of beats; when the beats are comparatively frequent, he speaks of 'roughness'; but the psychologist does not arbitrarily call roughness 'discord.' Upon the *cause* of discord the psychologists have *not* agreed; it is as yet unknown —at least to the psychologists.

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A CORRECTION.

IN SCIENCE for September 27, 1901, I called attention to a signature of a work entitled 'Florula Lexingtoniensis,' which I then supposed to be a work of C. S. Rafinesque. There is now no doubt that the signature in question is part of a work with the same title which appeared in the *Transylvania Journal of Medicine*, under the authorship of C. W. Short. The signature had been repaged, and does not have the appearance of a journal extract.

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CURRENT NOTES ON PHYSIOGRAPHY.

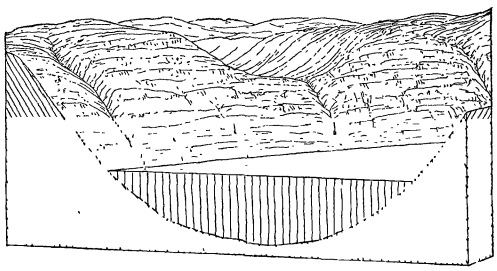
MT. KTAADN.

TWO visits to Mt. Ktaadn (5,150′) in northern Maine and four ascents have convinced Tarr that even the summit of the mountain has been glaciated, for fragments of schist, argillite and sandstone were found on its granite peaks ('Glaciation of Mt. Ktaadn, Maine,' *Bull. Geol. Soc. Amer.*, XI., 1900, pp. 433–448, 10 pl.). The greater part of the top is occupied by a 'tableland' surmounted by the several summits and gnawed into by huge basin headed valleys or corries, whose smooth and precipitous walls can hardly be scaled. Little talus lies in the basins, but a number of rock-basin lakes and terminal moraines were found on the valley floors. Where the basins come close together they are separated by sharp ridges, whose ruggedness Tarr accounts for by the moderate destructive action of the upper part of the ice sheet, as well as by postglacial weathering. He suggests that large local glaciers radiated from Ktaadn after the time of general glaciation.

Following the views of Richter, de Martonne and Matthes, recently noted in these columns, and the still earlier views of Johnson, the steep walls and sharp dividing ridges between the Ktaadn corries would be ascribed to the retrogressive erosion of their local glaciers, aided by the excessive frost action of the Bergschrund belt; and the 'tableland' would be regarded as a residual of a larger preglacial dome.

NORWEGIAN FIORDS.

THE year-book of the Norwegian geological survey for 1900 ('Norges geologiske Undersögelse,' No. 32, Aarbog for 1900, Kristiania, 1901, p. 263, many sketches and an English summary), contains an account of two important landslips in postglacial clays and a general discussion of the relief of certain typical areas. The highlands are regarded as presenting traces of two cycles of erosion; the older appears in the lofty snow-covered plateaus, more or less mountainous; the younger in the broad, open, high-level valleys among the high plateaus. The deeper valleys, whose deepest distal portions contain the fiords, are of later origin, after a great upheaval of the land, and are probably the work of water and ice in several interglacial and glacial epochs. Regarding the relative proportions of ice and water work, Reusch appeals to certain fiorded valleys, in whose walls a number of ravines have been produced by ordinary subaerial erosion. In such cases, the valleys must have been, Reusch thinks, worn nearly to their present depth before the ravines could have been formed. Hence "the glaciers enlarged the main valley and partly destroyed the side valleys, but they cannot be said to have made the main valley." But this conclusion leaves the problem in a quandary; for if the ravines indicate the preglacial depth of the main valley, it is difficult to understand why certain



hanging lateral valleys, whose streams are much larger than those in the ravines, were not also

worn down in preglacial time to the great depth of the main valley. Moreover, as a rule, the fiord walls are not strongly ravined; they are generally rather smooth, as if they had been severely scoured. May it not therefore be supposed that the ravines are of late interglacial origin in rock structures that favor relatively rapid wearing; and that they have been eroded with respect to a valley floor which earlier glacial erosion had already deepened; while a minimum measure of the total glacial erosion is best given by the altitude of the large hanging valleys above the fiord bottoms, huge as the minimum may be?

THE ORIGIN OF MOELS.

'The Origin of Moels, and their Subsequent Dissection' (*Geogr. Journ.*, XVII., 1901, 63–69) is a discussion by Marr of the rounded mountains common in several parts of Great Britain, showing convex, dome-like tops and concave basal slopes, all covered with rock waste and vegetation, and not dissected by streams. Etymologically they are the Welsh equivalents of the 'balds' of our North Carolina mountains. Their form is ascribed to weathering under vegetation. The irregular forms into which a tableland is carved by streams would in time be subdued to moels, if weathering under a climate which favored the growth of a mantle of vegetation by which streams are excluded. In an arid or frigid climate, sharp peaks or ridges with even-sloping sides would, it is said, be developed, while running water would carve the well-known concave valley lines with steepening slope to their sources. The author goes on to show that if streams should gain a hold on a moel, either by climatic change destroying the plant mantle or by headward growth from the basal slopes, radial valleys would be carved by retrogressive erosion. Such valleys would in time reduce the intervening spurs into sharp ridges; notches would be worn in the narrowing ridges near the summit, where they are soonest consumed by the widening valley heads; and the peak of each ridge, just outside of the notch, would then be a 'tahoma,' as Russell has called such forms on Mt. Rainier (18th Ann. Rep. U. S. G. S., pt. II., 349). When one side of a mountain is exposed to rainy winds, while the other side is relatively dry, the convex moel slope may be paired with the concave stream slope, as in certain parts of the English lake district.

Soil-creeping might have been given more explicit consideration than it here receives; for both the convex upper summit and the concave basal slopes of a valleyless moel may be largely produced by the slow creeping of the waste cover, as well as or better than 'partly by the action of the wind, and partly by inconstant runnels of water.' It seems unadvisable to treat moels as exhibiting 'the ultimate outlines of mountains which have been shaped by denudation'; for the ultimate outlines are level to the eye, and even the penultimate outlines have but a faint relief as the moels fade away. It is questionable whether the attainment of a convex summit outline is impossible in arid and frigid deserts; more probably it is merely delayed till the reduction of the mountain to a moderate relief in a late stage of the cycle weakens the forces of waste transportation to essential equality with forces of waste supply; a graded waste cover may then be formed all over the surface, whose outline will exhibit no sharp forms, but only gentle undulations. These undulations may be too gentle to be classed with the strong moels of Wales, but they deserve consideration in the general study of land forms.

W. M. Davis.

THE PHYLOGENY OF THE TOOTHED WHALES.

A recent issue of the *Memoirs of the Royal Museum of Natural History of Belgium* is devoted to a paper by Dr. O. Abel on the 'Longirostrine Dolphins of Bolderien,' in which the author describes and figures in detail the skulls of two remarkable extinct dolphins, *Cyrtodelphis sulcatus* and *Eurhinodelphis cocheteuxi*. The memoir is, however, a great deal more than the description of these crania, valuable though this be, for nearly one-half of it is devoted to observations on the phylogeny of the Odontoceti. We have a discussion of the evidence furnished by the dentition in general, and that of the pre-maxillaries in particular, the dermal armor and the general characters of