

from the mouth of the Sognefjord westwards, in the middle of May, every year from 1901 to 1905. One of these series is figured on p. 240. Nansen and the writer have calculated the mean temperatures in the Atlantic water of this section, both for the surface and for the deeper water. The variations in the surface-temperature are represented in curve I., Fig. 208, curve II. showing the variations in the growth of the pine in eastern Norway during the following year. The low surface-temperature in May 1902 corresponded to the small growth of the pine in the succeeding year, 1903, and the high temperatures in the surface of the Gulf Stream in May 1905 corresponded to a great addition to the height of the pine trees in the year 1906. This is explicable by the fact that the annual growth of the pine is not determined by the meteorological conditions of the same

year, but by those of the year before, when the bud was formed, the growth mainly depending on the formation of the bud. Continued investigations will prove whether the agreement strongly suggested by the figure is really a general rule, in which case it may be possible, on the basis of investigations in the Norwegian Sea, to predict with a high degree of probability how much the Norwegian pine will grow in the following year.

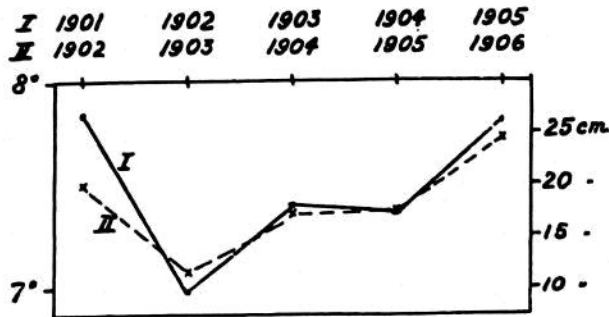


FIG. 208.

I., mean temperature of the surface of the "Gulf Stream" in the Norwegian Sea (Sognefjord section, May); II., mean growth of the pine in eastern Norway.

By calculating the mean temperature of the Atlantic water-masses below the surface in the Sognefjord section, and multiplying the ascertained value by the area of the transverse section of these water-masses, an expression is obtained for the amount of heat in the northern branch of the "Gulf Stream." This has been done from the observations made during the May cruises, and the results are exhibited in curves I. and II. in Fig. 209; the two curves are obtained by two different methods of calculation which need not be discussed here. The lower curve shows the variations in the mean temperature of the air in Norway during the winter months from the 1st November to the 30th April. The coincidence is striking; when, for instance, the amount of heat in the Gulf Stream was great in the month of May, the air-temperature in Norway was high in the following winter. This holds good throughout six years,