Review: The Altitudinal Limits of Vegetation in the Mediterranean Area

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that the tide at Cape Columbia comes from the west. "It is the Baffin bay tide transmitted, first north-westerly through the eastern portion of the Arctic archipelago to the Arctic ocean, and then easterly along the northern coast of Grant Land to Cape Columbia. That the tide wave should be felt after a passage of this kind instead of practically disappearing after entering the Arctic ocean, is one argument for the existence of a waterway of limited width to the north-west of Grant Land." This, and the arguments already known to students of the problem (and outlined by Sir C. R. Markham in the *Journal* of January, 1906), are adduced to indicate "an obstruction (land, islands or shoals) containing nearly half a million square miles," and demarcated roughly by points adjacent to Bennett island, Point Barrow, Banks Land, and Peary's Crocker Land. This would suggest that Mikkelsen's sounding of no bottom at 339 fathoms about 72° N., 150° W. indicated something in the nature of a deep Mediterranean basin, and probably not all authorities will follow Mr. Harris so far on the evidence; does it justify the assumption of anything beyond comparatively small land-masses towards the east and west extremities of the area indicated?

Meteorological observations were taken, of course, and are compared with those of Greely at Fort Conger, with which they "agree well." In an allied scientific connection, a student of the geography of diseases may find interest in the comments on the evidence of "grippe," which is said to be coincident in the Arctic with epidemics at home. An attack experienced by Peary in 1892 followed a storm from the south-east, "more than a local disturbance," which raised the temperature over 70° in a day.

Illustrations are copious and, on the whole, "worthy of the occasion," though the difficulties attendant on photography during a "drive" over the ice (to use the traveller's own term) are sometimes apparent. A notable feature is the reproduction in facsimile of some of the observations as to position. Perhaps the reader may be allowed a smile at the convenient ice-mound which is honoured as representing the pole.

O. J. R. H.

MATHEMATICAL AND PHYSICAL GEOGRAPHY.

THE ALTITUDINAL LIMITS OF VEGETATION IN THE MEDITERRANEAN AREA.

' Beiträge zur Kenntnis der Höhengrenzen der Vegetation im Mittelmeergebiete.'
Von Dr. Max. Koch. Halle-a-S. : C. A. Kaemmerer & Co. 1910.

This book is an attempt to interpret, analyze, and explain the relations existing between the numerous meteorological and botanical observations made in the Mediterranean area. After a few historical notes, the area under discussion is mapped out, and its limits are defined according to its geology, its climate, and its flora. After a careful consideration of the material at his disposal, the author has come to the conclusion that the height to which certain types of plants ascend in the Mediterranean area is dependent on certain isothermal lines. The altitude to which the Mediterranean vegetation generally ascends is dependent on the course of the 5° January isotherm as reduced to sea-level. The altitude to which trees ascend in the Mediterranean area is dependent on the course pursued by the 10° July isotherm, again reduced to sea-level. In each case a rise to a higher altitude of the isotherm induces an ascent of the particular form of vegetation. The purely Mediterranean plants are most under the influence of the January and the central European plants are most under that of the July isotherm. From the point of view under consideration, the rainfall does not to any great extent seem

to affect the vegetation, except in the case of the forest formations. The author has worked through a large amount of material in the course of his studies, and his complaint is that it is not yet complete enough, but he hopes that this contribution to the subject may lead to the existing gaps being filled up in time.

O. V. D.

A TEXT-BOOK OF METEOROLOGY.

‘Descriptive Meteorology.’ By Willis L. Moore, LL.D., SC.D. *Charts and Illustrations.* New York and London: D. Appleton & Co. 1910. 12s. 6d. net.

This is a comprehensive and clearly written treatise on the principles of meteorology, designed to meet the requirements of all students of the subject, but especially of those entering the service of the United States Weather Bureau. With the rapid growth of meteorological science, many of the better books are getting out of date, and Dr. Moore's text-book, thoroughly brought up to date, should be of great use to English readers. Some of the “knotty” problems in meteorology are elucidated in a clear and concise manner, such as we miss in most other books. We have, for instance, searched through many treatises for a satisfactory explanation of the cold on mountain-tops, but most authors make no reference at all to the causes of this striking and all-important fact of physical geography. Dr. Moore, in one short paragraph, says, “The absorption of solar and terrestrial radiation by the air is greater in its lower levels where dust, water-vapour, and cloud are densest, while the transmission of both incoming and outgoing radiation is more rapid through the purer air aloft. Thus we account for the coolness of all mountain peaks, and the perpetual freezing temperature of some, even though they be located in the tropics, and though their tops occupy positions several miles nearer the sun than the bases from which they rise.” This does seem to get at the gist of the matter. Mountain peaks are cold, not so much because the atmosphere over them is thin and cannot act as an efficient blanket in preventing the escape of the sun's heat, as because they rise isolated into the cold upper levels of the atmosphere where the air is too rare, pure, and dry to absorb the solar radiation which passes through it and to thereby become heated. Dr. Moore devotes some attention to the theory of rotary storms, and the possibility of including atmospheric eddies in certain well-known simple types of vortex motion, like the dumbbell shaped or funnel shaped. But quite the most interesting point we learn in connection with cyclonic movement is the apparent fact that storm systems are translated *en masse* in the general drift of the atmosphere, and not merely propagated as a sort of wave disturbance, as has sometimes been suggested, always affecting fresh masses of air. Thus the prevailing westerly surface winds or anti-trades of the north temperate zone are constantly being broken up into passing cyclonic or anti-cyclonic eddies which obliterate the general eastward drift of the atmosphere, but when the winds of these rotating systems, depicted on isobaric charts, are resolved into their components, and the cyclonic components subtracted, a persistent current from the west remains. This is a hydrodynamic question of great importance, and we are glad to welcome information respecting it derived from solid facts. We do not much care for the somewhat elaborate system of classifying climates which Dr. Moore has quoted from various meteorologists, and indeed always hold that after a broad classification of climates into hot, warm-temperate, cool-temperate, and cold, on the one hand, and into equable, or extreme, on the other, the climate of any particular region on the Earth's surface had better be *described* on its own individual merits, and not entered into any detailed scheme of classification, since the subject does not lend itself to classification, one climate merging imperceptibly into another.

The work is handsomely illustrated with photographs, weather-charts, etc.,