nearly vertically at least another 10 m., where a waterfall entered from the wall and precluded further exploration. Here the shaft was getting larger and receiving many tributary tunnels.

The moulins were found useful as ready-made seismic shot holes. Time did not permit a thorough study of them or their part in the internal hydraulics of the glacier. The party received a strong impression that the "free ground-water system" discussed by Mathews (1964) is very deep in a glacier the size of Kaskawulsh Glacier. A particularly interesting problem here is the relation of this system to the large evanescent lakes that border the glacier.

Fig. 2. An investigator entering a dry moulin on the central arm of Kaskawulsh Glacier

The writer believes that with the proper equipment, including water-tight suits, extensive sub-surface exploration is feasible.

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SIR, *Similarity of tree growth in northern Scandinavia, polar Urals and the Canadian Rockies*

Growth patterns for coniferous trees in northern Scandinavia and for *Larix sibirica* in the polar Urals summarized by Adamenko (1963) over the past 250 yr. are remarkably similar to the growth of *Picea engelmannii* Parry in the Canadian Rockies over the same period (Bray and Struik, 1963; Bray, 1965). The Canadian growth patterns are more nearly synonymous with those of the polar Urals than of Scandinavia.

I had not seen Adamenko's paper when my summary of the Canadian data was published (Bray, 1965), and I wish to suggest that his summary reinforces some conclusions I had reached at that time. Conditions for forest tree growth in these three regions were most favourable in the mid to late eighteenth century and following the first two decades of the twentieth century. These two intervals are synchronous with the two periods of maximum mean yearly sunspot number since exact European observations began in A.D. 1700. Conversely, the periods 1656–1723, 1799–1833 and, to a lesser degree, 1879–1913 were intervals of minimum forest growth and minimum sunspot activity. The most probable explanation for this apparent correlation of tree growth and sunspot activity is summer temperature, which is apparently higher, on average, during periods of maximum mean yearly sunspot activity.

Summary data given by Bray (1965, table 2) record the tendency for the minimum sunspot activity periods (1656–1723 and 1799–1833) to have apparently been periods of snow accumulation with subsequent major glacier advance in the Coastal Range and Rockies in north-west North America. Periods of maximum sunspot activity (1756–1798 and 1914–present) were, on average, intervals of glacial retreat or stagnation.

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