while going uphill, care being taken to adjust the capacity of the mask so that the most advantageous volume of air is rebreathed. The mask I used was adjustable in this respect. The mask should be so designed that the capacity can be recorded. Mine was not; and I probably opened it about half way, and chanced the result.

Incidentally, I might record the experiences of two well-known British climbers, I think during the same summer. One had the idea that carbon dioxide was the solution of the high altitude problem; got some bombs charged with it; and persuaded his friend to come and test them on Monte Rosa. The proposal was to test them before becoming acclimatised; and so they travelled out to the Alps and straight away crossed Monte Rosa to the Margherita hut. On arrival there they were so done that they had to receive medical attention, and were glad to get down with the bombs untested. One was laid up for a week afterwards. This agrees with Prof. Henderson's note about the two men who had walked up Pike's Peak without getting into condition first of all.

P. J. H. UNNA.

4 Dean's Yard, London, S.W.1. March 27.

Control of Dunes

THE arid south-east corner of the Mediterranean basin has been desolated by sand dunes, increasing during the last few centuries, and ever smothering more and more of a fertile border of Sinai and Palestine. The means for control can be seen in existing vegetation.

Examination of irregular palm groves shows that a belt three palms wide, about 80 ft., entirely arrests dune advance, by acting as a friction clutch on the upper wind, beneath which the ground flow of sand haze cannot be formed. Eventually a dune may pile up until it slides down and covers the front palm stems, but the tops still keep a wind-clutch. Pockets of palm grove become enclosed when dunes flow on both sides, but they still maintain a clear ground beneath, covered with small plants. A gap of 100 ft. in a belt lets a dune through, and even 50 ft. is precarious.

Besides arresting the front of dunes by palms, the gathering ground behind can be checked by lines of *Opuntia*, which will grow on the sand. Such a line will hold up 10 ft. depth of sand, growing up as the sand rises. Though dangerous in unoccupied Australia, there is in Palestine such a pressure of occupation that there is full control. Fig is useful to stop ground flow, but does not grow unless some organic soil is within reach of the roots.

FLINDERS PETRIE.

Zuweyd, Sinai, Egypt.

A Sine Curve Crack in Natural Ice

IN January of this year, an interesting phenomenon was observed on Lake Bohinj in the Julian Alps. This lake, in the extreme north-west of Yugoslavia, is a typical alpine lake, its basin having been hollowed out by a diluvial glacier. Its altitude is 523 m., it is about 4 km. long and 1 km. wide. In winter the lake is thickly frozen over and last winter was no exception. Acute tangential tensions always set up in the ice crust and find adjustment in various cracks which extend over the entire width of the lake in straight or broken lines, as the case may be. As a rule, the cracking of the ice is accompanied by a powerful detonation which can be heard distinctly for a distance of several kilometres.

On January 4, Mr. F. Avčin noticed a peculiar crack in the ice. It extended across the entire lake and was about one kilometre in length. Near the southern shore its course was curved and then followed a straight line to the opposite shore. The crack itself, however, was in the form of an almost perfect sine curve (Fig. 1). The wave-length of



FIG. 1. Sine curve crack in the ice of Lake Bohinj.

this curve was about three metres, its amplitude about 0.5 m. The ice was about 15 cm. thick. The crack was about 10 cm. wide and, on January 4, a thin crust of new ice had already formed upon it. There were several other cracks in the ice, but all of them normal, that is, straight. They too were newly frozen over and, therefore, appeared to be of the same age as the sine curve crack.

It is suggested that the detonation caused by the occurrence of one of the normal cracks liberated the tensions in the sine curve crack. The percussion started by the cracking of the ice travelled through the ice in the form of longitudinal vibrations. Periodically alternating condensations and attenuations passed across the crack as it was being formed in a straight line. Might not the combination of these two phenomena furnish the explanation of the sine curve track of the crack ? I am indebted to Mr. F. Avčin for the photograph and description of this strange phenomenon.

PAVEL GROSELJ.

University, Ljubljana, Yugoslavia.