but, of course, that is too short a period from which to draw definite conclusions. Anyhow, these preliminary results point to possibilities of no little importance, and we may in the future be able to predict, months beforehand, whether the coming winter will be warmer or colder than the normal. Many similar relations could be pointed out between the conditions in the sea and facts of interest bearing upon our daily life, but the above examples give an indication of the problems to be faced in modern oceanography.

The Atlantic current flowing northwards over the Norwegian Sea, which in our waters is also called the Gulf Stream, is thus subject to considerable variations in temperature and total amount of heat. This current is, however, a mixture of water from the Atlantic proper with water from the northern currents penetrating into the Norwegian Sea, north of the Faroe Islands, and the character of the "Gulf Stream" will depend on the conditions of mixture, and on the individual temperature of each of these currents, factors of which we know little. It is highly probable that the Gulf Stream of the Atlantic also shows annual variations, and, though they may not be of much importance in their effect on the small branch in the Norwegian Sea, they may prove to be of great climatological significance for the countries on both sides of the Atlantic Ocean; a thorough study of this current in the immediate future is therefore looked forward to with great expectations. That there are large annual variations in the caloric conditions of the huge water-masses of the North Atlantic was suggested by the observations of the "Challenger" nearly forty years ago, and has been confirmed during the recent cruise of the "Michael Sars," these two vessels having made investigations in the

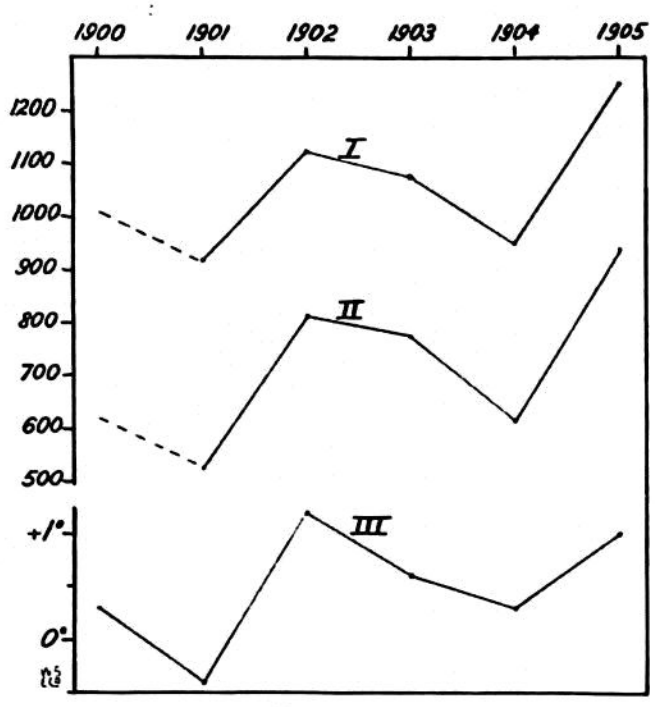

FIG. 209.

I. and II., the annual variations in the amount of heat in the "Gulf Stream" (Sognefjord section, May); III., variations in the air-temperature of Norway (November to April).