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Water temperatures in the Nova Scotia Shelf and Georges Bank areas, 1960-68

by

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Data on water temperatures were summarized from 10,287 hydrological stations occupied in 1960-68 during AtlantNIRO expeditions over the Nova Scotia Shelf and Georges Bank. Mean values of water temperatures at three typical points on the temperature profile curve which reflects the variability of water temperatures by depth (A or B, C and D of Fig. 1) and by months of the calendar year were determined for each one degree square (Charts I-XII). Each point represents a typical temperature for three layers: surface, intermediate and bottom, or for the three main water masses: inshore, Labrador and bottom, as described earlier (Bryantsev, V. A., 1965). In addition to mean values, the points represent minimum and maximum values for the period under study. The squares are numbered by latitude from the east to the west and by longitude from the north to the south and extend to include the 200-m isobath and greater depths in the deep waters of the Gulf of Maine and the Nova Scotia Shelf, which are not shown on the charts.

The surface temperature which changes from winter to summer, in the interval between A and B (Fig. 1), is characteristic of the inshore water mass (surface layer).

Labrador water mass is characterized by the value of an intermediate temperature minimum (point C). In winter (the B, C, D curve) the intermediate temperature minimum is absent as a rule, because both layers intermingle as a result of convectional mixing. In the transition periods, that is in spring and autumn or in the regions where the intermediate temperature minimum is marked even in winter, the value at point C was treated only in cases when the point C was found below 50 m.

Intermediate temperature maximum (point D) characterizes warm bottom water of oceanic origin. When it is absent, as, for example, at depths of less than 150 m, only the values for the bottom layer were chosen, provided that the inversion was revealed in the vertical distribution or the depth was above 90 m.

All valued in the squares on the charts are arranged in the following order (Fig. 1): three columns represent the temperature values for the three water masses from left to right - inshore, Labrador and bottom. The upper figures show the number of chosen temperature values (n) followed by their mean value ($\bar{t}$), maximum (t max) and minimum (t min). The empty squares have no observations or their number for the period of the studies was less than 10.

Values in the squares can give some idea of the curve of mean and extreme temperature changes by depth in different areas for certain months.

The most numerous values of surface temperatures may serve as a standard for estimation of thermal conditions for years, seasons and months over definite areas. Besides, they may be useful in ananyses of seasonal temperature variability in different areas, etc.

Reference

V. A. Bryantsev, 1965. The Influence of Water Masses of the New England and Nova Scotia Shelf on the Formation of Commercial Concentrations of Herring. ICNAF Environmental Symposium, Spec. Publ. No. 6, p. 597-602.

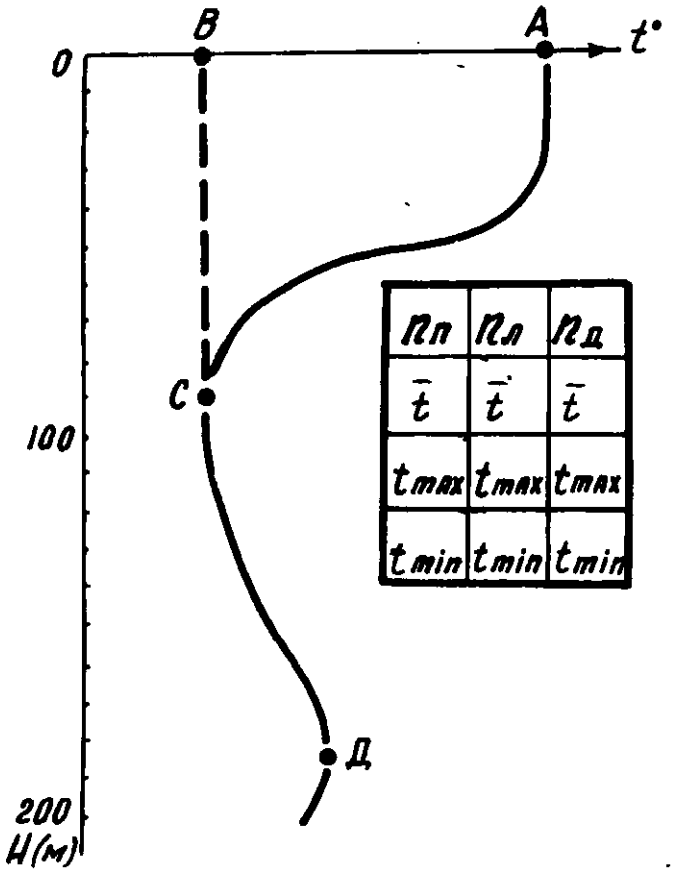

Fig. 1. Vertical temperature profile showing points representative for surface or inshore (points A or B), intermediate or Labrador (point C), and bottom or oceanic (point D) water masses. (For further explanation see text.)

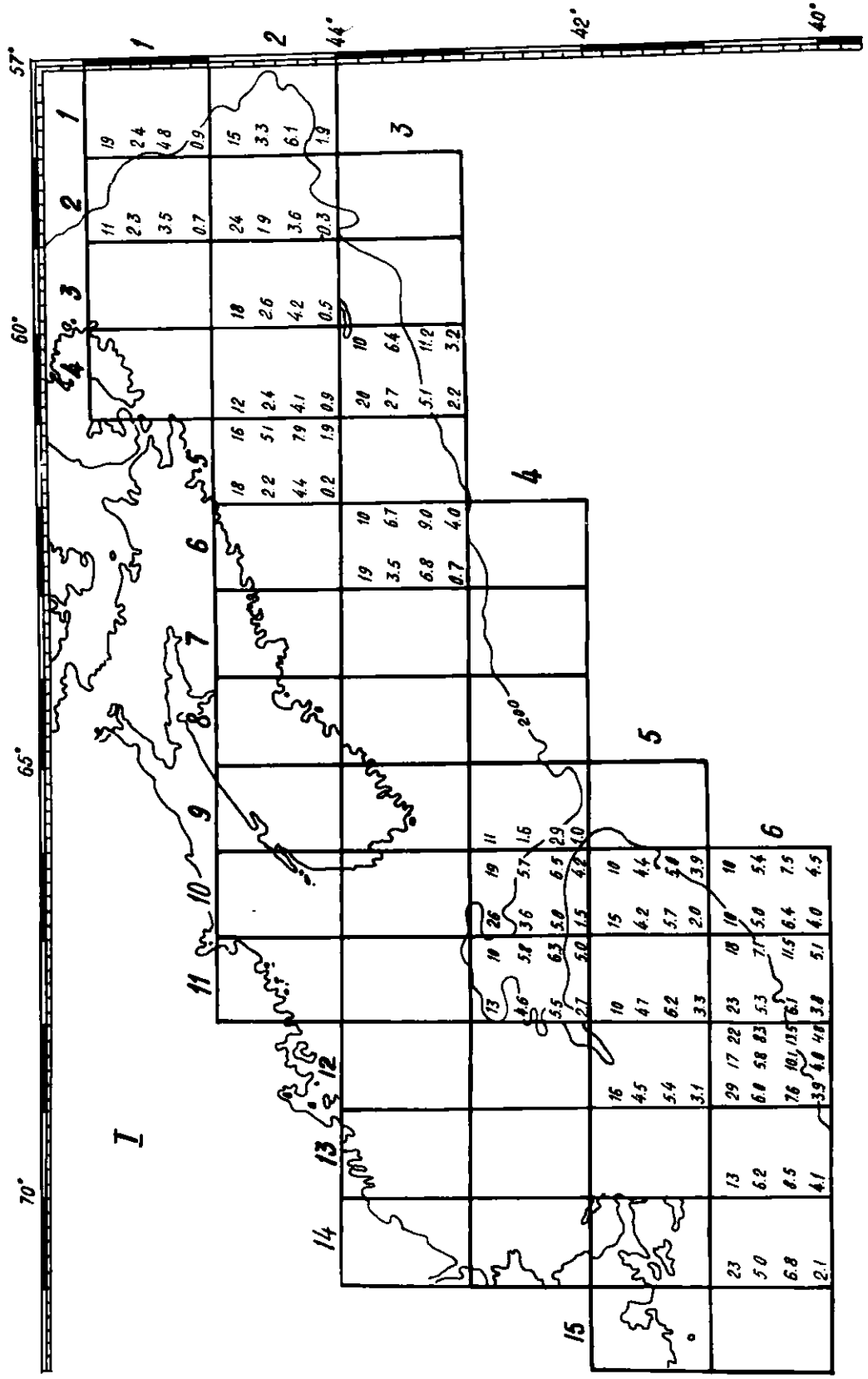

Chart I. Average maximum and minimum water temperatures of the inshore, Labrador and bottom water masses over one degree squares of the Nova Scotia and Georges Bank areas in January. (For further explanation, see text.)

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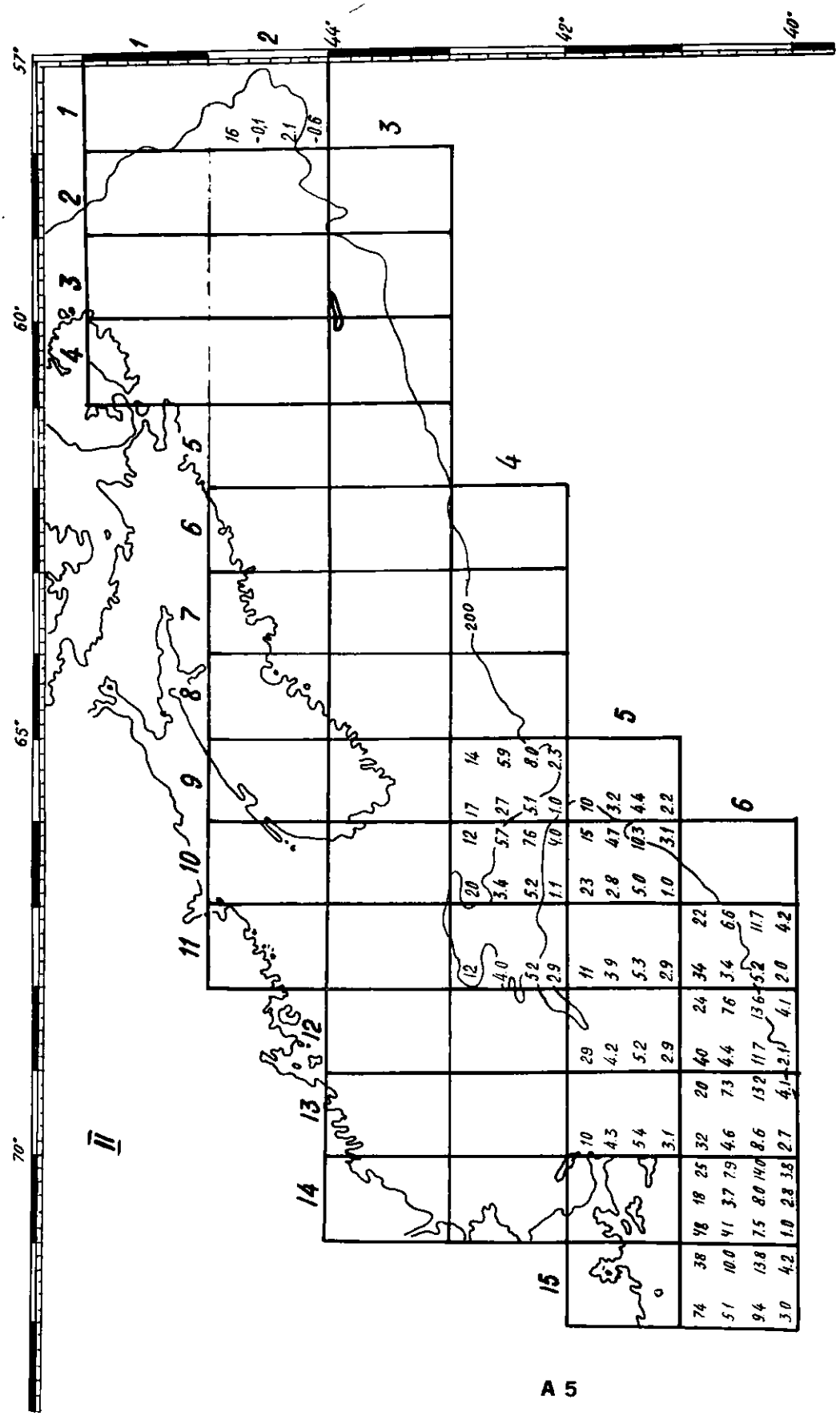

Chart II. Average maximum and minimum water temperatures of the inshore, Labrador and bottom water masses over one degree squares of the Nova Scotia and Georges Bank areas in February. (For further explanation, see text.)

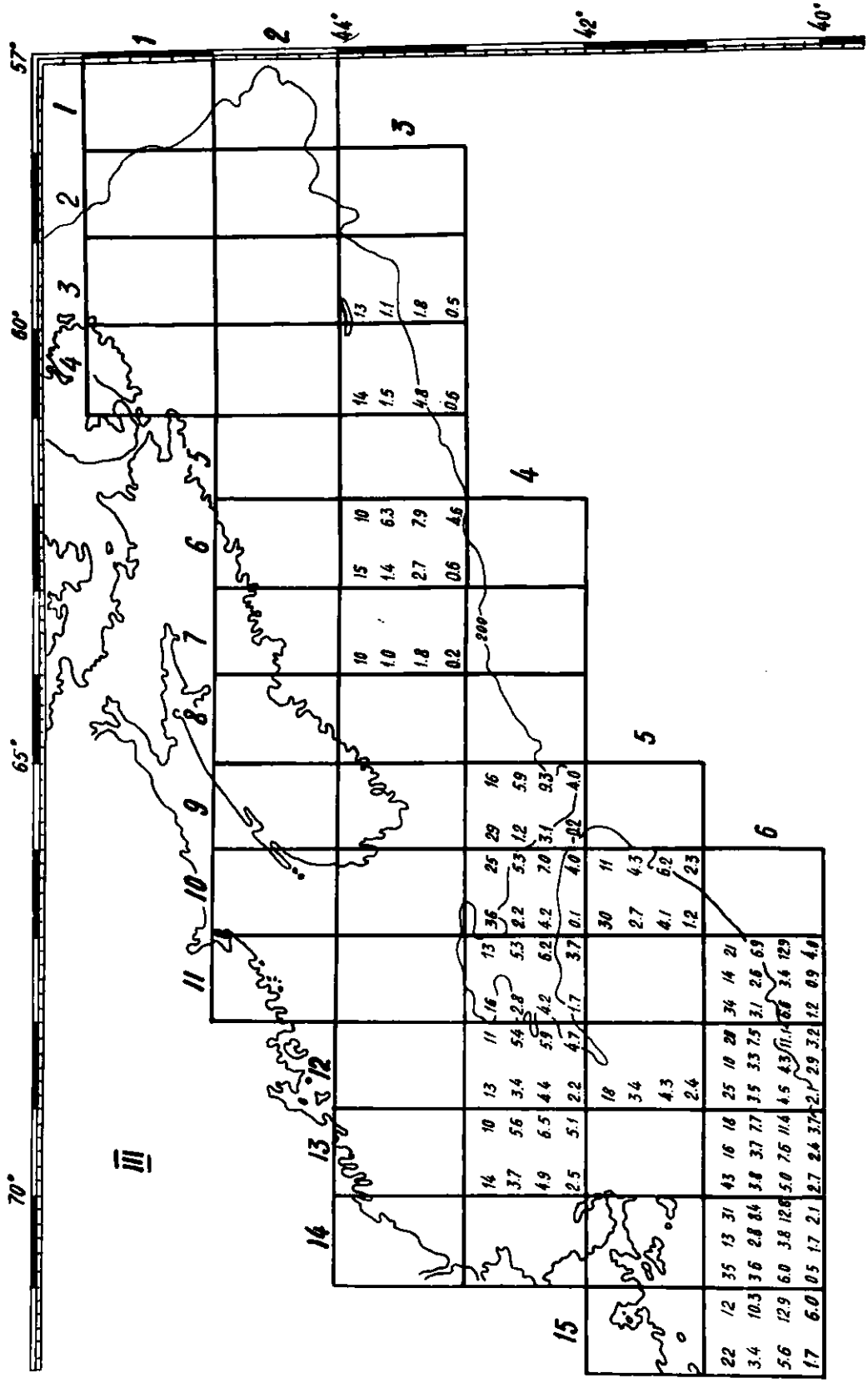

Chart III. Average maximum and minimum water temperatures of the inshore, Labrador and bottom water masses over one degree squares of the Nova Scotia and Georges Bank areas in March. (For further explanation, see text.)

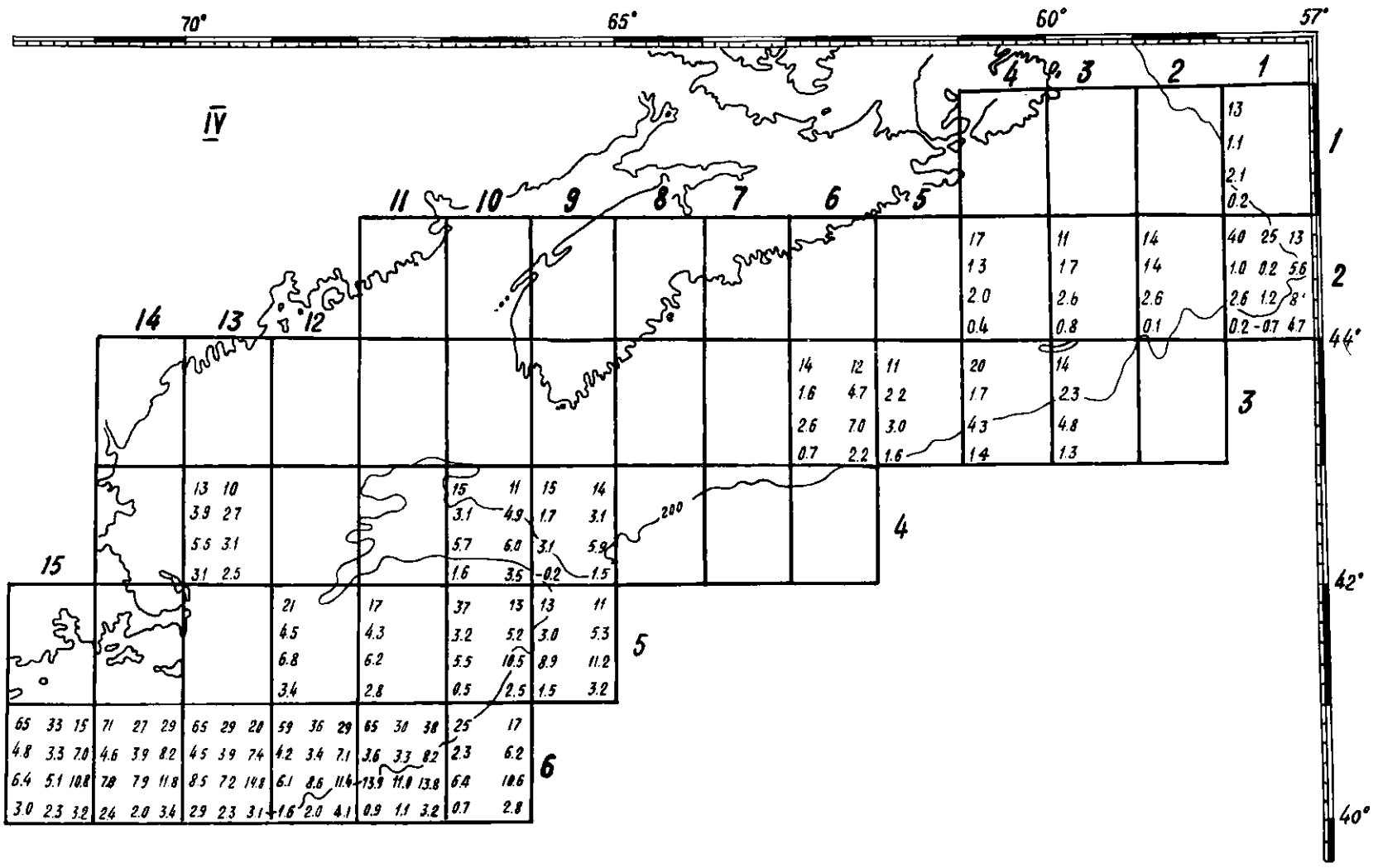

Chart IV. Average maximum and minimum water temperatures of the inshore, Labrador and bottom water masses over one degree squares of the Nova Scotia and Georges Bank areas in April. (For further explanation, see text.)

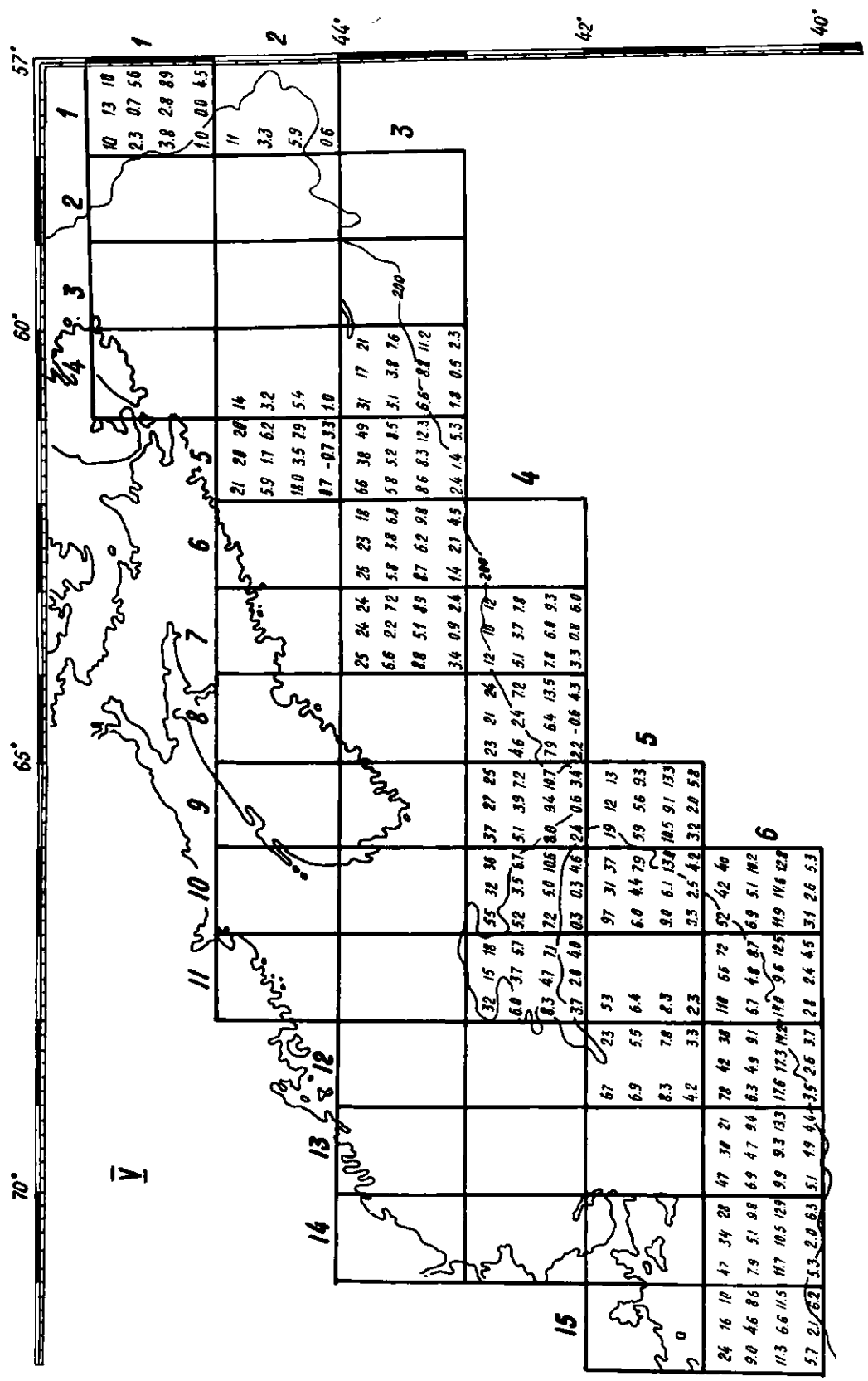

Chart V. Average maximum and minimum water temperatures of the inshore, Labrador and bottom water masses over one degree squares of the Nova Scotia and Georges Bank areas in May.
(For further explanation, see text.)

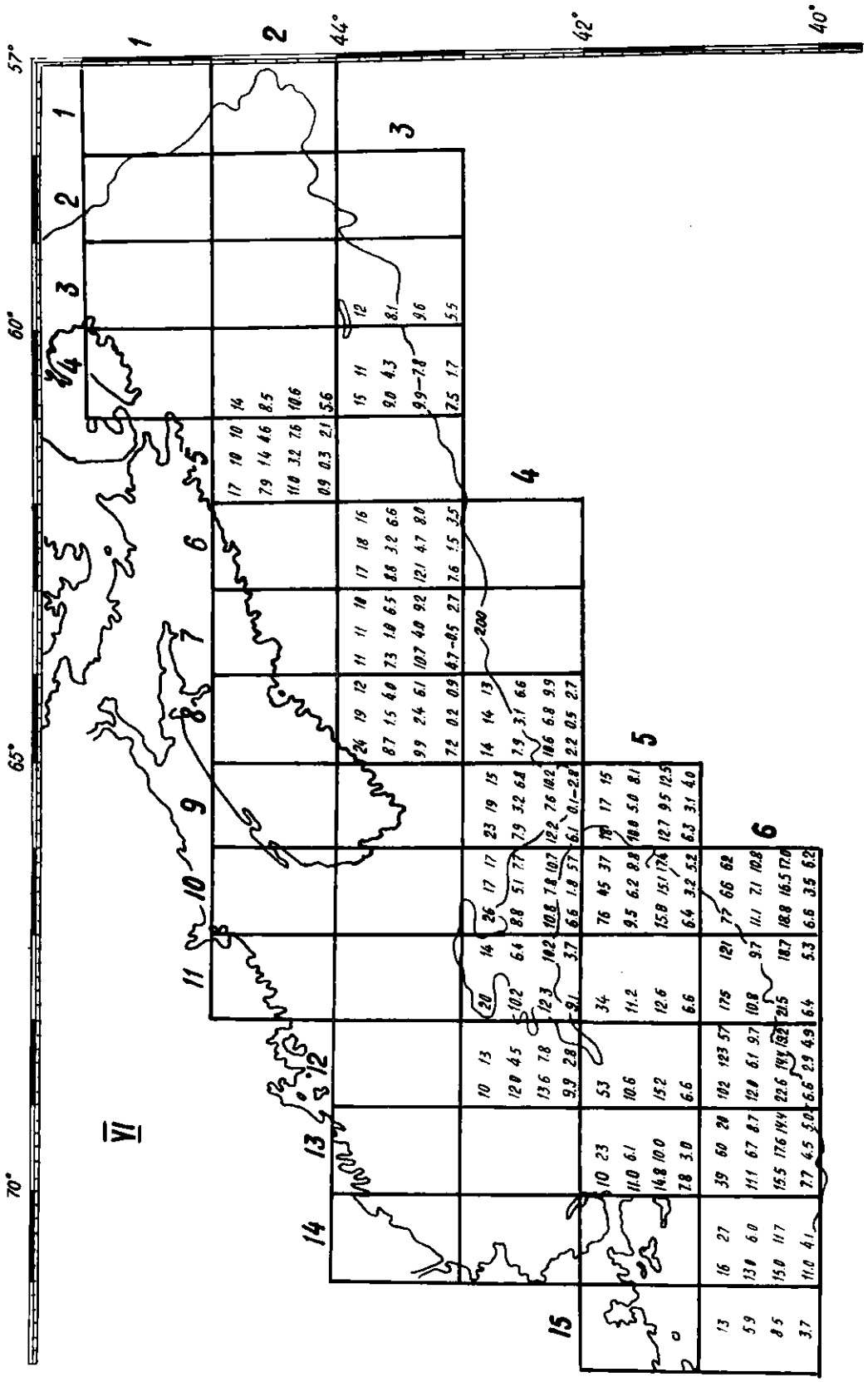

Chart VI. Average maximum and minimum water temperatures of the inshore, Labrador and bottom water masses over one degree squares of the Nova Scotia and Georges Bank areas in June. (For further explanation, see text.)

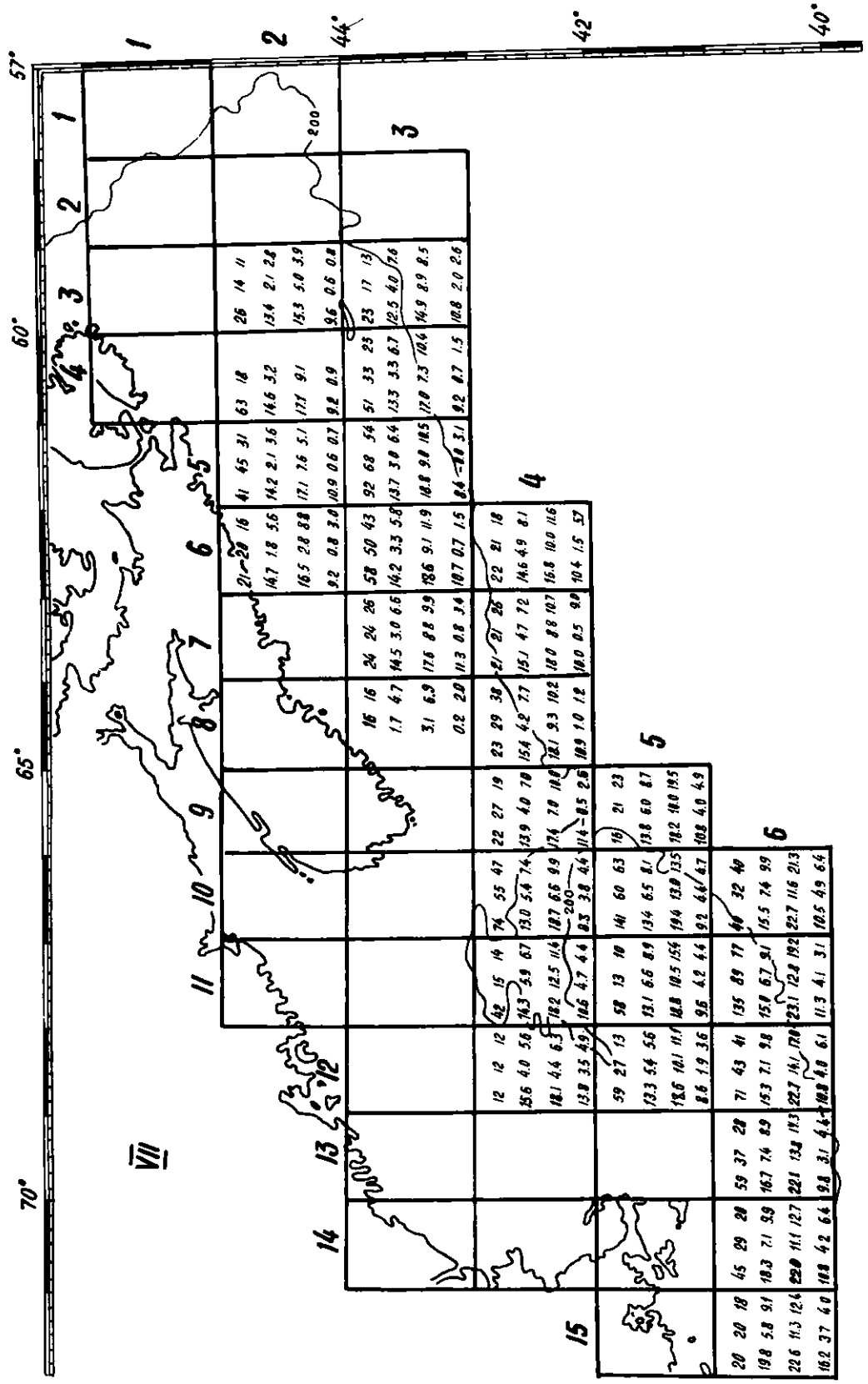

Chart VII. Average maximum and minimum water temperatures of the inshore, Labrador and bottom water masses over one degree squares of the Nova Scotia and Georges Bank areas in July. (For further explanation, see text.)

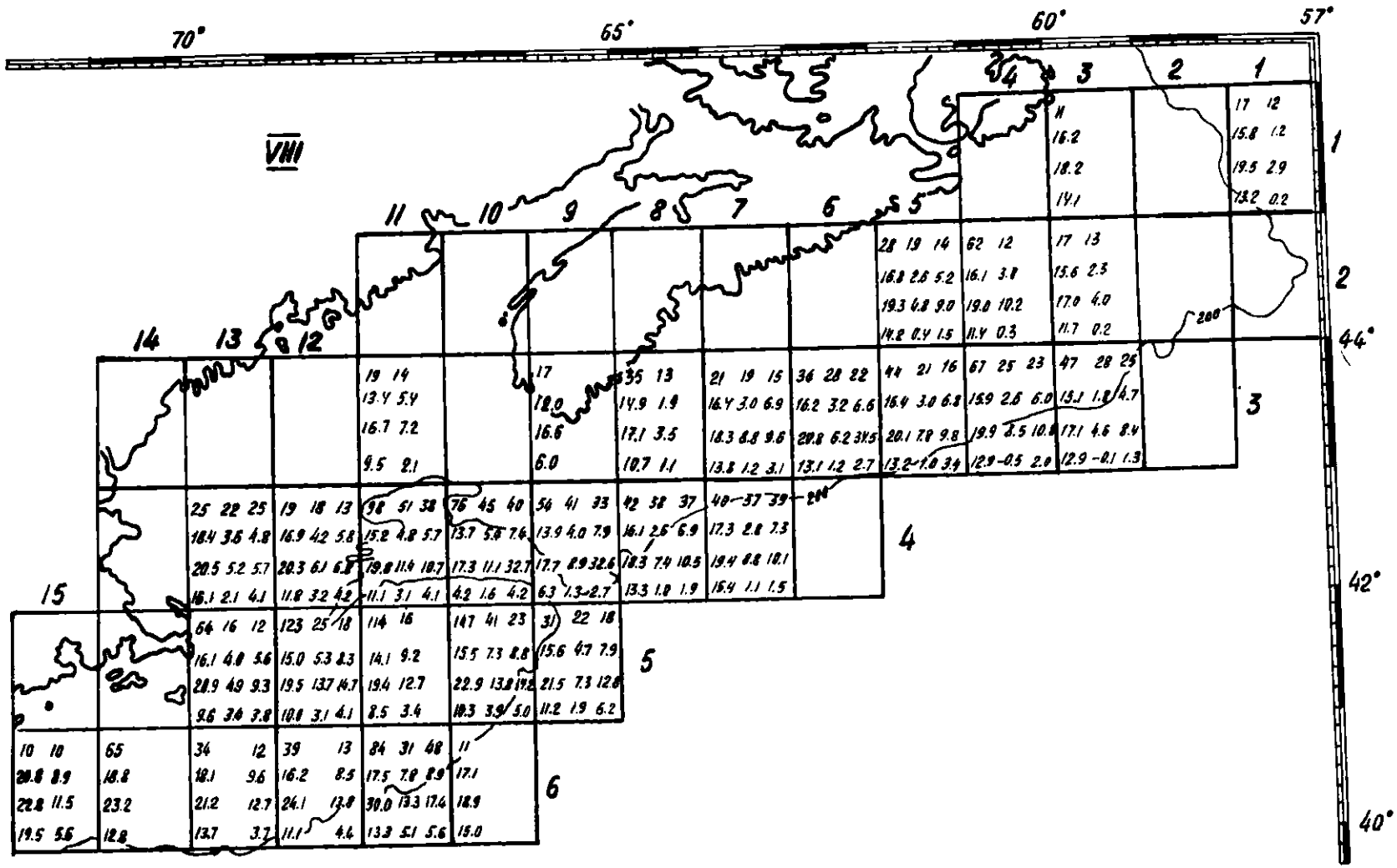

Chart VIII. Average maximum and minimum water temperatures of the inshore, Labrador and bottom water masses over one degree squares of the Nova Scotia and Goerges Bank areas in August. (For further explanation, see text.)

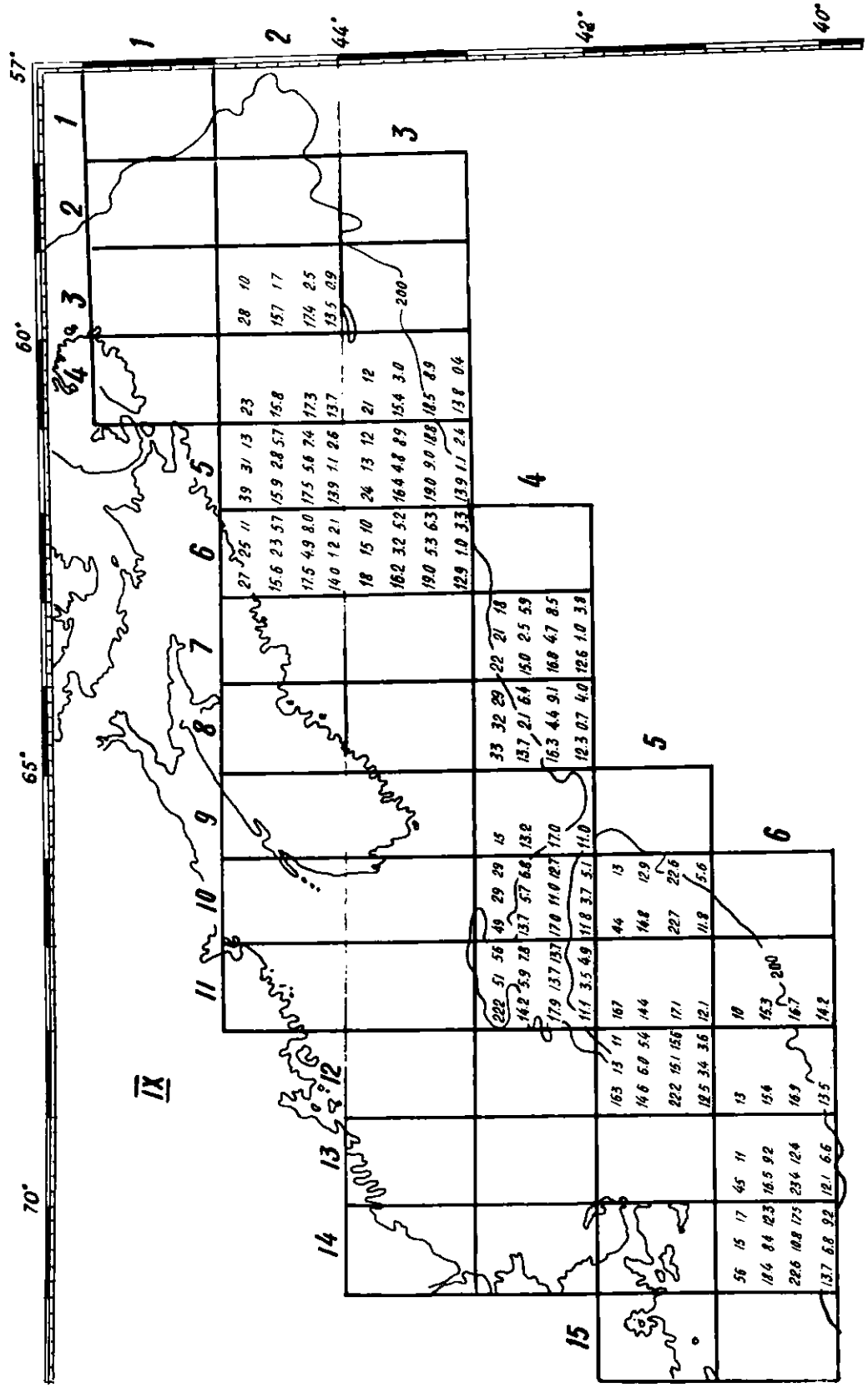

Chart IX. Average maximum and minimum water temperatures of the inshore, Labrador and bottom water masses over one degree squares of the Nova Scotia and Georges Bank areas in September. (For further explanation, see text.)

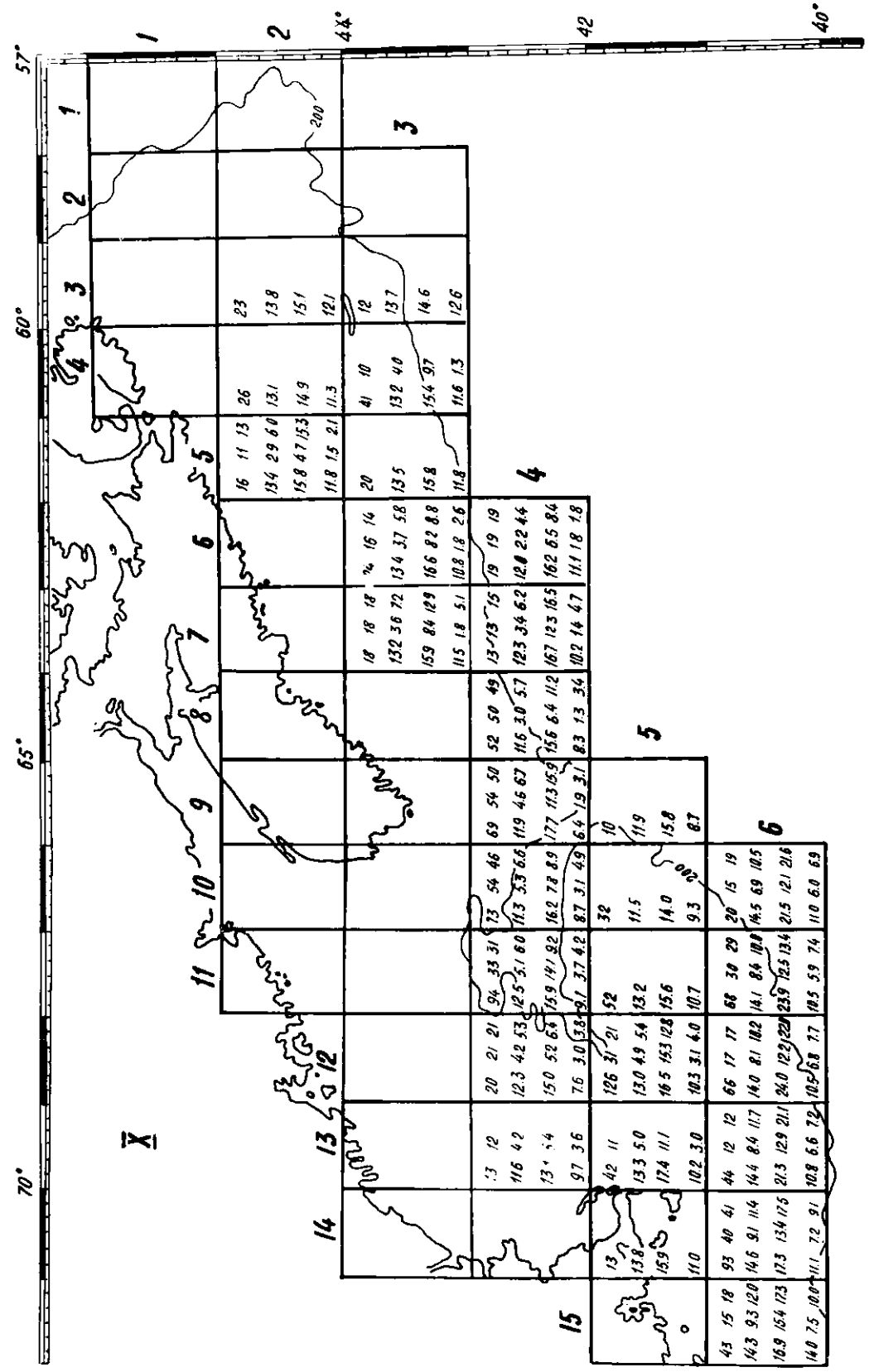

Chart X. Average maximum and minimum water temperatures of the inshore, Labrador and bottom water masses over one degree squares of the Nova Scotia and Georges Bank areas in October. (For further explanation, see text.)

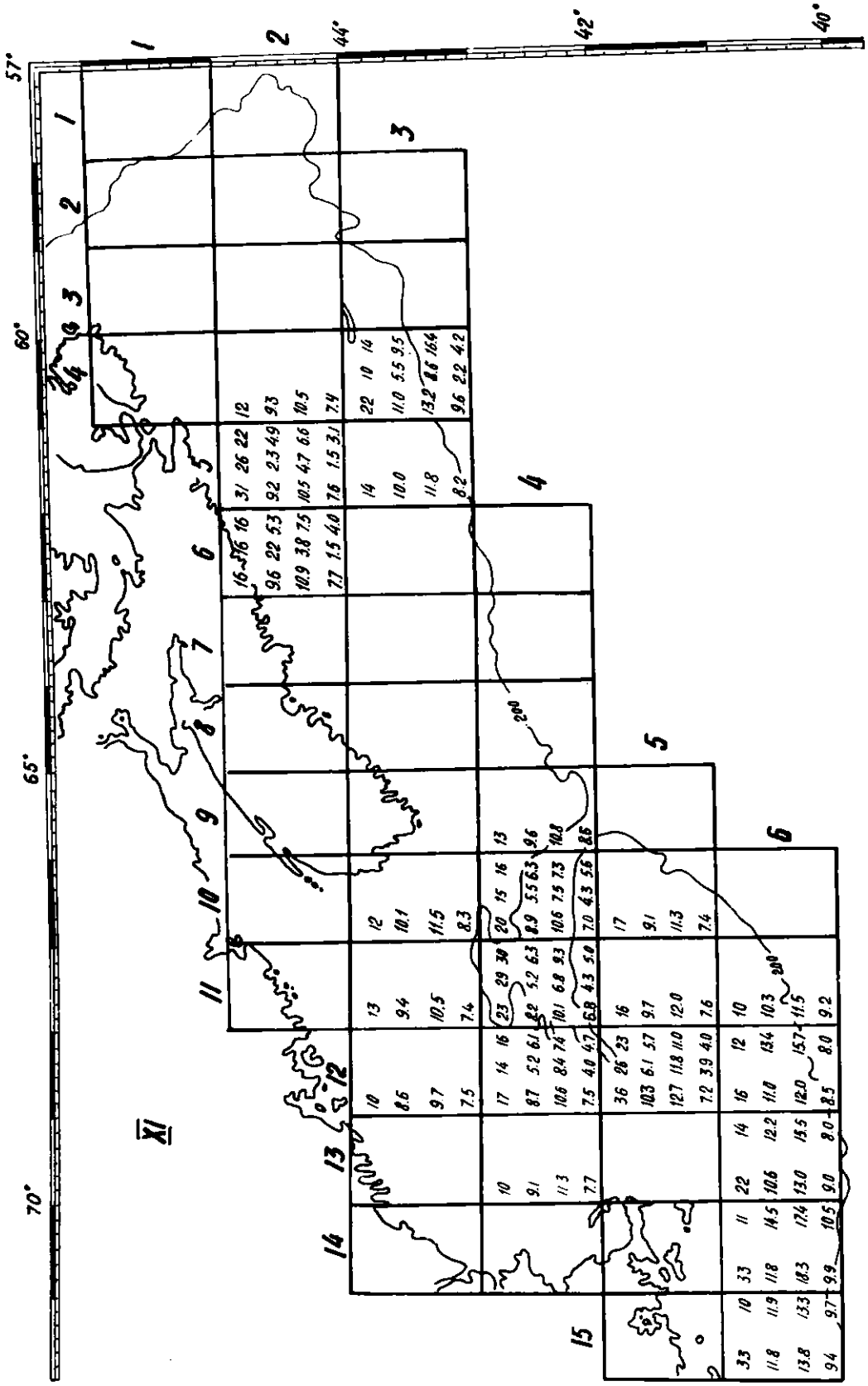

Chart XI. Average maximum and minimum water temperatures of the inshore, Labrador and bottom water masses over one degree squares of the Nova Scotia and Georges Bank areas in November. (For further explanation, see text.)

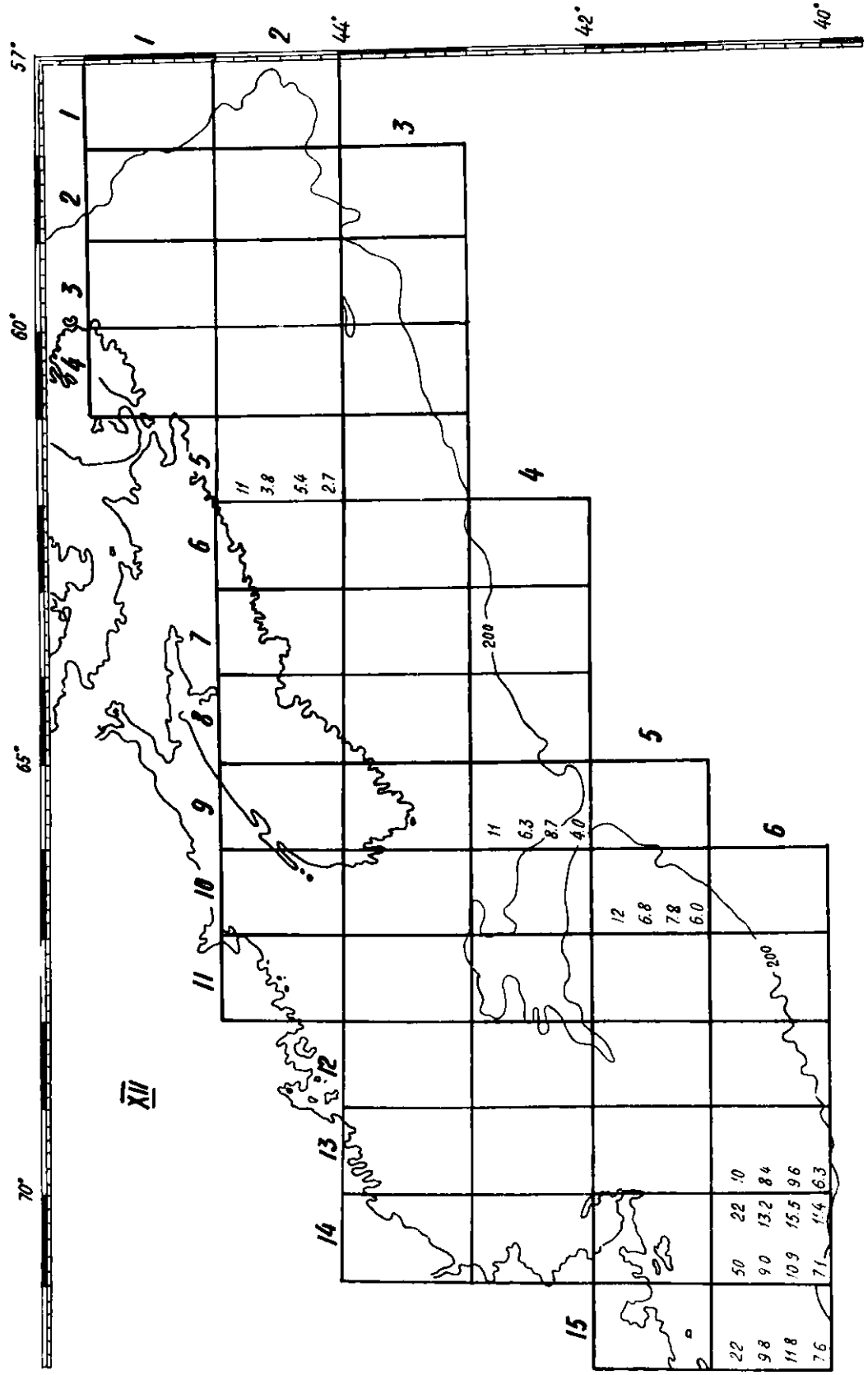

Chart XII. Average maximum and minimum water temperatures of the inshore, Labrador and bottom water masses over one degree squares of the Nova Scotia and Georges Bank areas in December. (For further explanation, see text.)