

1950 attended by many glaciologists and meteorologists. Dr. de Quervain came over from Switzerland for the Meeting. He explained the principles which had guided the Committee and answered numerous questions.

The classification was generally approved, with certain minor reservations and some suggestions for its improvement. These, together with comments from other sources, are now (December 1950) being considered. After all points have been finally settled the full classification will be published in this Journal.

EARLY DISCOVERERS

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LOUIS AGASSIZ ON "EXTRUSION FLOW"

AGASSIZ* evolved, at an early date, a theory of differential movement of the layers in a glacier. In order to explain the differing positions of the beds in the lower and upper sections of the glacier he suggested that the speed of the lower beds in the accumulation or *névé* region was faster than that of the upper beds. In the ablation region the opposite was the case. These suggestions were not the result of detailed experiments but were brought forward as a hypothesis from *a priori* argument. After making many observations, it appeared to him that the layers in the upper section sloped downwards, those in the middle were almost horizontal, whilst those at the terminus slope, upwards.

Agassiz believed that this differential movement between the upper and lower layers of a glacier explained the following facts. The bergschrund being filled every season with new snow would tend to form a wedge of *névé*. This *névé*, replaced each year by a fresh accumulation, would build up a succession of vertical strata down the glacier. Agassiz argued that the absence of vertical strata could only be due to an increased speed of the lower layers. Again, the differential movement seemed to explain how two stations on the glacier, one in the upper regions and another a little lower, could undergo differential ablation whilst having a similar snow level. Agassiz here implied that the same amount of snow is received at each station, but that the increased level one would expect in the upper station, due to decreased melting, was not found. This, he said, could be explained by an increased speed of the lower layers of the glacier in the upper or cirque region.

The mechanism by which differential movement was made possible was described by Agassiz as a plasticity in the lower layers of the glacier due to the presence of water. This drained through the glacier so that the upper layers were comparatively dry, whilst the lower layers tended to absorb the water, their motion being thus facilitated. The upper layers, being dry, had no such lubricating medium.

Agassiz had no illusions about the difficulties of the hypothesis and at the end of the section he showed his complete lack of dogmatism. "Is this cause which we have indicated sufficient to bring about such a result? It is through future research that we shall perhaps find this out one day."

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* Agassiz, Louis, *Système glaciaire. Nouvelles études et expériences sur les glaciers actuels*. Paris, 1847.