nental denudation are chiefly deposited. Hence, the continents grow by the formation of mountain-chains along their borders.

3. The rate of mountain-making, and therefore also that of continental evolution, diminishes with the increase of the time.

IV. "Note on the Geological Bearing of Mr. Davison's Paper." By T. G. Bonney, D.Sc., LL.D., F.R.S., Professor of Geology in University College, London. Received April 7, 1887.

The results obtained by Mr. Davison throw light upon one or two matters in regard to the petrology of the older rocks, which have always appeared to me difficult of explanation. I venture therefore to add a brief note to his paper, written from the point of view of a geologist. He throws light especially on the following matters:—

(1.) Among the older rocks the great foldings and their results, such as cleavage, appear to have occurred when the beds formed the upper layers of the earth's crust. Thus the Ordovician rocks of North Wales were cleaved anterior to the deposit of the Silurian; the Carboniferous, and other Palæozoic rocks of South-west Britain and Britanny were plicated and cleaved, geologically speaking, shortly after their deposition. The great foldings in the Scotch Highlands occurred, in great part at least, in Silurian time. The disturbance of the Lake District rocks, resulting in cleavage, must be placed between the end of the Silurian and the very beginning of the Carboniferous; that of Southern Scotland, between perhaps yet narrower limits. The first epoch of mountain making in the Central Alps, with its plication and cleavage, immediately followed the deposition of the Eocene rocks. The list might easily be extended.

(2.) The crystalline substratum often appears to be less modified than the overlying softer and more recent beds. This I had attributed to the greater resistency of the former, but then could not see how to explain the foldings of the latter, if the others were comparatively uncompressed. This, however, accords with Mr. Davison's results of the diminishing effects of compression, while the fact that in early geological times the "neutral zone" between compression and tension was comparatively near the surface of the earth, may explain the frequent parallel arrangement of the minerals in the older Archæan gneisses. I do not now refer to the more marked changes, such as the intercalation of calcareous or micaceous rocks, of more felspathic or quartzose layers, whereby a stratification is simulated, if it be not recorded, but to the fact that very often a general parallelism may be

noted in the flakes of mica or any other mineral of somewhat like form scattered through the mass of the rock, sometimes approximating to a banding of the constituents, without any indication of this being the result of crushing. In regard to this particular structure, it is worth notice that it often lies in planes making a low angle with the horizon.

(3.) The same result may help to explain the assertion so frequently made, that among the older rocks the foliation (or minor mineral banding) is commonly parallel to the (apparent) stratification (or major mineral banding). This also I have noticed in cases where either there was no indication of subsequent crushing, or the latter had not effaced, and its effects could be distinguished from, the earlier structure of the rock. I once supposed this parallelism and tendency to horizontality to be due to the weight of superimposed beds, but for some time have been dissatisfied with this explanation, because I could find no evidence that any heavy burden had been laid upon the older rocks till long after they had assumed a foliated structure. Tension, however, would probably produce the structure at least as readily as pressure, and the former of course would, as a rule, act parallel with the surface of the earth's crust, while compression should be exhibited commonly in planes making a high angle with it.

V. "Note on some Experiments on the Viscosity of Ice." By J. F. MAIN, M.A., D.Sc. Communicated by Prof. W. C. UNWIN, F.R.S. Received April 13, 1887.

(Abstract.)

The paper contains an account of some experiments on the continuous extension of bars of ice subjected to tension, made during the last winter in the Engadine. To eliminate the influence of regelation, the experiments have been carried on at such low temperatures as preclude the possibility of any effect being produced by this cause. The highest temperatures during the experiments were $-2{\cdot}6^\circ$ C. in Experiment I; $-1{\cdot}0^\circ$ C. in Experiment II; and $-0{\cdot}5^\circ$ C. in Experiment III. These maximum temperatures only obtained for a very short time on one or two days.

The bars were tested in a compound lever testing machine with accurate knife edges, the load being a known weight of shot. The whole apparatus was enclosed in a double wood box. A delicate thermometer graduated to tenths of degrees, attached inside the box, gave the temperature at any given time, and the range of variation of temperature was recorded by two maximum and minimum thermometers, fixed inside to the roof of the inner box. To obtain ice