

## EXTRACTS AND REVIEWS OF BOOKS.

### EXPEDITION IN THE ICEBREAKER "SEDOV" IN 1934.

by

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(Extract from the *Bulletin of the Arctic Institute*, Leningrad, No. 10, 1934, p. 354). (\*)

The Chief Administration of the Northern Sea Route organised an expedition in 1934, on board the icebreaker *Sedov*, for the purpose of a thorough exploration of the northern and north-eastern parts of the Kara Sea.

The Arctic Institute and the Chief Administration of the Northern Sea Route had been jointly charged with the material organisation of the expedition. The chief objective of the latter was to be the carrying out of hydrographic surveys and hydrological research in the least known zone of the Kara Sea.

On 19th July the *Sedov* proceeded from Archangel and on 24th July she arrived at Cape Zhelaniya in Novaya Zemlya, where she landed provisions and a motor boat. Setting an easterly course, considerable depths were found (down to 520 m. - 284 fms.). This cavity represents, as it were, the prolongation of a large, deep trough, located east of Franz Josef Land and connected with the geological structure of the northern part of Novaya Zemlya. Heading for Wiese Island, the *Sedov* fell in with the edge of the ice only a few miles from Cape Zhelaniya. Having done the hydrological work at this place, the expedition entered upon its principal task, the work in the northern part of the Kara Sea. It was especially important to determine precisely the size and the boundaries of a shoal on which the icebreaker *Taimyr* had come to grief in 1932. This task was successfully accomplished. To the eastward of Wiese Island, the general location of the shoals was determined, extending along the azimuth  $105^{\circ}$  to the meridian of  $85^{\circ}36'$ . There, impassable ice, 10 points (†) in thickness, was encountered. On 3rd August, any further advance to the east having proved impossible, the reverse tack to the westward was effected, 5 to 25 miles from the outward tack. The shoals have depths of 14 to 50 metres (7.7 to 27.3 fms.) and are characterised by an accumulation of *stamukhi* and heavy ice fields. It was there that the great "ice island", with a perimeter of about 30 kilometres (16  $\frac{1}{4}$  nautical miles) was discovered. It presented an accumulation of an enormous quantity of heaped-up blocks of ice. Astronomical determinations on its southern barrier gave the following geographical co-ordinates :

$$\varphi = 79^{\circ}14.5' \text{ N.}, \quad \lambda = 79^{\circ}34.0' \text{ E.}$$

West and north-west of Wiese Island, at a distance of 75 miles, a cavity was detected with depths of 500 to 600 metres (273 to 328 fathoms).

A series of shoals was also found between Uiedinenie (Lonely) and Brusevitz Islands. We must also mention the depression off Cape Opasnyi (Danger Cape), on the east coast of Novaya Zemlya, which is possibly the prolongation of the supposed Sound of Novaya Zemlya, lying yet under the ice. Altogether 980 soundings were taken.

A topographical survey of Wiese Island proved the island to be much larger than has hitherto been supposed, and that it must be moved 10 miles to the N.N.W. on the chart. A wooden mark was set up on the south-west coast of the island, the geographical co-ordinates of which are  $\varphi = 79^{\circ}29.0' \pm 0.05' \text{ N.}$ ,  $\lambda = 76^{\circ}52.6' \pm 0.25' \text{ E.}$  The configuration and dimensions of Lonely Island were determined by a topographical survey. The co-ordinates of the cairn, erected in 1933 by the *Chelyuskin*, are  $\varphi = 77^{\circ}29.4' \text{ N.}$ ,  $\lambda = 82^{\circ}14.8' \text{ E.}$  The astronomical calculations are of course of a preliminary nature.

The island shown 40 miles to the eastward of Lonely Island does not exist; nor does the rock west of that island.

(\*) *Original text in Russian.*

(†) *According to scale giving ice navigation conditions from 0 to 10.*

Magnetic observations revealed an anomalous declination zone of  $36^{\circ}$  to  $32^{\circ}$  in the region of both islands. Determination of the magnetic elements at various points on the stationary ice, or when drifting slowly, enabled the zone of magnetic observations to be considerably extended. A series of symmetrically placed points was thus obtained, enabling a more accurate chart of the magnetic elements of the unexplored portion of the Kara Sea to be constructed. The great variations in the intensity of the horizontal component of the earth's magnetism account for the considerable perturbations of the variation of the compass. In all, 13 observations were made at 8 stations.

Hydrological observations were made at 105 deep-water stations, two of which were of 48 hours' duration. In the district of shoal depths, i.e. the central and northern parts of the Kara Sea, the temperatures in all the layers of water were very low, approximately  $2^{\circ}$  lower than those taken in 1932. At the stations north-west of Wiese Island, in a deep depression, warm Atlantic water was detected in a layer of water bounded by the 100 and 300 metre contour lines, penetrating there from the polar basin. The highest temperature of this water was  $1.7^{\circ}$ . In the *Sedov's* laboratory analyses were made of salinity (1077), oxygen (618), phosphates (619) and alkalinity (680): in all, 2994 analyses.

The temperature and salinity of the surface layer were determined at 308 points. Two hundred floats were streamed for determining the ice-drift, and the tides at the islands were determined.

These investigations have enabled a dynamic chart of the Kara Sea to be plotted.

With regard to the floating sea ice, it must be said that both in the northern and north-eastern parts of the Kara Sea this year has been a very difficult one. The border of heavy pack-ice, 10 points in thickness, extended along the east coast of Franz Josef Land, eastwards to Novaya Zemlya and running to the southward some 50 or 60 miles from the Kamenev Islands. In the rest of the area, as far as the Arctic Institute Islands, the thickness of the ice was from 6 to 7 points, gradually thinning out towards the south.

Turning to the other kinds of work, the nature of the sea bottom was investigated. One hundred and seventeen monolithic fragments were recovered from the bottom and 120 other samples. Further, valuable material was collected on the distribution of boulders, pebbles and rubble at 50 points of the sea. The deepest parts of the sea are covered with a brown ooze of considerable thickness. As the Taimyr Peninsula is approached, the thickness of the brown ooze decreases greatly to give place to a greyish-green and green ooze.

Simultaneously with the observations on the ice sheet, the physical properties of the latter were studied, particularly its mechanical resistance, the salinity distribution (by the method of determining its electric conductivity) and the hard particles (by the method of photometric measurement by means of photo-elements). Altogether 938 determinations were made.

The cruise lasted in all 75 days; the distance covered during this time was 5,000 miles, of which 3,500 were entirely on the ice.

The icebreaker *Sedov* rescued the surveying ship *Tsirkul*, which was caught in the ice and which was extricated with great difficulty.

On 2nd October the *Sedov* returned to Archangel.

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## DAS OZEANOGRAPHISCHE BEOBACHTUNGSMATERIAL (SERIENMESSUNGEN) DES METEOR.

(RESULTS OF THE OCEANOGRAPHIC SERIAL OBSERVATIONS  
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collected and arranged by

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The publication of the observations of the German Atlantic Expedition in the *Meteor* continues; the International Hydrographic Bureau has received the second part of the fourth volume; it contains the results of the oceanographic serial observations made by the oceanographers of the expedition. The first part of the fourth volume described the