SIR, *Recent moraines of a lobe of the Taylor Glacier, Victoria Land, Antarctica*

Drs. Harrington and Speden have offered an interesting defence [1] of their theory [2] for the ages of the moraines near a lobe of the Taylor Glacier, concerning which we have suggested an alternative hypothesis.[3] However, despite the existence of four moraines bordering each of two small neighbouring valley glaciers, and despite the fact that these moraines may correlate with the moraines in Beacon Valley as pictured in the original letter, the absolute ages of all the moraines remain unknown. Until they are known, we feel strongly that their use in the suggested correlation with 19th century moraines in Europe and New Zealand [2] is unwarranted.

Probably all interested in this discussion will agree that what is needed now is more field study in the area concerned. The work of Drs. Harrington and Speden and their colleagues on the patterned ground [4] represents one important approach to the problem in question. In addition to the obvious possibility of more C^{14} dating, lichenometry might show age differences in certain areas. We would also like to suggest that the installation and measurement of a few ablation and movement stakes on this lobe of the Taylor Glacier might indicate whether or not the suggested rate of retreat [5] is possible under present climatic conditions.

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13 March 1961

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SIR, *Terminology for Antarctic ice features*

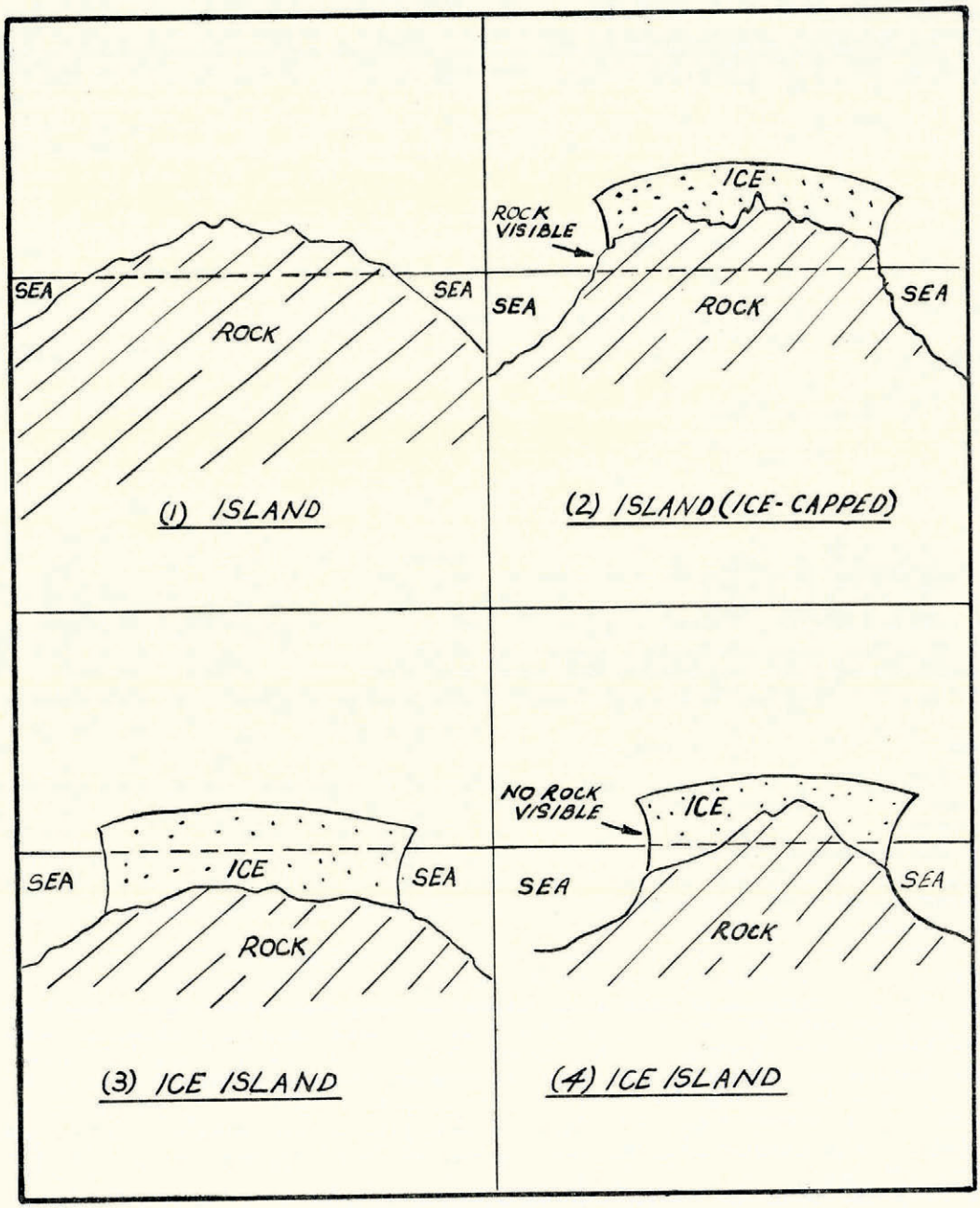
There is a growing need for a revision and extension of the definitions of ice features met with in Antarctica. The suggestion made below is just one of those which must inevitably arise as detailed work proceeds in Antarctic regions. It would be valuable if some sort of international agreement could be reached before publication of I.G.Y. and later work proceeds too far, and the recent S.C.A.R. move to adopt uniform cartographic symbols for ice features is welcomed. The "Illustrated ice glossary" (Armstrong and Roberts) [1] provides the basis for an agreement of this sort, but further work is required, as the example given below will illustrate.

There are, in Antarctic waters, three main types of islands. First is the ordinary rocky island, which in summer is bare or incompletely covered with ice. Secondly, there is the ice-capped island, whose rocky base rises above sea level and is visible around the edge, but which is covered by a layer of permanent ice, nourished by snowfall and by frozen sea spray. (Such islands are generally small.) Finally, there is the "Ice Island," which is generally dome-shaped and which displays no rock at all. In some cases its rocky base does not rise above sea-level, but nevertheless forms the anchorage for the permanent ice cap. In other cases the rocky base may rise above sea-level somewhere beneath the ice; but it is nowhere visible and, from the sea, all that can be seen are ice cliffs. These latter two could only be distinguished by seismic ice depth measurements. (Such islands are generally large.) Diagrams 1 to 4 (p. 1166) show these three types.

To permit uniformity of description of these features in the literature I would like to propose the following nomenclature:

Diagram (1) Island
Diagram (2) Island (descriptively it could be referred to as an ice-capped island)
Diagrams (3) and (4) Ice islands

Typical ice islands are Drygalski Island in the Davis Sea (near Mirnyy) and White Island near Amundsen Bay (Enderby Land).



I realize that the term "ice island" is already in use in Arctic regions for the large floating icebergs broken from the ice shelf off Ellesmere Island. However, these floating, drifting features cannot in any sense be regarded as islands and I see no point in perpetuating such a misnomer at the expense of correct terminology in Antarctica. The Arctic features could be re-defined as "Ellesmere icebergs," "island icebergs," "iceberg islands," or some other term.

The term "ice rise" (Armstrong and Roberts) I consider less suitable geomorphologically for the Antarctic feature.

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To be more specific I would suggest the following definition:

Ice island

An elevation of the sea bed, not within the confines of an ice shelf, permanently capped with ice projecting above sea-level but with no rock visible above sea-level.

The term "ice-capped island" would be largely a descriptive term because, cartographically, this feature would be regarded as an ordinary island.

Following the S.C.A.R. decision to use the prefix "sub-glacial" before ordinary generic terms to designate features which are beneath Antarctic ice, it should be pointed out that Diagram (4) illustrates a "sub-glacial island." However, until seismic ice-depth determinations are carried out, such a fact will not be known. One would expect, therefore, that as exploration proceeds some "ice islands" will be reclassified as "sub-glacial islands" for cartographic purposes, although for descriptive purposes the name "ice islands" would probably be retained.

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6 February 1961

PHILLIP LAW

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SIR, *Terminology for Antarctic ice features*

P. G. Law raises an interesting and important point in regard to the nomenclature of ice features, which I most heartily endorse.

The use of the term "ice island" is perhaps a bit unfortunate, but there was a justification if the alternate definition of an island is considered—something set distinctly apart from its surroundings. I do not particularly like the term iceberg which to me represents a portion of a glacier discharged into the sea, instead of a portion of an ice shelf which has broken loose. Though a descriptive term such as "shelf berg" or "shelf island" might be coined, it is a bit too late, for the unfortunate T-3 has now been grounded for nearly a year and is slowly disintegrating. I would much prefer the title "floating ice island" and would argue that these are so few that the extra title is unimportant.

Perhaps to complicate the issue of Law's ice islands, there is Roosevelt Island on the Ross Ice Shelf, surrounded not by the sea in a strict sense but by a floating ice shelf. Also Law's "ice islands" may in time become either "islands," or "islands (ice capped)," or the ice of ice islands may even become detached, in which case the ice island title would be more apt to follow the original ice than the underwater shoal that remained.

The troubles with ice feature definitions come from lack of knowledge of details and with the possibility of temporal changes. The former in many instances may never be resolved, and the latter is a threat that must be lived with. The solution lies in simple terms, and I am very much in favor of Law's suggestions of "ice islands," and would also include such features as Roosevelt Island (Roosevelt Ice Island). When and if the rock above sea-level becomes exposed either artificially or naturally, or is proven by geophysical means to be above sea-level, the term "ice" could be dropped. If the ice as a whole became detached the term "floating" could be added. My understanding of the sub-glacial prefix concept was that it would be mainly applicable to large sub-continent geographical provinces such as plateaus, ranges, channels, etc. It need not confuse the isolated island issue.

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SIR, *Terminology for Antarctic ice features*

We have read with interest the letters on this subject by Mr. Law and Mr. Crary, and fully agree with their views about the need for continued revision and extension of the terms and definitions of Antarctic ice features.

Mr. Law's illustrations of four types of island illustrate the problem well. His types (1) and (2) call for no comment, either in definition or term. However, we suggest that his remarks on types (3) and (4)