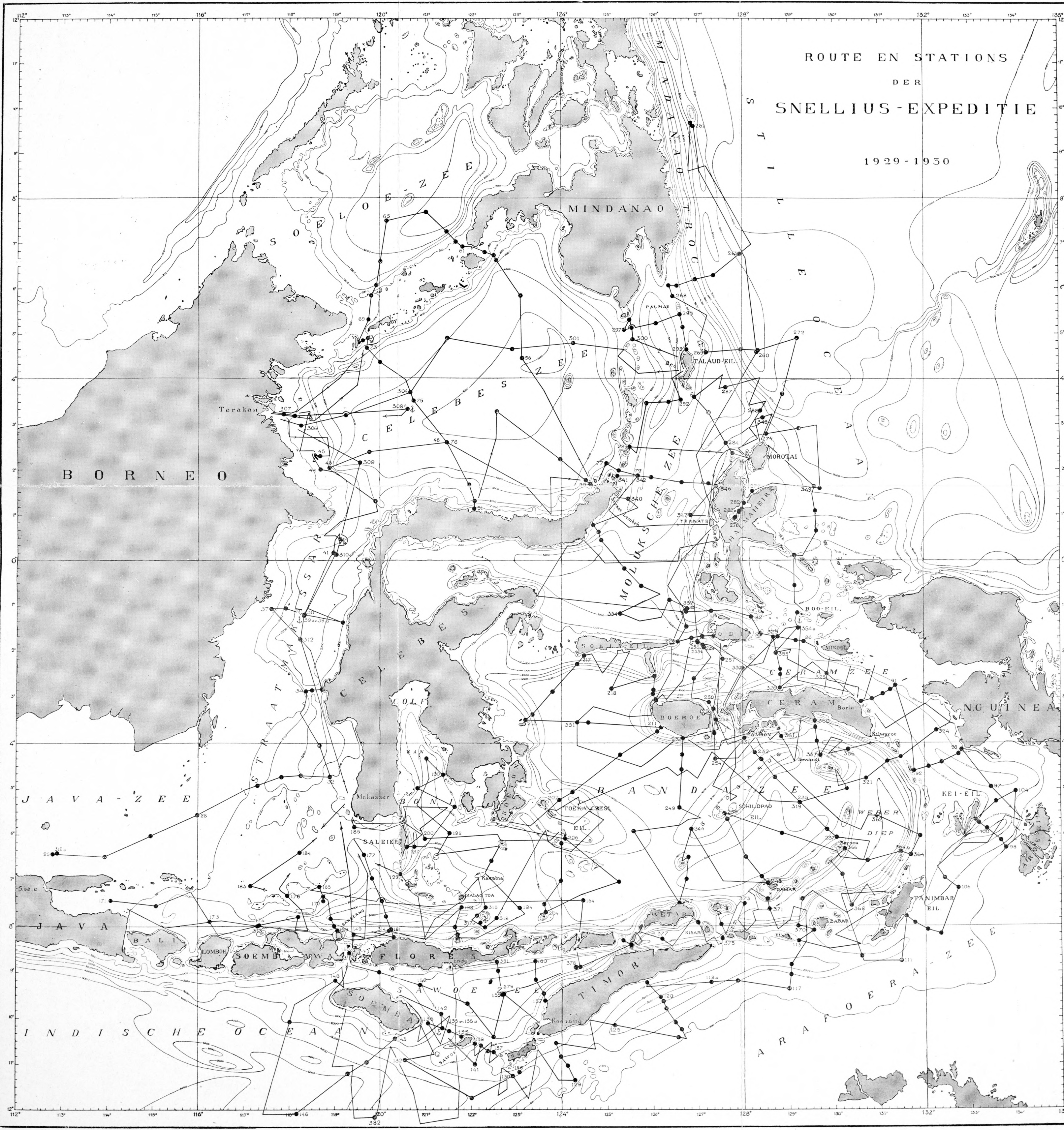


ROUTE EN STATIONS
DER
SNELLIUS-EXPEDITIE

1929-1930



EXPEDITION OF H.N.M.S. "WILLEBRORD SNELLIUS"

by

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In continuation of the article on pages 140 to 160 of the May 1930 number of this Review, which contained an account of the Expedition up to the end of 1929 (*), a short summary of the work done since 17th. December 1929 till the end on 15th. November 1930 is given below. A chart showing the whole of the track followed and all the stations made during the expedition accompanies this article. Several lines of soundings are omitted on this chart to make it more legible and the contour lines have not been corrected in accordance with the results of the Expedition.

At the end of the first article it was mentioned that H.N.M.S. *Snellius* had entered the Banda Sea in the middle of December on her way to Soerabaja; the ship arrived at this port on the 29th. of that month. In the meantime the exploration of the Flores Sea was commenced. Stations 164 to 170 inclusive were made and several islands belonging to the Paternoster and the Pos-tiljon Atolls, situated on the boundary of Makassar Strait, were examined from a geological and biological point of view.

At Soerabaja some repairs were undertaken; the sounding and winding gears were overhauled and the instruments were checked. On the 29th. January 1931 the *Snellius* again went to sea to complete the examination of the southern part of Makassar Strait, of the Flores Sea and of the Gulf of Boni (Stations 171 to 206 inclusive). A depth of more than 5000 m. was recorded in this sea; the contour line limiting this depth evidences a narrow trench (synclinal) of a length of 250 kms., but only 12 kms. wide.

It being expected that longer bottom samples would be obtained by leaving the glass cylinders out of the sounding tubes, as this would diminish friction, trials were carried out during this trip. These proved successful, for samples of 168 and 173 cms. were obtained, and these show very distinct stratification and colour variation. The same samples, taken with the original arrangement, measured only 43 and 64 cms. Later on a sample as long as 206 cms. was secured. The length of these samples leads to the conclusion that the layers of deposits in the basins of the East Indian Archipelago are thicker and that sedimentation is more rapid than in the oceans.

Among other islands in the Spermonde Archipelago near Makassar, Tanah Djampea to the South and Batoe Ata to the East of Saleier were visited.

In March and April extensive portions of the Banda Sea, the Ceram Sea and the Molucca Passage and adjacent straits were investigated, accompanied by geological and biological exploration of several of the surrounding islands

(*) On page 156, second line from the bottom, the following error in print should be corrected. The words "constant accidental errors" must be read: "constant and accidental errors".

(Stations 207 to 259 inclusive). This examination was continued in May and June over the adjacent part of the Pacific and the approaches from this ocean towards the Molucca Passage and the Celebes Sea. The deep basin in the Mindanao Trough was thoroughly examined (*see International Hydrographic Bulletin*, N^o XII, 1930, page 285) and during this examination, a sounding by wire of 10,030 m. was recorded; this sounding gave a bottom sample of red clay and a sample of bottom water together with a temperature (*). The observations at the station concerned (262) took 13 hours.

After having left the Mindanao Deep, H.N.M.S. *Snellius* proceeded to the East coast of Halmahera and examined the southern end of the Mindanao Trough (269-276). A special investigation was made in the remarkable Kaoe Bay, which has a depth of about 500 m. but is closed by a sill of 40 m. This prevents the supercession of water near the bottom of the bay, which was proved by an absence of oxygen and traces of sulphuretted hydrogen. The same phenomenon is observed in the Norwegian fjords and in the Black Sea. A second visit was made by the Geologist to Morotai; he, in company with the Biologist, also examined the island of Karakelong of the Talaud group.

At the end of June and the beginning of July the observations in the Celebes Sea were completed, and in so doing, the observations of the past year at some stations (297 and 301) were repeated in order to ascertain whether yearly differences existed. At station 308a the ship anchored in 5000 m. to make current observations.

H.N.M.S. *Snellius* proceeded through Makassar Strait, wherein also the observations were completed (Stations 309 to 312 inclusive), to Soerabaja for repairs; this place was reached in the middle of July. The unsatisfactory state of health of the crew made a fairly lengthy stay at this place necessary, during which all hands enjoyed a holiday in the hills. The engines were overhauled, the instruments checked and the emitters of the Atlas Echo-sounder, which were unduly worn, were renewed.

On 13th. August the ship left Soerabaja again and, passing through the Flores Sea, the observations at some stations, North of the Little Soenda Islands, were repeated in order to ascertain the difference between the properties of the seawater during the East and West Monsoons. At station 317a the ship anchored in 2500 m. for current observations and to compare the observed currents with those computed indirectly from observations made immediately afterwards at stations in the neighbourhood. Thereafter the investigation of the Banda Sea and the Ceram Sea was carried out (Stations 319 to 330 inclusive). Then steering through the Molucca Passage, some transverse profiles were made to finish the examination in this area and, passing round Morotai, some supplementary stations were made, concluding with a lengthwise profile East of Halmahera from the Pacific into the Ceram Sea (349 to 355).

In the end of October the WEBER Deep, between the two Banda Arches, was investigated and during this, at Station 362, a depth of 7300 m. was

(*) The thermometers had successfully resisted a pressure of more than 1000 atmospheres, for which compliments are due to the makers, the firm of RICHTER and WIESE of Berlin.

recorded. Current observations were made at anchor on the steep East slope of this Deep in a depth of 4400 m. The ship, working Southward, proceeded through Ombai Strait to the Savoe Sea, making some supplementary stations and some others for checking purposes (Stations 367 to 381 inclusive). Before finishing the expedition, a thorough investigation was made of the area between the long trough South of the Soenda Islands and that Southeast of Timor, in order to ascertain whether these two are connected or not. This was found to be the case.

On 12th. November this investigation was finished. The *Snellius* thereupon returned to Soerabaja and here the Expedition came to an end.

It may be said that the main lines of the original plan have been followed. During the 16 months of its duration the Expedition covered a distance of 33,700 sm; 32,451 echo-soundings were taken and thus the number of known depths outside of the 200 m. contour line has been increased tenfold; at 371 stations complete observations have been made and 282 bottom samples gathered. At eight places, in depths up to 5000 m., the ship anchored to observe the current in different layers. At nearly every station surface plankton was collected and, very often, organisms from the lower layers also, when under way. On several reefs corals and marine animals have been collected, both from the surface and from the slopes. A great many islands, in addition to those mentioned, have been visited for geological investigation. Undoubtedly the Expedition has been a great success and its outcome will greatly further, not only the growing knowledge of oceanography in general and, more particularly, that of the remarkable basins visited, but also the knowledge of the geological structure of the Eastern Part of the Netherlands Indian Archipelago.

