tion, a theory which the people described as 'the older and more orthodox Methodist ministers' so abominate that they will not even give Professor Tubbs a hearing. Apparently the general issue of academic freedom is not involved here, for the school professes to be a sectarian institution; that is, it subordinates the independent investigation of the truth to the propagation of certain doctrines. Professor Tubbs himself admits that his standing as a scientist, his success as a teacher and administrator, and his character as a man were not the only things considered in his appointment, for he says: "Bishop Vincent fully questioned my beliefs, approved them, and appointed me to the seminary." The only question is whether an evolutionist can be an orthodox Methodist in central Kansas. The trustees of the school say no. The decision may cause Professor Tubbs temporary inconvenience; but if belief in evolution is his only fault, he can comfort himself with the reflection that he is far better off than the 'university' at Salina. —The N. Y. *Evening Post.*

MR. CARNEGIE'S GIFT TO SCOTTISH UNIVERSITIES.

At the time when Mr. Carnegie's gift was first announced, and when nothing had been made known except its magnitude and the fact that it was intended to defray the cost of University education for Scottish students, we felt it necessary to point out, while cordially expressing our admiration of the munificence of the donor, that the very magnitude of the fund would render its wise administration a matter of some difficulty, and to call attention to circumstances which might interfere with the practical realization of the intended benefits. The conditions of the trust, as now disclosed, appear to meet, in almost every particular, the considerations which we mentioned. The application of half the income for the purpose of improving the apparatus of education and for establishing what can hardly fail to become world-renowned laboratories in every department of science which falls within the province of a university will at once lift those of Scotland to the very highest level of academic importance, and will be likely to place the country in the very forefront of practical scientific teaching and investigation. Medical science is specially mentioned in the trust, and, to take only a single example, it will be within the power of the trustees to enable any Scottish University to equip an expedition for inquiring into the life histories of fever-carrying mosquitoes or other insects, and thus to accomplish, perhaps in the course of a few months, more than could be accomplished by private enterprise, aided only by small and laboriously collected donations, even in the course of years. The problems of organic chemistry, again, are daily becoming of more and more importance in relation to health and to disease; as are those of inorganic chemistry in relation to a large number of manufacturing processes or industries. In respect of these and many kindred matters the great hindrance to scientific work in Great Britain has been simply want of means; and this want once removed, a very important step will have been taken towards assisting us to hold our own in the great industrial contests which the future can hardly fail to have in store for us, and in which scientific knowledge will certainly be one of the most important elements of success. We cannot but think that this section of the trust is likely, as time goes on, to prove itself infinitely the more important of the two, and that in the future, under the elastic terms and liberal powers of the deed, it may even come to swallow up or to supersede the general payment of fees which, after all, are not so large as to place a serious impediment in the way of any young man who is not absolutely destitute, and who is determined to push his way to the front of any calling in which it may be his purpose to engage.—The London *Times.*

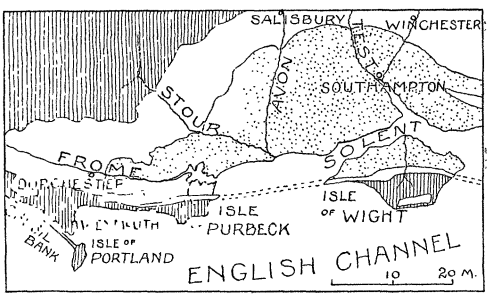
CURRENT NOTES ON PHYSIOGRAPHY.

THE SOUTH COAST OF ENGLAND.

The mid-southern coast of England is bordered by a narrow anticline of mesozoic strata, greatly eroded. The largest remnant of the anticline is the Isle of Wight, while further west a nearly isolated portion is called by the anticipatory name of the Isle of Purbeck. The physical features of the latter, with those of

the associated anticline of Weymouth, are treated in a chapter by Strahan ('The Geology of the Isle of Purbeck and Weymouth,' *Mem. Geol. Sur. England*, 1898, pp. 230–235). Next inland lies the unsymmetrical Hampshire synclinal basin of Tertiary strata, broadening eastward, and thus analogous to the London Tertiary basin. Each basin gave rise to an east-flowing axial consequent river, the lower Thames and the Frome; but while the valley of the Thames is still well preserved, the southern side of the original Frome valley has been greatly consumed by the sea. Lateral consequents of good size still come from the north, and one of them, the Stour, rises back of the chalk cuesta; but nearly all the consequents on the south have been shorn off; yet two small ones still remain, one on the Isle of Wight, one on the Isle of Purbeck, and each of these streams, like the Stour, heads back of the chalk, which on the south forms a monoclinal ridge of nearly vertical structure. Much of the original axial consequent has been destroyed; the river now called Frome being only the upper 30 miles of a stream that may originally have had a length of over 100 miles. The Solent estuary, separating the Isle of Wight from the mainland, is taken to be a middle part of the axial consequent, as described by Strahan in an earlier memoir (1896).

The Isle of Portland, south of Weymouth, is a smaller fragment of the devastated anticline, west of the other remnants. It is now connected with the mainland by the famous Chesil bank (*Ibid.*, pp. 203–209), a superb reef of pebbles and sand, 18 miles long, enclosing a shallow lagoon called the Fleet (from Saxon, meaning shallow water) for 12 miles. The exposed (southwest) face of the reef is a steep beach, benched with long, even terraces (locally called 'curbs'), the temporary records of the maxima in an irregular but generally decreasing series of wave efforts; the highest crest of the reef being the work of the master storm of the decade or century. The reef rests on clays which are sometimes exposed on the beach face after storms. Pebbles are abundantly thrown over the crest of the reef during on-shore winter gales; the windows of the nearest houses in Chiswell (where the reef joins the Isle of Portland) must then be boarded up, even though the crest is there 42 feet 9 inches above high-water mark. The reef as a whole must be marching slowly inland (northeast). It may have been formed originally several miles to seaward of its present position. The pebbles are largest at the southeastern end, where the reef is attached to the wasting and beachless cliffs of the Isle of Portland, and finest towards the northwest end, where it approaches but does not reach the Chalk uplands of Bridport; yet the commonest pebbles are not derived from the Portland sandstones, but consist of well-rounded chalk flints; and there are occasional Triassic pebbles, although no Triassic rocks are exposed for some 30 miles to the west. An earlier writer suggested that the movement of pebbles on the beach is from the northwest, and that the largest ones are now at the southeast end because they are most readily carried by storm waves and drift; but this is difficult to believe. Prestwich thought that the movement is to the northwest. Strahan seems to accept the earlier opinion, but concludes that the more persistent movement is only inward (northeast); and that the materials of the reef represent the most durable sweepings of the land area that has hereabouts been destroyed by the sea. Thus explained, it seems probable that the chalk flints and the Triassic pebbles were derived from exposures of these formations somewhere along the original position of the reef, a district now occupied by the northwestern part of the English channel.



Part of southern England, representing the Hampshire syncline and fragments of the adjoining anticline. Chalk, blank; older formations, lined; Tertiary, dotted.

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