

REFERENCES

- Debenham, F. 1952. *In the Antarctic: stories of Scott's last expedition*. London, John Murray.
- Dittmar, W. 1884. Report on researches into composition of ocean water collected by H.M.S. Challenger during the years 1873-76. *Report on the scientific results of the voyage of H.M.S. Challenger during the years 1873-76. Physics and chemistry*, Vol. 1, Pt. 1, 251 p.
- Dubrovin, L. I. 1960. Rassol v shel'fovom lednike Lazareva [Brine in the Lazarev Ice Shelf]. *Informatsionnyy Byulleten' Sovetskoy Antarkticheskoy Ekspeditsii* [Information Bulletin of the Soviet Antarctic Expedition], No. 22, p.15-16.
- Lyons, J. B., and Leavitt, F. G. 1961. *Structural and stratigraphic studies on the Ward Hunt Ice Shelf*. Bedford, Mass., Geophysics Research Directorate, U.S. Air Force Cambridge Research Center. (Report on contract AF 19/604-6188.)
- Marshall, W. E. 1960. Structure and stratigraphy of T-3 and the Ellesmere Ice Shelf. (In Bushnell, V. C., ed. *Scientific studies at Fletcher's ice island, T-3, 1952-55*. Vol. 3. Bedford, Mass., Geophysics Research Directorate, U.S. Air Force Cambridge Research Center, p. 45-78. (Geophysical Research Paper No. 63.))
- Stuart, A. W., and Bull, C. 1963. Glaciological observations on the Ross Ice Shelf near Scott Base, Antarctica. *Journal of Glaciology*, Vol. 4, No. 34, p. 399-414.
- Thompson, T. G., and Nelson, K. H. 1956. Concentration of brines and deposition of salts from sea water under frigid conditions. *American Journal of Science*, Vol. 254, No. 4, p. 227-38.

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*Advance of a Patagonian glacier**

The Glaciar Bruggen (or Pio XI) is a very active tidewater outlet of the southern Patagonian icefield. More is known of its variations than of any other glacier on the Pacific side of the icefield.

In 1830 H.M.S. *Beagle* sailed to the head of Fiordo Eyre, and King (1839, p. 337) reported a

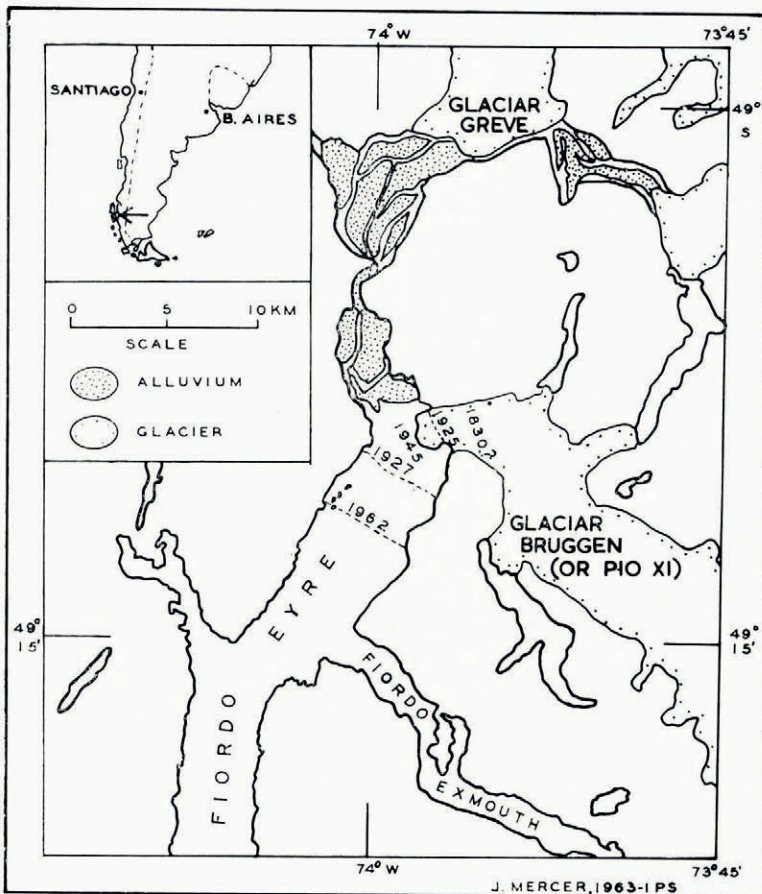


Fig. 1. Map showing the position of the Glacier Bruggen and the positions of its front †

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† Map source: Instituto Geográfico Militar de Chile. 1954. Isla Angamos. 1:250,000. [Numbered] 4975.

river flowing through a lowland from a large glacier, presumably the Greve but possibly the Bruggen. He did not mention a tide-water glacier nor did he refer to floating ice.

In 1925 a sheep farm was established in the valley between Fiordo Eyre and the Glaciar Greve. At the end of 1926 the Glaciar Bruggen advanced and closed off the valley, and the farm was abandoned (Agostini, 1941, p. 60). When and where this advance ended is not known, but by 1945 the terminus was about 3 km. back from its 1926 position. The aerial photographs taken in that year by the U.S. Air Force for the Chilean government are the basis for all recent maps.

In early 1962 a Chilean expedition crossed the icefield from Fiordo Exmouth to the Cerro FitzRoy area on the Argentine side. Senor Marangunic of the Geology Department, University of Chile, a member of the expedition, noted that the ice front was far in advance of its mapped position and had reached a group of small islands on the west side of Fiordo Eyre (personal communication). This represents an advance of about 5 km. and a doubling of the length of the calving front between 1945 and 1962.

The recent advance of the Glaciar Bruggen may or may not be anomalous. Many of the glaciers on the western side of the icefield including the Greve appeared close to a maximum position in the 1945 aerial photographs but they have not been photographed or visited since.

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REFERENCES

- Agostini, A. 1941. *Andes Patagónicas*. Buenos Aires, [L. L. Gotelli, printer].
King, P. P. 1839. *Narrative of the surveying voyages of His Majesty's Ships Adventure and Beagle between the years 1826 and 1836, describing their examination of the southern shores of South America and the Beagle's circumnavigation of the globe. Vol. 1. Proceedings of the first expedition, 1826-1830, under the command of Captain P. Parker King, R.N., F.R.S.* London, Henry Colburn.