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Grant No. 4236—Penrose Fund (1966), \$1,000. A palynological investigation of peat bogs in eastern Norway.

During August, 1966, ten peat sections were obtained in eastern Norway to provide a basis for pollen analysis and other data for the purpose of reconstructing the postglacial forests and climate in eastern Norway. These sections are in addition to nineteen obtained August, 1964, also with the assistance of a grant from the American Philosophical Society. The twenty-nine sections were taken from bogs and lakes over a 300-mile transect ranging from a few miles north of Sarpsborg in the south, northward to Roros. The width of the transect varies from a few miles east of the Swedish border to about 50 miles westward, although most of them lie within 25 miles of the border. The general characteristics of the sites and the flora on the bogs and adjacent, were discussed in a report published in the 1965 Year Book of the Society, pp. 316-318. Four of the sections are located in the drier regions in the most westerly part of the transect and should reveal a forest history somewhat different from the rest of the sections.

The region represented by the range of the peat sections includes a number of forest types. Much of the area involved, however, is cultivated and this should be reflected in the pollen assemblages, at least in more recent time. It is hoped that the sections in the midst of the cultivated land will reveal the earliest occupation by man. Pollen profiles should picture a progressive postglacial plant succession northward, in the wake of the retreating ice. This may be complicated, however, by the existence of an ice divide about 50 miles south of Røros, from which the ice moved both north and south. Thus, the mode of ice retreat in the region of the divide may have prevented a one-way migration of the postglacial vegetation. It seems probable that none of the region involved predates the postglacial, as southeastern Norway was inundated by the Late Glacial marine transgression, and sections taken from peat bogs in the broad valleys are underlain by brackish water sediments.

The preparation of the sediments has been largely completed, but the microscopic analysis has been proceeding at a slower pace than one would

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like. The grantee has been devoting most of his time to the sections from the southern part of the transect. An excellent pollen record is present and the profiles should present a representative picture of the postglacial vegetation within range of pollen dispersal to the site of the sediments. The following is a brief and general discussion of the vegetation based on the pollen record in the southern part of the region involved.

Pollen analytical data from bogs in southeastern Norway reveal an interesting and significant history of vegetation in that area. At many sites the initial sediments were apparently laid down on marine clays deposited by the Late Glacial marine transgression, and the recorded vegetation may be slightly earlier than that in bogs analyzed by Hafsten in the inner Oslofjord area, because of earlier deglaciation and emergence from the marine transgression. The sediments are thought to record the earliest Pre-boreal period with a predominance of pine and birch, and a strong representation of grass with appreciable amounts of *Hippophae* on land recently raised above sea level along bays, stream courses, and lakes. Spruce also makes its appearance in the lowest level. This may be designated as a pine-grass period.

The warm, dry Boreal period was still dominated by pine, but with an expansion of birch, hazel, and alder, designated as a pine-hazel period as in the Oslofjord region. During the warm, moist Atlantic period, pine continues to decline, birch remains stable, while mixed oak and alder expand. A noteworthy expansion of spruce occurs during the Atlantic, which did not take place in the Oslofjord area until the Sub-atlantic, although it made its appearance in the Sub-boreal. The Sub-atlantic is marked by a strong expansion of spruce to over 60 per cent, while the deciduous forests considerably contracted. Later in the period, pine increased, and this period may be designated as a spruce-pine complex.

There is no record of cultivation during the Sub-boreal and Sub-atlantic periods, as Hafsten has shown to have been the case in the inner Oslofjord region. It is possible that the Oslofjord area was occupied earlier by man, because of easier access and transportation, as well as the more moderate climate than in the interior. The conclusions of this study, however, are tentative until more data are available from additional pollen profiles and a better understanding of the many problems is developed by the writer.

HANSEN, H. P. 1967. "Palynology of a Bog in Eastern Norway." *Rev. Palaeobotany and Palynology* 4: pp. 129-133.