

No doubt this appears a tremendous leap from the contemplation of the instrumental observations of the eighteenth century kept by our ancestors in various parts of north-west Europe. But I believe it is for a geographer to endeavour, even at some risk, to provide material for discussion by those better qualified to make more detailed studies. Minor studies, centering round the reasons for the small groups of colder years within the record, may nevertheless open up the major problem of the ways in which the cooling of the seas was begun, both in the deep oceans and on the surface. Now that it has been shown by the Scandinavian glaciologists that we have so recently emerged from a period of maximum post-glacial advance we are in a position to link up and compare the results from a variety of sources in the realms of glaciology, oceanography and meteorology. It is not inappropriate that the countries round the North Sea which have done so much in these realms of observational science should now bring together their results; I hope that these suggestions may lead to further development.

REFERENCES

1. Ahlmann, Hans W. son. Glaciological research on the north Atlantic coasts. *Royal Geographical Society Research Series*, No. 1, 1948, 83 p.
2. Ångström, Anders. The change of the temperature climate in present time. *Geografiska Annaler*, Årg. 21, Ht. 2, 1939, p. 119-31.
3. Egedal, J. Om variationer af middelværdien af lufttemperaturen over Nordvesteuropa. *Geografisk Tidsskrift* (Kjøbenhavn), Bd. 46, 1943, p. 58-71.
4. Manley, Gordon. Temperature trend in Lancashire, 1753-1945. *Quarterly Journal Royal Meteorological Society*, Vol. 72, No. 311, p. 1-31.
5. Labrijn, A. The climate of the Netherlands during the last two and a half centuries. *Mededeelingen en Verhandelingen*, No. 49, Koninklijk Nederlandsch Meteorologisch Instituut (Gravenlinge), 1945.
6. Thorarinsson, Sigurdur. Oscillations of the Iceland glaciers in the last 250 years. *Geografiska Annaler*, Årg. 25, Ht. 1-2, 1943, p. 1-54.
7. Werenskiöld, W. Glaciers in Jotunheim. *Norsk Geografisk Tidsskrift*, Bd. 7, Ht. 5-8, 1939, p. 382-91.
8. Ericksson, B. E. Till kännedom om den nutida klimatändringen inom områdena kring nordligaste Atlanten. *Geografiska Annaler*, Årg. 25, Ht. 3-4, 1944, p. 170-201.
9. Pennington, W. Studies of the post-glacial history of British vegetation. *Philosophical Transactions Royal Society of London*, Series B. Vol. 233, No. 596, 1947, p. 137-75.
10. Mannerfelt, Carl M. son. Några glacialmorfologiska fornelement. *Geografiska Annaler*, Årg. 17, Ht. 1-2, 1945, p. 1-239.
11. Iversen, J. Viscum, Hedera and Ilex as climatic indicators. *Geologiska Föreningens i Stockholm Förhandlingar*, Bd. 66, Ht. 3, 1944, p. 463-83.
12. Brooks, C. E. P. *Climate through the ages*. London: Ernest Benn., Revised edition 1949.
13. (a) Post, L. von. The prospect for pollen analysis in the study of the earth's climatic history. *The New Phytologist* (Cambridge), Vol. 45, No. 2, 1946, p. 193-217.
(b) Conway, V. M. Von Post's work on climatic rhythms. *Ibid.*, Vol. 47, No. 2, 1948, p. 220-37.
14. Wager, L. R. The form and age of the Greenland ice cap. *Geological Magazine*, Vol. 70, No. 4, 1933, p. 145-56.
15. Dahl, E. On the origin of the strandflat. *Norsk Geografisk Tidsskrift*, Bd. 11, Ht. 3, 1946, p. 159-71.
16. Flint, R. F. *Glacial geology and the Pleistocene epoch*. New York: John Wiley & Sons; London: Chapman & Hall, Ltd., 1947.
17. Simpson, G. C. World climate during the Quaternary period. *Quarterly Journal Royal Meteorological Society*, Vol. 60, No. 257, p. 425-78.
18. Umbgrove, J. H. F. *The Pulse of the Earth. Second edition*. The Hague: Martinus Nijhoff, 1947, 358 p.

GLACIER FLUCTUATION IN THE ALPS 1947-48

In the summer of 1948 heavy precipitation caused an increase of the snow reservoirs in the upper reaches of the glaciers, but rain at lower levels caused the general process of ablation to continue although at somewhat lessened speed. Some glaciers even re-advanced. Dr. P-L. Mercanton in his report* shows that during 1948 13 per cent of the glaciers had advanced, 10 per cent were stationary and 77 per cent were in recession. In 1947 the respective percentage figures were 0, 2 and 98.†

* *Die Alpen*, Vol. 25, No. 7, 1949, p. 267-73.

† From details received from the Comitato Glaciologico Italiano (*Revista del Club Alpino Italiano*, N. 7-8, 1949, p. 113-18) in 1947 4.2 per cent of the Italian glaciers under observation had advanced, 11.1 per cent were stationary or indeterminate and 84.7 per cent were in recession.