(1) These accurate records taken in quick succession have brought to light a considerable dispersion in the results and have shown that it is not sufficient to make a few observations at long intervals. The only thing of real value is a mean derived from a large number of isolated observations.

(2) Two current-meters set 19 metres apart have nearly always indicated different currents. A scrutiny of these differences enables the influence of the ship's movements to be eliminated. Those which remain after this correction have been resolved into two parts, one due to a slow oscillation (*langsame Schwankung*), the other to an instantaneous irregularity (*schnelle Unruhe*).

(3) The instantaneous irregularity arises from the rolling of the ship and increases with the roughness of the sea.

(4) The slow oscillation, expressed in hundredths of the current's velocity, may be resolved into a systematic deviation caused by the ship's hull and a pure dispersion (*reine Streuung*).

(5) The pure dispersion depends to a slight extent on the ship's position with respect to the current, to a greater extent on the velocity of the current, and to an inappreciable extent on the differences of the current at various depths.

Hence, in practice, currents (as well as temperature and salinity) should not be observed even at 10 metres depth from the side which is to leeward of the current.

(6) The pure dispersion, in the same way as the slow oscillation, depends in particular to a great extent on the mixing processes and may actually serve to measure their intensity.

P. V.

AGGREGATION OF STATIONARY CURRENT OVERFALLS IN THE WATERS OF NORTHWEST AFRICA.

by

ERNST RÖMER, DEUTSCHE SEEWARTE, HAMBURG.

(Extract from the *Annalen der Hydrographie und Maritimen Meteorologie*, Berlin, 15th January 1935, page 10.)

Dr. Ernst RÖMER of the Deutsche Seewarte has published in the *Annalen der Hydrographie und Maritimen Meteorologie* of 15th January 1935 a documentary article on the presence of overfalls in West African waters.

The conclusions of this interesting study are reproduced hereunder.

* * *

We have taken the continental shelf to be the principal cause of the current overfalls which occur during every month, firstly because the places where they occur lie in its immediate vicinity, and secondly because the general orientation of the overfalls mainly follows its outline.

The nature of the independent movements of the water which, combined with the influence of the shelf, give rise to this phenomenon, could not be determined. The question whether (and to what extent) the edge of the shelf, considered as a mechanical obstacle, is capable of causing the surface currents to follow to some extent the shape of its outline, must be left undecided.

It would appear, however, that the part taken by the configuration of the bottom is clearly shown by the 20-metre line, for, where this approaches closest to the 200-metre edge and runs parallel to it — between 11° 40' and 10° 35' N. — the greatest number of overfalls is found.

Upwelling water from the deeps can be assumed to be a generating process of overfalls, but the scarcity of data makes this uncertain. Isolated observations taken far to the Southward suggest that overfalls may be formed without the occurrence of upward-moving water.

The specific movements which the overfalls sometimes execute remain unexplained, as also does the behaviour of the temperature of the water before, during and after the overfalls. It would seem, therefore, that it is necessary to collate extensive data and to carry out systematic observations in order to elucidate such stationary processes.

ON THE USE OF YELLOW-TINTED GLASSES IN THE DESIGN OF MARITIME OR AVIATION LIGHTHOUSES.

(From à note by Mr. ANDRÉ BLONDEL, in the *Comptes Rendus de l'Académie des Sciences*, Paris, No. 17, 22 Oct. 1934).

It is noteworthy that the colouring of white lights, which were formerly produced solely by petroleum oil lamps with one or several concentric wicks yielding a somewhat yellowish light, has been greatly altered by improvements in the modern lighting agents which have nearly everywhere replaced them, viz. AUER mantles made incandescent by gas or petroleum oil vapour, acetylene flares, gas-filled electric filament bulbs and arc lamps; in this manner the proportion of more refrangible to less refrangible rays in the beam of light from the lighthouses has been greatly augmented. It will be opportune to consider the advantages and disadvantages liable to be experienced as a result.

It must moreover be noted that the question affects maritime lighthouses in an appreciably different manner from motor-car headlights.

At great distances the reflexion of the light on mist or on the particles of moisture in the atmosphere, which is very troublesome for the observer in the case of a motor-car, is, on the contrary, favourable for the appreciation of lights by the navigator; for the beams from the lighthouse in slightly hazy weather are thus materialised near the lighthouse and are visible at a great distance; even when the weather is fairly clear, they serve to mark the position of a lighthouse when a direct view of the light is impeded by the curvature of the sea.

But at short distances the white beams are blinding and have quite often given rise to objections from fishermen or coasters when they emanate from low lights and the natural divergence of the beams is such that they meet the sea at a short distance.

In such cases the dazzling effect might be greatly reduced by filtering the light from the illuminant in use, by sheets or by a sleeve (less expensive) of a glass which will absorb the violet and ultra-violet rays, these being the most injurious and being incapable of improving the visibility even at great distances.

With regard to low-lying, more or less short-range harbour lights, the visibility of which depends solely on direct vision, a further step may be made in this direction by filtering the light as in motor-cars, through glasses of a more or less marked yellow tint, provided there is no risk of this tint turning to red by absorption in mist, like that of petroleum oil lamps. Actually, thanks to recent progress in the technique of coloured glass, it is possible nowadays to produce yellow glasses which cut out the wave lengths fairly sharply from a certain limit onwards, this limit, according to the glasses used, being 3500, 4000, 4250, 4750 or 5000 angströms. The selenium-cadmium glasses now used for motor-car headlights, which cut out at 4750 or 5000 angströms, according to whether of the light or the dark type, have a so-called amber colouring which would be suitable for very short-range lights. For the remainder it would be well to take 4750 or 4500 angströms as limit; thus the "canary yellow" colours are obtained.

The only objection that might be raised against yellow glasses is relative to the losses to which they give rise and which are of two kinds: on the one hand, reflexion on the entry and exit surfaces, say altogether about 9 per cent irrecoverable at great distances owing to the aberration of the reflected rays; on the other hand, global absorp-