

Chapter II deals with the movement of the Atlantic waters. The author will not admit that the current issuing from the Florida Straits continues beyond the 40th degree of longitude West. To characterise the movement of the waters in the eastern and northern part of the Atlantic, he has proposed the name of "transgression", which he defines as follows:-

"A periodic movement of varied amplitude on the part of the Atlantic waters of tropical origin, entailing a momentary encroachment of these waters into the waters of polar origin and particularly into the continental waters. The waters of the transgressive mass have always a salinity over 35 ‰."

He shows, in fact, by a comprehensive study, given in detail in chapter III, what are the characteristics of the waters of these regions with regard to density and temperature, and what seasonal variations are noted there. These Atlantic waters of tropical origin extend in summer, at the moment of their greatest extension, between Iceland and Scotland as far as Spitsbergen; in winter they go no further, at the moment of their maximum withdrawal, than the sill joining Scotland and Iceland.

The explanation given of these phenomena is based on more questionable theories. M. LE DANOIS attributes the transgressions and their periodicity to the attraction of the moon, and claims to find many complex periodicities in the movement of this body; and, to explain the discrepancies which he nevertheless meets with, he falls back on the periodical variation of the earth's magnetism and the displacement in latitude of sun-spots. It would seem simpler, to understand this annual seesaw of the Atlantic waters from one hemisphere to the other, to see in it the influence of the variations of the sun's declination and the manifold actions of that body on atmospheric conditions, which also have periods of an order analogous to those which have been found in the case of the transgressions.

One does indeed recognize, as the author says, the various lunar periods in the periodicities of the mean level of the sea, but one fails to see how this movement of the mean level can be connected with the transgressions either in the rôle of cause or of effect. Neither can one follow how the force of the earth's rotation can "provoke currents"; its action seems to be limited to changing their direction. Must we then abandon the name of "Gulf Stream" for the water movements of this part of the Atlantic? Let us quote in this respect the opinion of Mr. C. VALLAUX in his *Géographie Générale des Mers* :

"It is evident that these waters of the Atlantic are not forced forward by the waters of the Florida Current. They represent a phenomenon of another order, with its own variations and laws. But it is no less evident that there is connection and continuity between the two phenomena."

This continuity follows even from the representation of the transgressions given by M. LE DANOIS which is reproduced in *The Hydrographic Review*, Vol. XI, No. 2, Nov. 1934, p. 177, fig. 4. It is well indicated also opposite p. 178 of the same Review, where there is a reproduction of the chart of the surface currents of the Atlantic drawn for the month of August by O. H. FELBER. Nevertheless, some oceanographers have already suggested different names for the various branches of this current; the name of "transgressions" may appear to be the most suitable for the phenomenon of this part of the Atlantic, but to justify it, it will be necessary for the causes of the phenomenon to have been more completely elucidated.

P. V.

## CURRENT TABLES, STRAITS OF MALACCA AND JAVA SEA, 1935.

Published by the *Hoofdkantoor van Scheepvaart* (Head Office of Navigation),  
Marine Department, Batavia (Centrum), Price Fl. 1.

(Extract from *De Zee*, Den Helder, No. 3, March 1935, page 154) (\*).

These current tables are based on current observations carried out in the years 1932-1934 by the surveying vessel *Orion*. From these observations, tidal-stream constants were computed, besides the constant current which prevailed locally during the period of observations; both are given on page 1 of the publication.

(\*) *Original text in Dutch.*

The observations were made at eleven stations, viz. off the Een Vadembank (One Fathom Bank) and the Longbank, in Malacca Strait, Doerian Strait, Berhala Strait, Singapore Strait, Riouw Strait (northern part and south entrance), eastward of P. Djang (Lingga Archipelago), off P. Toedjoe (northward of Banka), in Banka Strait, off Amelia Bank and Nemesis Bank. The times of slack water and the times and strengths of the maximum current are given for these places, and for each day of the year, in eleven tables. The *constant current* to be expected is shown as "correction" at the top of each table. The direction of the current is indicated at the top of each page.

This publication merits attention and will doubtless be welcomed by shipping circles as a valuable addition to the *Zeemansgids voor Nederlandsch Oost-Indië* (Sailing Directions for the Netherlands East Indies). For this particular *Zeemansgids* is far from being complete as regards current data, owing to the fact that the opportunity had never before arisen of carrying out systematic observations at so many places in the straits over so long a period. In this connection homage must be rendered to both the Commanding Officer of the *Orion*, Mr. P.A.C.T. KNIJFF, Director of the Government Navy, who made the observations and worked them out in such a conscientious manner, and the *Hoofdkantoor van Scheepvaart* which lent its support to the undertaking and arranged for this publication.

On the route given, i. e. the busiest route of the Netherlands East Indies, the currents are not as a rule very strong; it is but seldom (for instance in Riouw Strait) that the sum of tidal stream plus constant current exceeds three knots. The tidal stream is mixed at all stations, of prevailing semi-diurnal character in Malacca Strait and prevailing diurnal character in most of the other straits. Consequently the aspect of the current is very capricious; all the more, for this reason, the current tables should be systematically consulted. This apparently capricious regime is evident on glancing at the tables. If the current is semi-diurnal, a notation is necessary every three hours, viz. slack water; three hours later, maximum current; three hours later, again slack water, and so on, so that each day is divided into 8 columns. During the period of prevailing diurnal tides, 4 to 5 columns only are filled in.

Mr. LUYMES, during his period of office, had already strongly advocated this type of tables (see *De Zee* of February 1934) and expressed his astonishment that the managers of shipping companies had apparently not yet completely realised the usefulness of such a publication. But opinions must be given time to evolve; the introduction of novelties takes time.

If the *Hoofdkantoor van Scheepvaart* does not abandon the experiment too soon (for this publication is, as a matter of fact, provisionally considered merely as an experiment), it is certain that these Current Tables will be used by the captain of every ship as a most welcome and valuable addition to the Sailing Directions. The booklet is very concise and clear. Each station occupies 6 pages (the whole booklet consists thus of 70 pages) on which all the current data are collated. The price of this collection of tables is one florin and there *should* therefore be no obstacle in this respect in the way of purchase. The undersigned wishes to stress particularly that directors of shipping companies and captains should acquire this publication and use it; they can but benefit therefrom. It may be procured, in Holland from Gebrs. van Cleef, Spui 28, 's-Gravenhage; in the East Indies from the distributors and the sub-agencies for the sale of charts and Sailing Directions in the various ports, and at Palembang. Any criticism of these tables will be gladly received.

HOOYKAAS.

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## DIRECTIONAL RADIO AS AN AID TO MARINE NAVIGATION.

(Extract from "Notes from the U.S. Bureau of Standards",

published in the *Journal of the Franklin Institute*, Philadelphia, March 1935, page 365).

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There are a number of applications of radio which make for safety in marine navigation. These include intercommunication among ships, the broadcasting of information such as weather reports, time signals, iceberg warnings, distress signals, and direction determination. The principal system for direction determination is the radio direction finder, used in conjunction with radiobeacons as installed on many lightvessels and light-