tribe, the Panggan.

The executive committee of the society, in their report, stated that representations had been made to the Governor of Kenya suggesting the desirability of creating national parks on the lines of the Kruger National Park, in view of the fact that a portion of the Northern Game Reserve is being alienated and that apprehensions are felt as to the ultimate status of the southern reserve.

Through the Colonial Office the society had expressed the hope that the forest reserves of Nigeria might be made also reserves for the indigenous fauna. In South Africa attention had been focused upon Zululand, which was important by reason of the fact that the last few remaining southern white rhinoceroses, probably not more than 20 in number, were found there. The area they inhabited, about 150 miles, was coveted by settlers, and in consequence the animals were being poached, one being shot last year by a settler, and about a month ago two others were found shot by unknown persons. The government and the public opinion of South Africa were fully alive to the urgent need of saving the animals, but opinion was divided as to whether they should be captured and transferred to the Kruger National Park, which would involve transport by road and rail for 700 miles, or whether they should be protected *in situ* by a special staff. The former plan was most favored, and anybody who could suggest a workable plan of capture without much risk of damage to the animals would earn the gratitude of wild animal lovers.

In Ceylon, where the position was described as not satisfactory, the Governor, Sir Herbert Stanley, had consequently been asked to keep a sympathetic eye upon the fauna.

The committee was also taking steps to lessen the slaughter of wild animals in India, where recent legislation had placed firearms within the reach of many irresponsible persons, resulting in the threatened extinction of many species. The committee noted with satisfaction the stoppage of the wholesale capture of orang-utan in Dutch East Indies.

A NEW CALIFORNIA WILD-LIFE REFUGE

BY executive order, President Coolidge has created the Tule Lake Bird Refuge in northern California, thus bringing to eighty the number of wild-life reservations administered by the Bureau of Biological Survey. The new refuge consists of 10,300 acres of government lands in northeastern Siskiyou County, within the Klamath irrigation project. These lands are flooded to a considerable extent by waste water and thus form an excellent waterfowl resort.

Paul G. Redington, chief of the Biological Survey, in commenting on the establishment of this project, states that it is a most important addition to the list of wild-fowl refuges established by executive order and by acts of Congress. Tule Lake has long been the Mecca for such wild fowl as the mallard, redhead, ruddy duck, cinnamon teal, avocets, stilts and other shore birds. It also is a favorable wintering ground for the cackling goose, a bird that breeds on the northwest coast of Alaska.

The layout of the area is such, due to mud conditions along the shores, that a natural refuge has existed in the northern part of the Tule Lake area, but sportsmen have in the past found their recreation on other portions of the area. In order not to mete out undue hardship to these sportsmen, it was deemed advisable to allow a continuance of hunting privileges on an area at the southern end of the lake, and accordingly the Secretary of Agriculture on October 10 approved an order permitting hunting on 2,800 acres south of the line forming the north boundary at sections 33 and 34 of township 47 north, range 4 east, Mount Diablo meridian. The inviolate refuge, therefore, comprehends 7,500 acres of land extremely valuable for resting and feeding grounds for the birds which frequent the area.