

CURRENT NOTES ON PHYSIOGRAPHY.

NORTHWESTERN OREGON.

A GEOLOGICAL reconnaissance in north-western Oregon by J. S. Diller (17th Ann. Rep. U. S. Geol. Survey, 1896, 1-80) gives new examples of mountains resulting from the dissection of peneplains. The Coast range in this district, consisting of inclined Miocene and older formations, shows uplands, bevelled across the tilted strata in gently sloping plains at various altitudes, as if the product of erosion at successive levels. A number of small monadnocks rise above the upper plain, and the narrow valleys of the streams are incised beneath the lowest. The relations of the different peneplains are not fully worked out. During the lower stand of the region, when the peneplanation was accomplished, Willamette valley of to-day was a drowned valley, like the existing Puget sound; and it is now floored with the sediments of that submergence. The sediments contain ice-raftered boulders, thought to be derived from the glaciers of the neighboring Cascade range on the east, then more extensive than now, in spite of the lower stand of the land. During emergence two of the stronger rivers seem to have maintained transverse courses across the rising peneplain (the Coast range), so that they now gather headwaters in Willamette valley. Old sea cliffs and beaches at various levels on the western slope of the Coast range record pauses during emergence; similar pauses are indicated by terraces along the river valleys. The movement of elevation continued until a five-mile belt of the existing sea bottom was added to the land; the evidence of this being found in the extension of river channels seaward from their present mouths, as determined by Coast Survey soundings under Davidson. Subsidence to the present altitude has drowned the rivers a number of miles up stream, letting the tide far inland. The present shore line is

sub-mature; alternating between bold rocky headlands not yet cut back to a graded outline, and long, smoothly curved beaches of concave outline towards the sea.

GLACIAL DEPOSITS OF INDIANA.

UNDER the above title, Frank Leverett, who has for some years past carried on field studies of the drift under the direction of Professor Chamberlain, gives a summary of his results for a central state (*Inland Educator*, August, 1896, 24-32); the essay being one of a series designed by Professor Chas. Dryer, of the State Normal School at Terre Haute, for the edification of local teachers. Leverett states that the border of the drift, as indicated on his outline map, needs correction, for repeated observations have convinced him that it extends further southward than is indicated on Wright's map of the glacial boundary (Bull. 58, U. S. Geol. Surv.). The succession of glacial deposits and associated loess beds, with interglacial soils, is briefly described and the chief moraines are mapped. The terminal moraine of the Wisconsin (third) stage of glaciation is a broad ridge generally twenty feet high. Within the space of half a dozen steps one may pass from loess-covered tracts of earlier drift to the bouldery drift of this later invasion. There is an accompanying change of soil color and composition, from ashy (loess) to black (drift), of a great agricultural importance. Certain prominent moraines near the western boundary (Benton and Warren counties) are overridden by transverse or unconformable bouldery moraines. A temporary lake, apparently enclosed by ice on the east and north, explains the sands spread over the northwestern counties.

If the geographical aspects of the drift, both as to form and occupation, could be more fully stated by Mr. Leverett in another article, better work by local teachers would be still further promoted.

SCIENTIFIC GEOGRAPHY IN ITALY.

AN encouraging sign of progress in geographical instruction is found in a note on the Scientific Systematization of the Study of Military Geography, by Lieut.-Col. C. Porro (Rev. Mil. Ital., 1896, 30 p.). After reviewing the various methods of geographical study for some time back, he adopts the guidance of Lapparent in emphasizing the importance of a rational understanding of the origin of topographic forms as a means of better perceiving the forms themselves, and urges such study as a basis of specialization in military geography. The Italians already being well advanced in the production of elaborate maps and reliefs, they are prepared to profit greatly by exchanging the earlier empirical methods for more modern scientific and systematic study. Geomorphology, as recognized in this country, has hitherto had no place in Italy, in spite of the beautiful variety of topographic forms on which its methods might be exercised.

NOTES ON ASHANTI.

MAJOR C. BARTER gives some Notes on Ashanti, taken while on the (British) Ashanti expedition of 1896 (Scott, Geogr. Mag., xii., 1898, 441-458). He says, in his preface, that the most he could offer, outside the military features of the campaign, would be a record of general impressions and of local accounts and traditions which his memory had retained. His interesting narrative is largely concerned with other than physiographic matters. Landing in surf boats, a fatiguing march followed across twenty miles of sandy undulating country, covered with low bushes, gradually merging in the primeval forest, of which an impressive description is given. The forest belt is about 300 miles broad, and beyond its northern border, which limits Ashanti, come rich prairie plains, with healthy climate and an abundance of big game, under the Sultan Samory. The forest country is undulating,

except in isolated hilly districts of small area; the water courses are broad and swampy. The clearings about villages are connected by paths, on which from one to four men can walk abreast. The excessive dampness is relieved by the Harmattan, or 'Doctor,' a steady cool breeze which blows from a northerly direction during the winter months, apparently a local manifestation of the normal northeast trade.

This note is offered not so much for its physiographic value as for a sample of the gleanings that may be gathered from the usual observations of the military explorer. If British military training were based on the recommendations of Porro, above, the geographical harvest of foreign expeditions would be richer; but those in charge of the program of British military schools might plausibly say that they are so well satisfied with the success thus far attendant on their graduates that they find no reason for altering their curriculum.

W. M. DAVIS.

HARVARD UNIVERSITY.

CURRENT NOTES ON METEOROLOGY.

CLOUD HEIGHTS.

IN a recent number of *Nature* (Dec. 31). Clayton makes some important suggestions concerning possible errors in calculating the heights of certain forms of clouds by means of theodolites and photogrammeters. At Blue Hill Observatory the average height of nimbus obtained by theodolite measurements is 6,814 feet, while the height of the base of the same kind of cloud as shown by sending kites into it is usually less than 1,640 feet. There is seen to be a considerable discrepancy here. Evidently the kite measurements are the most accurate, and there can be no doubt that the nimbus cloud belongs lower down in the cloud classification than the position it now occupies in the International Nomenclature, as given in the new Cloud Atlas. In the