where

T is the mean temperature in ° C.,
L is the latitude in degrees and tenths of degrees,
E is the elevation in meters.

Predicted temperatures agree fairly well with observed temperatures as is shown at a few randomly chosen stations listed in Table II.

U.S. Army Cold Regions Research and Engineering Laboratory, Wilmette, Illinois, U.S.A.
28 March 1961

R. H. RAGLE *and* T. C. DAVIS, JR.

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SIR,

The term "ice island"

I have read with interest the three recent letters on "Terminology for Antarctic ice features" in this *Journal* (Vol. 3, No. 30, p. 1165-68).

I agree that we now have to accept the term "ice island", with or without a qualifying adjective, for a particular type of tabular berg found in the Arctic Ocean and adjacent waters. I support Dr. Crary in favouring the form "floating ice island" for this feature. It is unfortunate that the best-known example, T-3, has gone aground, and must presumably continue to be called an "ice island" (Dr. Law's type (3)?) until it becomes a shoal.

G. HATTERSLEY-SMITH

Directorate of Physical Research (Geophysics), Department of National Defence, Defence Research Board, Ottawa, Ontario, Canada.
23 October 1961

SIR,

Ice mounds on frozen lakes in McMurdo Sound, Antarctica

In the course of a two-month stay in McMurdo Sound, thanks to assistance from United States expeditions, I observed on the surface of frozen lakes mounds of ice elliptical in shape and crevassed. They appear to be a common feature in this region, and it would be interesting to know how they originate.

One was seen at McMurdo Sound about 0·9 km. to the north-east of the U.S.A. Station at a height of 127 m. in the centre of a small crater lake. Further to the north-north-east of the Station, 5 or 6 mounds were found in a frozen lake at the terminus of the big glacier to the north-east, at an altitude of 140 m. At Cape Royds, 2–3 km. to the south-east of the hut, on two small elliptical lakes there was a mound on each. In Victoria Valley, at the end of the lower Victoria Glacier, there was one mound. On Lake Vida there was at least one big mound. Finally, on the McMurdo Ice Shelf below Brown Island, amid a series of moraines, a number of small frozen lakes were seen from the air, some of which contained radiating crevasses reminiscent of the design of the preceding mounds, but closer observation was not possible owing to the danger of landing.

In the little crater lake 0·9 km. to the north of the Station there was a mound about 12–15 m. in diameter, with its top about 0·5 m. above the level of the lake. The crevasses in it (Fig. 1) were 8–10 m. long, about 5 m. apart, and 10–15 cm. wide at the top. At the top of the mound the ice was in columnar crystals which, viewed from above, formed a cellular network, each crystal being about 2–3 cm. in diameter. The centre of the crystals was transparent, the margins more opaque or white (Fig. 2). Their

Fig. 1. Crevasses in the ice mound

Fig. 2. Same place, upper melting surface, showing the lattice formed by the nearly vertical crystals

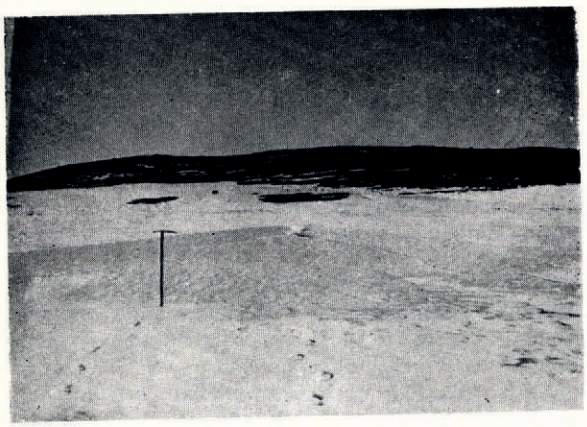

Fig. 3. Ice mound on the frozen lake

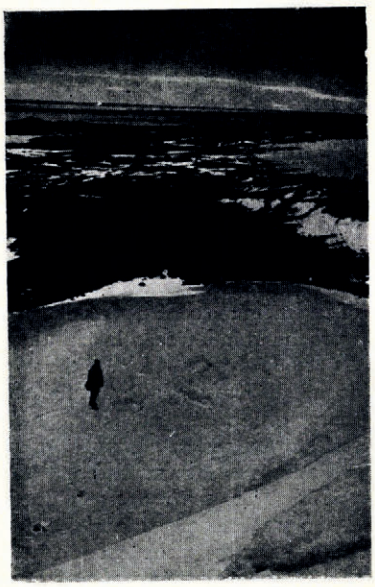

Fig. 4. Strongly crevassed small ice mound in an oval-shaped lake

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upper surface in contact with the air was melting. On the lower margin of the top one could see nearly vertical crystals projecting upwards some 5–8 cm., about 2–5 cm. wide, with 3–8 cm. space between. In places on these small pillars there was a crust of snow probably belonging to a former surface before melting. In contrast to the ice crystals of these mounds, the surrounding snow was typical of that in the McMurdo region—loose, powdery and fine grained.

About 500 m. further north-north-east, on the frozen lake where the glacier from the north-east peters out, one could see 5 or 6 mounds, some oval (Fig. 3), some more elongated. The ice was blue and clear in small vertical columns joined together. The surface showed the same cellular network. There were crevasses which cut across the mounds. At Cape Royds (Fig. 4) there was a much fractured mound. 6–8 m. in diameter, with radiating crevasses. In the lake at the front of the Victoria Glacier the mound was 1–2 m. high, and 10 m. in diameter. The radial crevasses were 20 cm. wide and 60 cm. deep. On the wall the ice was clear blue and furrowed by vertical lines which were very conspicuous. At the surface the design was the same as before with a wide cellular network on a transparent base.

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27 September 1961

SIR,

I have seen Professor Cailleux's letter, and would say that the phenomena described by him are similar to the "icings" which commonly form on rivers and lakes in Siberia. One of the ways in which the water which feeds the "icing" is forced up from under the floating ice, is by the pressure caused by the freezing process itself; as the floating ice on the surface grows thicker, the water beneath it (if there is no outlet) may be forced up through a crack in the ice into the open air, where it freezes at once. The mound thus formed can look very like those in the photographs.

A very general description is given in P. A. Shumskiy's *Osnovy strukturnogo ledovedeniya* (Moscow, 1955), p. 199–200.

Scott Polar Research Institute, T. E. ARMSTRONG
Cambridge.
6 October 1961

SIR, *Vaughan Lewis and Norway*

For the last fifteen years of his life, glaciers in Norway were Lewis's main subject of research.

It all started when, after an international excursion to the Rondane mountains, which I organized in 1946, he went on alone to the Jotunheim, to those glaciers where we met again in the unforgettable summer of 1947.

The outline of the enormous amount of work done by him and his collaborators on the Jotunheim and Jostedalsbre glaciers will be known to all readers of this *Journal*. Several of his students also went to other parts of the country, notably to the Rondane, Dovre and to Svartisen in the north.

In 1953 we were able unofficially to offer him the Chair of Physical Geography in the University of Oslo, vacant after the retirement of Professor Werenskiöld, his great friend, who also died in the summer of this year. But very understandably, Lewis felt his connections with Cambridge were too close to be severed, even for a short period.

At the time of his death Lewis's membership of the Norwegian Academy of Sciences was under consideration.

In September 1958 Lewis was invited to Oslo and gave a course of lectures on glaciological subjects. His ability to perceive unfamiliar geomorphological features was never more evident than on the excursions we made in the Oslo area with its very peculiar surface forms, largely conditioned by geological structure.

Two of his advanced students worked in Norway under my supervision. They and I keenly felt what they owed to the high standards he set them.