THE ORIGIN OF FIORDS.

O. Nordenskiold contributes some 'Topographisch-geologische Studien in Fjordgebeiten' (*Bull. Geol. Inst. Univ. Upsala*, IV., 1899, pp. 157–226, 1 pl., 14 fig.), based on observations of fiords and on representations of their form by maps, soundings, etc. He finds normal or radial fiords (West Greenland, New Zealand), parallel fiords (Alaska, Patagonia), and combined forms (Norway). Fiords always occur in groups or systems. Their bottom is uneven, with deep basins and shallow swells. They are from 5 to 40 times longer than broad; they are enclosed by steep and high walls of strong rock. Their distribution shows that they stand in some relation to glaciers: glacial erosion of preglacial valleys best accounts for most features.

This inductive study furnishes many excellent descriptions of typical examples and a series of well-supported conclusions as to the prevalent features of fiords. In attempting explanation, the inductive method seems insufficient; a fuller consideration of what might be expected from long-lasting, vigorous glacial erosion is desirable; for unless the forms reasonably deduced from such a consideration match the observed forms, the theory of the glacial origin of fiords would be seriously at fault. It is perhaps because of the greater emphasis here given to the inductive than to the deductive part of the investigation that the discordant depths of confluent fiords are insufficiently explained, and that the important subject of hanging valleys, recently discussed by several observers, here receives no sufficient mention.

VIEWS OF THE COLORADO CAÑON.

'Glimpses of the Grand Cañon of the Colorado,' is the title of a portfolio of 13 colored plates published by Thayer, of Denver, Colo. It may be 'a fact that under certain conditions the cañon presents the marvelous colorings herein reproduced,' but such conditions are altogether exceptional; and the actual colorings under ordinary conditions are so strong and fine that there is no warrant for a resort in all the views to the exaggerated effects of a rare sunset. Not only are the reds too vivid, but the greens are those of a pluvial, not of an arid climate. The colored views of the cañon published by the Detroit Photographic Company from photographs by Jackson are on the whole to be preferred, not only from being more faithful and delicate but as well from being free from the distraction of more or less irrelevant poetical quotations with which the Thayer views are prefaced.

KABA VOLCANO, SUMATRA.

An entertaining account of the ascent of Kaba, a volcano in Sumatra, is given by Hagen ('Eine Besteigung des Vulkans Kaba auf Sumatra,' *Globus*, LXXIX., 1901, 245–250, 267–273). The illustrations from original photographs are remarkably well reproduced and exhibit the crater forms with unusual success. As in the 'curbs' or storm lines on a beach, so here, the existing craters represent the successive weakening maxima in irregular series of eruptions, all the minima being destroyed except the last.

W. M. Davis.

CURRENT NOTES ON METEOROLOGY.

WEATHER AND CROPS IN SAXONY.

An elaborate investigation into the relation of weather conditions and crop yield in Saxony, based on data for the period 1864–1897, leads to rather unsatisfactory results (Grohmann: 'Die phänologischen Beobachtungen der Jahre 1864 bis 1897, und die Ernteerträge im Königreich Sachsen in ihrer Abhängigkeit von den Witterungsverhältnissen,' Chemnitz, 1901). The various districts of Saxony are divided into three groups, and the results for these groups show striking agreement in comparatively few cases only. On the whole, it appears that there is a larger yield of winter grain in warm and dry than in cold and wet years. An influence of weather conditions upon the yield of summer grain cannot be demonstrated in many districts, and the only fact which does come out clearly is that a greater amount of moisture is necessary in order to produce a large crop of summer grain than a large crop of winter grain. In some cases an influence of higher spring temperatures upon the summer crop is indicated. Potatoes succeed best in years with warm summers and normal

precipitation. The smallest crops of beets and cabbages are usually obtained in dry, warm years. The largest crops of clover and grass come in years with excessive precipitation and high temperatures.

RAINFALL AND FORESTS IN INDIA.

AN important publication on Indian forestry has recently been issued, in which certain conclusions as to the climatic influence of forests are set forth. The book is entitled 'Forestry in British India,' and is by Berthold Ribbentrop, late Inspector-General of Forests to the Government of India (Calcutta, 1900). From a recent review of this volume (*Nature*, April 18, pp. 597–601) it appears that while the author does not distinctly maintain that by afforestation the climate might be improved as far as to stop the recurrence of droughts, it is evident that he is rather inclined to that opinion. He does say that "in a warm climate the denudation of a country diminishes its moisture and consequently its fertility." The regulation of surface drainage by forests is clearly pointed out.

PERIODICITY OF SEVERE WINTERS IN ENGLAND.

IN the *Quarterly Journal of the Royal Meteorological Society* for April is a paper by A. E. Watson, entitled 'A Review of Past Severe Winters in England, with Deductions therefrom.' From an examination of the records of the severe winters of the last 300 years, the writer comes to the conclusion that such winters are most frequent in the years with the numbers 0–1 and 4–5. He is also of opinion that the severe winter in the middle of each decade is generally a late one (Jan.–Mar.), while that at the beginning or end of each decade is generally an early one (Nov.–Jan.).

NOTES.

IN 'Hints to Travelers, Scientific and General,' edited for the Council of the Royal Geographical Society by John Coles (8th edition, London, 1901), there is an article by Dr. H. R. Mill on 'Meteorology and Climate,' the object of which is to supply the traveler with instructions to enable him to make use of meteorological instruments, 'and to obtain evidences of the climate of the region which he is passing through by noticing the effects produced on the land, vegetation, etc.'

MCADIE, of San Francisco, contributes a fourth paper on 'Fog Studies on Mount Tamalpais' to the March number of the *Monthly Weather Review*. In this he considers the refraction of sound waves by fog surfaces and the dissipation of fog. Two excellent half-tones accompany the paper.

BEGINNING with 1901 the Royal Observatory of Belgium will issue an *Annuaire météorologique*. Hitherto the *Annuaire* has been concerned with both astronomical and meteorological matters, but in the future the astronomical and meteorological divisions of the Observatory will have separate annual publications. The *Annuaire météorologique* for 1901 contains, among other matters, a sketch of the history of meteorology in Belgium and a review of two old meteorological journals, by J. Vincent; tables of monthly and annual means of the principal meteorological elements at Brussels and at Uccle, based at the former station on observations from 1833 to 1890, and at the latter from 1891 to 1899; and a paper on 'Le Climat de l'Ardenne,' by Lancaster.

R. DEC. WARD.

COLUMBIA UNIVERSITY BIOLOGICAL LECTURES.

FOR some years it has been the custom in Columbia University to have an annual course of public lectures on some biological topic. This year's series, recently completed, consisted of seven lectures on the Protozoa by Dr. Gary N. Calkins, of Columbia University.

The Protozoa, on account of their unicellular character, are of great importance in relation to many questions of general biology and especially physiology. The seven lectures by Dr. Calkins treated not merely the structure of the Protozoa, but their physiology, relations to more complex forms and the economic importance of certain types. The first lecture was a general sketch of the various discoveries which have gradually led to the recognition of the true relationship of Protozoa to Metazoa. This was followed by lectures on the four main types of Protozoa, in which physiology and