red lights because there is not time to discover them at long range (for they are only visible on the fovea and are hard to locate); green ones because, although easy to discover, they appear colourless when seen at long range and thus hardly different from white lights. Coloured lights, either fixed or with very closely spaced flashes, or broken by short occultations, can be accepted. But in any case, the diversity of coloured glasses used in tubular, chimney or pane shape makes it necessary to establish a norm to enable the conditions of visibility to be foreseen and, if possible, the range of coloured lights to be increased, notably with the aid of selenium glass. The standards adopted for purposes of comparison must be defined by a spectro-photometric curve, and must also be studied experimentally from the point of view of the visibility of the coloration.

Comparison between points of light coloured by different standard glasses and white points must be made at the limit of the range of visibility in grey tones, which gives a measurement of the liminal coefficient of transparency of each glass, and at the limit of distinguishability of the colour, which allows the chromatic transparency to be defined besides a photochromatic ratio giving a relative figure for the saturation. Those are the three characteristics of coloured glasses in the visual appreciation of points of light.

The same tests must be repeated in a thick atmosphere.

These important questions are now the subject of new investigations which will soon lead to useful conclusions. The sums which can be devoted to light signals in every sphere, notably in that of aeronautics, are necessarily limited; it is essential to have accurate figures capable of guiding engineers and authorities responsible for light signals either for short range or more especially for long range purposes. Lights of the latter category which use enormous quantities of energy are sometimes so expensive that it has been necessary to light them only when specially requested. It is essential to attain a technical and economical performance such that the lighting may be, on the contrary, more extensive and always ready to give information to any airman who may turn up.

I RISULTATI DELLA CROCIERA GRAVIMETRICA DEL R. SOMMERGIBILE "VETTOR PISANI" E LA GRAVITA IN ITALIA

(THE RESULTS OF THE GRAVIMETRIC CRUISE OF THE SUBMARINE *VETTOR PISANI*, AND GRAVITY IN ITALY).

In a lecture reproduced in the *Atti della Società Italiana per il progresso delle Scienze, XXII Riunione, Bari, October* 1933, Vol. II, Professor G. CASSINIS gives the results of the gravity measurements resulting from his work in collaboration with Commander M. de PISA, Assistant Director of the Italian Hydrographic Service, and Professor P. DORE.

In the *Hydrographic Review*, Vol. IX, No. 1, May 1932, p. 148, we have already mentioned the general lines of the Italian gravimetric cruise carried out in the Mediterranean and particularly in the Tyrrhenean Sea between July and October 1931; other information on pendulum measurements relative to gravimetry will be found in the *Rapporti sull' attività del Comitato Nazionale Italiano per la Geodesia e la Geofisica* drawn up by the Italian National Geodetic and Geophysical Committee for the International Conference of Lisbon, 1933.

In the brochure recently published under the direction of Professor CASSINIS will be found a concise explanation of the various methods used, and the successive improvements made, especially since 1887, in relative gravity measurements.

The method and the pendulum apparatus used since 1923 by Dr. F. A. VENING MEINESZ for eliminating the perturbing influence of the horizontal accelerations of the support of the pendulum are indicated in a few lines, as well as the different measurements at sea taken since that time on board various submarines.

The installation of pendulums of this type and the methods followed by the Italian expedition in the *Vettor Pisani*, for taking measurements and making chronometric comparisons, are described in detail and a list is given of the 88 stations made during the course of the cruise.

The report shows the precautions taken to fix the geographical positions of the stations by means of precise observations at sea. To minimise the error arising on account of unknown currents, it is recommended that the measurements made during a dive on a certain course should immediately be repeated on the opposite course.

The author indicates also the method of reduction applied in working out the results.

The Italian Geodetic Commission considers that gravity measurements taken at sea must be associated also with gravity measurements taken on Italian territory. The gravimetric measurements hitherto made both in Italy and in the neighbouring waters form about 550 stations. At the same time, these measurements are not all homogeneous nor uniformly spread over the territory; this makes it difficult to deal with them as a whole. The measurements made before 1910 have generally an insufficient degree of precision to enable them to be associated with the more recent measurements taken during the last twenty years; consequently Professor CASSINIS and Professor DORE have limited themselves to reproducing the calculations for 230 stations only, including 86 stations of the *Vettor Pisani*.

These measurements chiefly concern the Tyrrhenean Sea, Sardinia, Sicily and the southern part of the Italian peninsula. The authors first of all took care to construct really general tables which could be used with the various methods of reduction; a certain number of copies of these tables have been multigraphed, and they are analagous to those which are being worked out by the Coast and Geodetic Survey of the U.S.A. and which will be finally published under the auspices of the International Geodetic Association.

Afterwards applying the method of calculating the normal values of the gravity by the international formula proposed by the Italian Commission and accepted by the Assembly of Stockholm in 1930, the authors have determined the anomalies and have established charts of isanomalistic lines corresponding respectively to the values − 100, − 50, + 50 and + 100.

In Calabria and Sicily these isanomalistic lines have a configuration analogous to that found by MEINESZ for the Sunda Islands Archipelago where the tectonic activity is also very great. It is exactly along a narrow band running from Terranova to Etna, to Cape del l'Armi, to the Gulf of Squillace, to the promontory of Cotrone and to Castrovillari, that one finds on the one hand great positive anomalies and on the other hand great negative anomalies.

In conclusion, the author insists on the necessity of taking new gravity measurements to fill the present gaps in the terrestrial measurements, and also of pursuing the measurements at sea, notably in the Adriatic and the Aegean.

A MAGNETIC SURVEY OF SWEDEN.

by

G. S. LJUNGDAHL

31 × 24 cm. - 37 pp. + 5 fig. + tab. + 6 maps.

Jordmagnetiska Publikationer NR 9 - Kungl. Sjökarteverket, Stockholm, 1934.

The Swedish Hydrographic Service has published a report entitled *Magnetic Survey of Sweden made by the Hydrographic Service in the years* 1928-1930.

This report is by Dr. Gustaf S. LJUNGDAHL, Head of the Section of Magnetic Research, and is drawn up in English. The Hydrographic Service had decided to "begin all over again" by the establishment of an homogeneously measured net over the whole area of the country, the stations of which have been selected in such a manner that they may be exactly reoccupied, thus assuring the continuity and homogeneity of future surveys. The actual survey carried out by the Hydrographic Service includes 86 stations not counting that of Lovö, so that the average distance between two stations is 72 kilometres. Reduction to the common epoch 1929.5 was made by interpolation between three base-observatories, namely Lovö, Rude Skov (Copenhagen) and Sodankylä (Finland).

In 1930 the Hydrographic Service published magnetic charts of Sweden giving the elements *D*, *I* and *H*.
