

by the freezing of water from perennial springs, which, likewise derived from the perpetual snows, gush out at numberless places in the bottom of the glen. These waters freeze in the cold, shaded glen in successive layers one upon the other, the bedding being very distinct and recognisable in the broken vertical faces of the ice-bench. On the top of all was what was evidently a phenomenon of secondary regelation, and connected with rainfall and wind, namely a layer of thin ice-needles and laminae set vertically on edge, all about 5 cm. high, quite easy to see from the side, though when looked at from above they had all the appearance of green velvet. This however made the surface of the ice yielding and easy to march on, the ice crystals crackling and crunching underfoot like snow. Under that topmost layer came several others of varying consistency and colour, some being hard and bright as glass, while others were crowded with air-bubbles, making them white like snow. These kinds of layers alternated several times. It looked as though the hard layers were formed by the freezing of actually running water, while the white layers owed their origin to copious falls of snow, which had been compressed and consolidated by the next irruption of spring-water.

The accompanying illustration (fig. 376) shows a transverse section of the glen at a narrow part. The edges of the ice-bench form, as will be seen, almost everywhere overhanging eaves, so that the upper area of the ice is always greater than its basal area. In some places, especially at the foot of the mountains on the right side of the glen, spacious caves and grottoes were hollowed out underneath the projecting icy roof; this was often very thin, and terminated in an edge as sharp as a knife. This construction is caused by two factors — on the side next the glen-slopes by their radiation and on the side next the stream by the beating and friction of the water against the ice. The thaw-water dripped and ran down off the projecting edges, and with the rain-water to help it formed innumerable tiny cascades, which splashed and sprinkled in every direction. These tiny rivulets gradually find their way into the river, this being one of the causes of the stream's constant augmentation farther down; at the

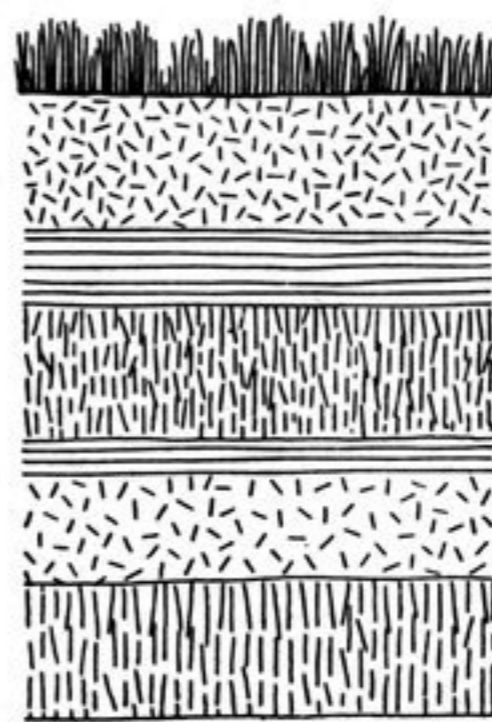


Fig. 375.



Fig. 376.

point where we turned back the volume would be about 8 cub.m. in the second. On the surface of the ice I observed countless miniature pools and rills, running together and forming complete hydrographical systems. Suppose we cross over one of these rivulets: it is not more than a foot broad and half a foot deep; its bed consists of ice as clear as glass, gleaming light green against the white slush