Here the upper surface of the ice slopes from *C* towards *A*, and the flow is in the same direction. All the ice in the hollow is in equilibrium and is urged in the direction of the arrow by that portion which is above the lip *A* and extends towards *C*. Very little force indeed is therefore required to raise the ice from *B* to *A*. The ice will get thinner as it advances, and the slope of the upper surface at each point will assume the angle required to deliver the proper volume of ice at any cross section, *aa*, *aa*.

If the glacier floor were immovable and the ice were frozen to it the rate of motion at the bottom would be very small indeed if local shear did not take place. We have proof, however, that the glacier not only undergoes internal distortion, but that it frequently slips over the floor as well. In Spitzbergen, where the ground is frozen for hundreds of feet in depth, it is clear that ice flowing over such a floor would freeze to it and drag it along. Under these circumstances large masses of frozen gravel and sand would become incorporated in the lower portion of the glacier together with boulders, and these inclusions would be thawed out and redistributed when they came to their journey's end. The 'pushing' effect of the ice front against loose material as the glacier advances is no doubt considerable; but it is rather to the work effected by the debris-charged lower portion that the transport of material is due.

Mr. Crook suggests that the transport and lifting are more likely to be the result of upward shear in the ice, say along the dotted line *BD* in the figure, than along the floor from *B* to *A*. This seems very unlikely.

If the Rhone Valley were filled with ice up to about the level of the numerous hanging valleys the smaller glaciers from these valleys would flow on to and over the surface of the main Rhone Glacier, and subglacial moraine would thus find its way to the upper levels. I do not think it at all likely, however, that bottom moraine would find its way to the surface by upthrusts in the ice.

R. M. Deeley.

Inglewood, Longcroft Avenue,
Harpenden, Herts.
March 13, 1911.

GEOLOGY OF PADSTOW AND CAMELFORD.

Sir,—In the notice of the Geological Survey Memoir on the Geology of Padstow and Camelford (p. 136) it was stated that the two new maps which accompany that memoir "show, for the first time, the divisions of Lower, Middle, and Upper Devonian". So far as the one-inch maps of the Geological Survey are concerned, this is quite correct. Nevertheless, mention should have been made of the fact that the main divisions of the Devonian rocks had been represented on a small map by Mr. W. A. E. Ussher (Trans. Roy. Cornwall Geol. Soc., 1891, p. 273). That map was constructed from lithological descriptions in De la Beche's Report, the data being interpreted by Mr. Ussher from his intimate knowledge of the Devonian rocks in South Devon. Although the relative position of the Meadfoot and Looe Beds and of the Dartmouth Slates was not then understood, the

order of succession of these subdivisions of the Lower Devonian was rectified by Mr. Ussher in 1903 (*Summary of Progress of the Geological Survey for* 1902, p. 160). Thus the main subdivisions in the Devonian rocks of South Devon and Cornwall introduced by Mr. Ussher have been fully confirmed and adopted by the Geological Survey. They are further shown on his Geological Map of Cornwall in the Jubilee Volume of the Geologists' Association, plate xxxii, p. 896 (1910). REVIEWER.

MISCELLANEOUS.

GEOLOGY AT THE LOCAL GOVERNMENT BOARD.—Mr. J. B. Hill, F.G.S., has just been appointed to the newly-created post of Geological Adviser to the Local Government Board. Mr. Hill joined the staff of the Geological Survey in 1884, and after working among the intricate schistose rocks of Argyllshire was transferred in 1897 to Cornwall. There he surveyed a large area in the neighbourhoods of Falmouth and Truro, and established the pre-Devonian age of the Mylor, Falmouth, and Portscatho Series. On completion of that work Mr. Hill was called on to take part in the re-survey of the Midland area, in the counties of Nottingham, Derby, and Stafford, gaining experience among Carboniferous, Permian, and Triassic rocks, as well as Glacial Drifts.

PRESENTATION TO DR. LAZARUS FLETCHER, F.R.S.—The invaluable services which Dr. Lazarus Fletcher, F.R.S., has rendered to the Mineralogical Society during his twenty-one years' tenure of the office of general secretary have been recognized by the presentation to him of his portrait painted by Mr. Gerald Festus Kelly, A.R.H.A. The subscribers were, however, by no means confined to members of the Society; since Dr. Fletcher resigned his office upon his appointment to the post of Director of the Natural History Museum, many others of his colleagues and friends took advantage of the opportunity to evince the esteem in which they held him by joining in the movement. Just before the anniversary meeting of the Society on November 15 the portrait was presented to him by Professor W. J. Lewis, F.R.S., president, on behalf of the subscribers. Later in the evening Dr. Fletcher was entertained to dinner at the Café Monico, Professor Lewis presiding, and in reply to the toast of his health, proposed in fitting terms by Principal H. A. Miers, F.R.S., delighted his hearers with a witty speech replete with the North Country humour for which he is noted among his friends.

KENTISH NAILBOURNES.—In the *Morning Post* of February 6, 1911, it is mentioned that the intermittent streams or nailbournes of Drellingore, between Folkestone and Dover, the Lyminge stream, and the Petham stream were then flowing, that they were also running last year, and that "there is no record of their having previously run two years in succession". This last remark does not apply to the Petham stream, which on several occasions has been known to flow in successive years, as recorded in Whitaker's *Water Supply of Kent* (Mem. Geol. Survey, 1908), p. 59. In that work full particulars of the nailbournes are given.