

Section III

# THE INTERNATIONAL HYDROGRAPHIC REVIEW

Vol. XXXVI

N° 1



(N° 65 OF THE SERIES)

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**Quai des Etats-Unis - Monte-Carlo**

**MONACO**

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**JULY 1959**

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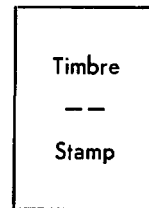
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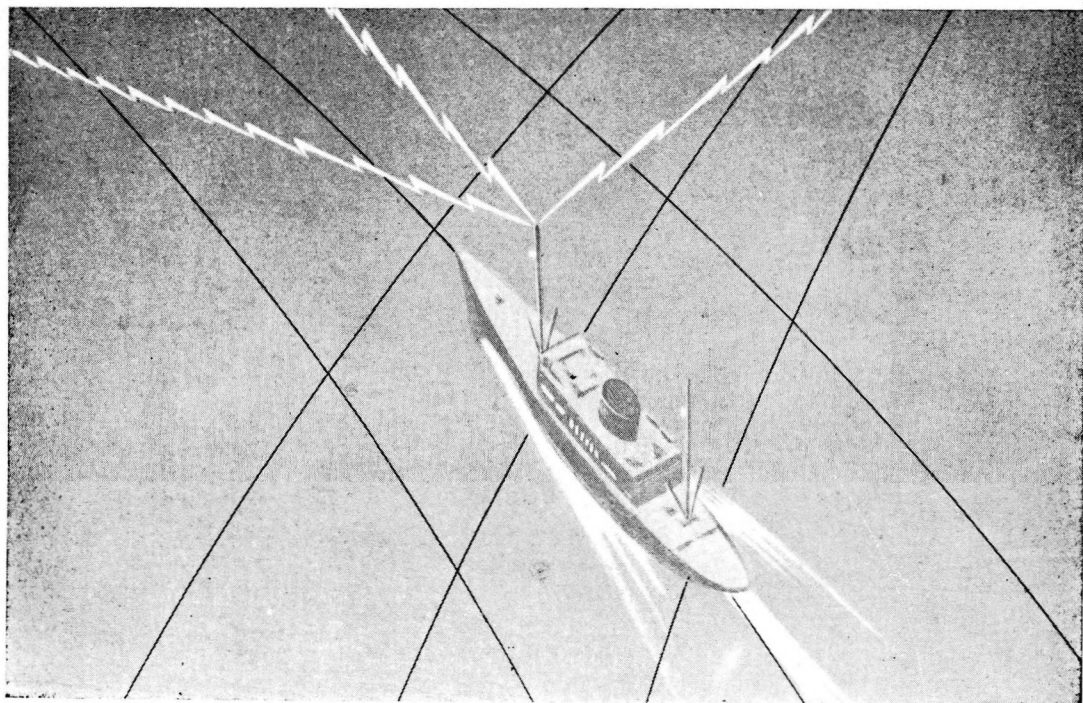
# **BUREAU HYDROGRAPHIQUE INTERNATIONAL**

Quai des Etats-Unis

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# RADIO AIDS

## TO MARITIME NAVIGATION AND HYDROGRAPHY

(INTERNATIONAL HYDROGRAPHIC BUREAU SPECIAL PUBLICATION N° 39)

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This publication contains the latest theoretical and practical information available regarding radio aids currently used for position-fixing in both maritime navigation and hydrography.

The summary of chapters is as follows :

**CHAPTER I. — Spectrum and Propagation of Radio Waves.**

1) Frequency Spectrum of Electromagnetic and Radio Waves - 2) Propagation of Radio Waves.

**CHAPTER II. — Radio Systems Used in Maritime Navigation.**

1) Radio Direction-Finding - 2) Loran - 3) Decca - 4) Consol.

**CHAPTER III. — Radio Systems Used in Hydrographic Surveying.**

1) Decca in Hydrographic Surveying - 2) Shoran - 3) Electronic Position Indicator (EPI) - 4) Shoran and EPI in Offshore Hydrographic Surveying - 5) Raydist - 6) Lorac - 7) Rana - 8) Computation and Plotting of Hyperbolic Lattices on Survey Plotting Sheets.

**CHAPTER IV. — Radar Technique.**

1) Radar Technique in Navigation - 2) Use of Marine Radar in Surveying.

**CHAPTER V. — Radio Systems in Geodetic Surveying.**

1) Outline of Present Situation - 2<sup>n</sup> Operational Reports.

**CHAPTER VI. — Reports on Use of Radio Systems in Hydrography.**

1) Decca - 2) Shoran - 3) EPI - 4) Raydist - 5) Lorac - 6) Rana.

The publication has been prepared in the two official languages of the I. H. B. : English and French. Both editions, which appeared in 1956, contain approximately 450 pages, and 223 figures including 50 full-page illustrations.

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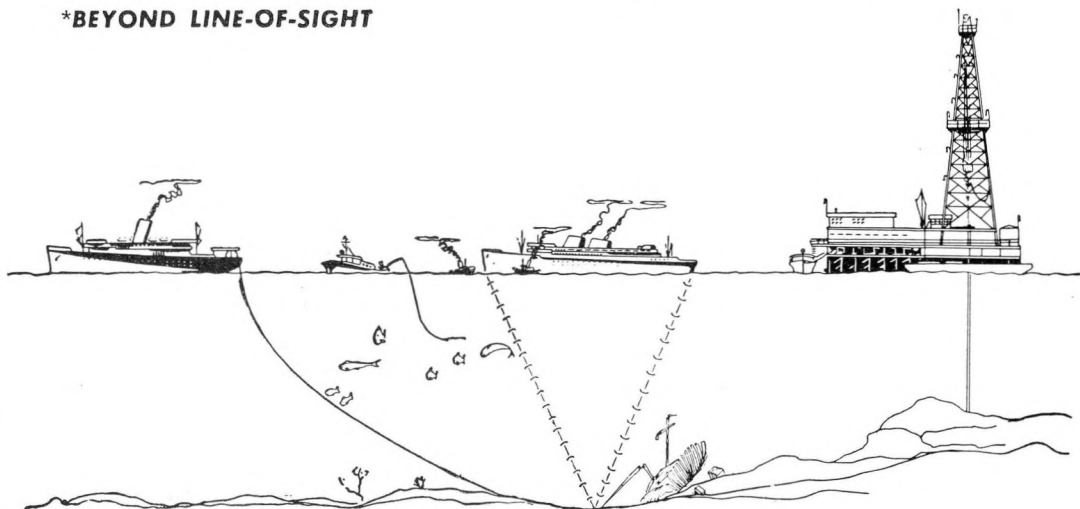
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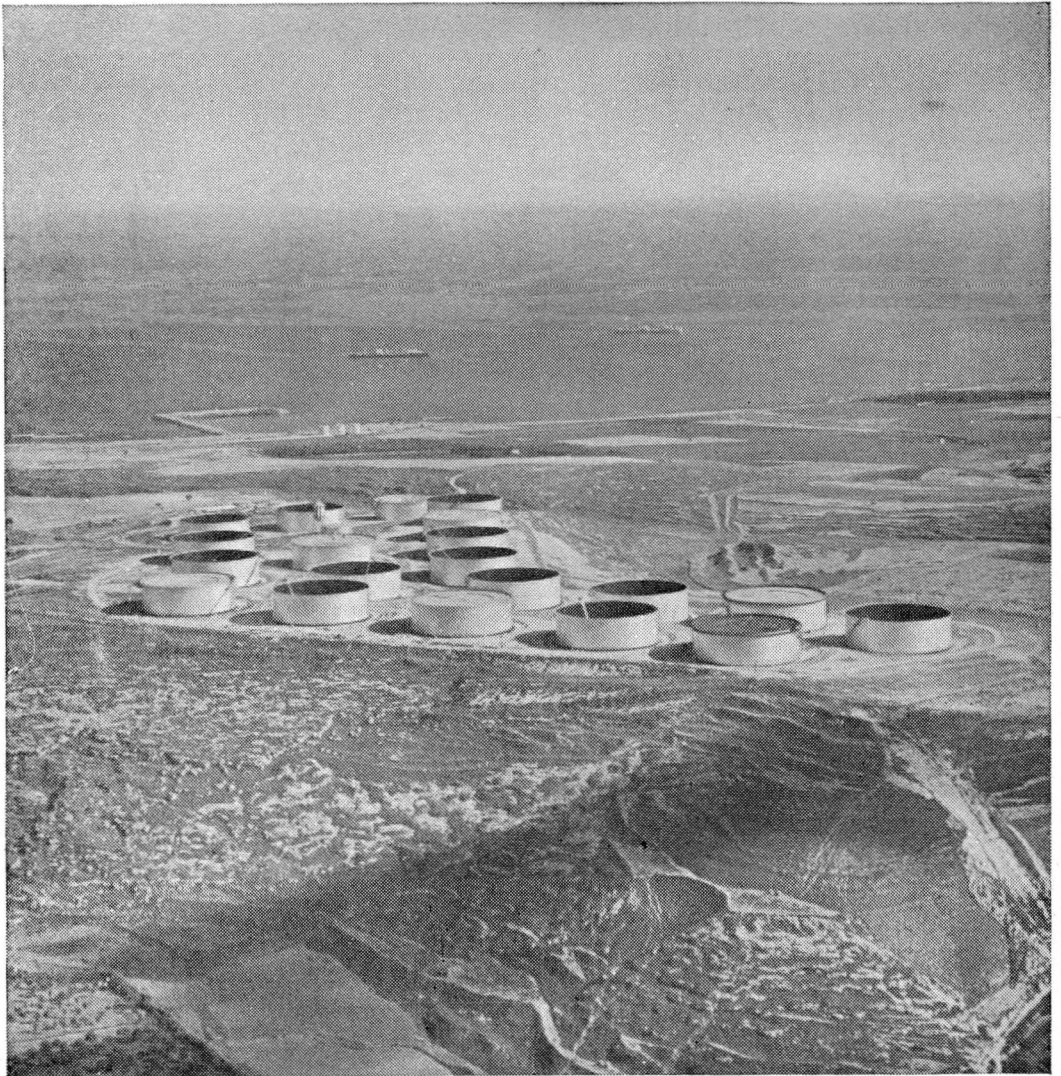
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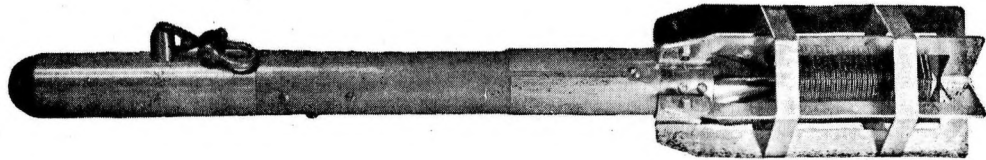
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Depth range *	0 to 200 ft.	0 to 450 ft.
Accuracy	2 ft.	4.5 ft.
Temperature range *	+ 30° to + 90° F.	+ 30° to + 90° F.
Accuracy	± 0.1° F.	± 0.1° F.
Maximum allowable depth	225 ft.	562.5 ft.
Length	31"	31"
Diameter: Nose	2 1/8"	2 1/8"
— Tail	5"	5"
Weight (pounds)	21 3/4 lb.	21 3/4 lb.
Shipping weight (pounds)	75 lb.	75 lb.
		FA-190032
		0 to 900 ft.
		9 ft.
		+ 30° to + 90° F.
		± 0.1° F.
		1125 ft.
		31"
		2 1/8"
		5"
		22 lb.
		75 lb.

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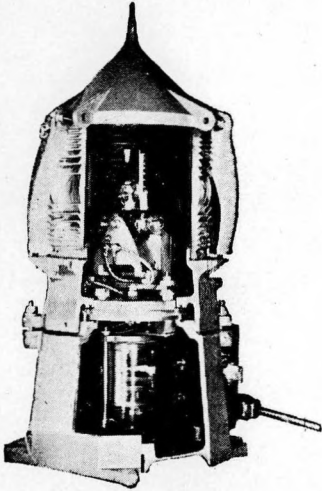
200 smoked glass slides. — Two individually calibrated grids and holders. — Two grid viewers. — Two pts. slide lacquer. — One pt. lacquerthinner. — One slide forceps. — One thermometer. — One nose casting.

\* Temperature and depth may be calibrated in °C and meters, if desired.

The accessories listed above are the same for models FA-190012, FA-190022 and A-190032, with the exception that a deep diving rig is included with model FA-190032.

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# ELECTRICITY POWERS THE MODERN AID TO NAVIGATION For Lighthouse or Buoy

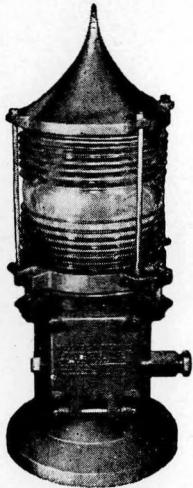


Wallace and Tiernan 200 mm. Lantern  
out away to show lamp changer and  
flasher mechanism

Recognizing the responsibility imposed on marine lights and their accessories, Wallace and Tiernan has, over the years, developed a complete line of modern **electrically powered** aids to navigation meeting all the requirements of unfailing dependability, low initial cost, negligible maintenance and long unattended service periods.

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- Flasher Mechanisms suitable for any flashing characteristics and operating voltage.
- Automatic lamp changers.
- Corrosion resistant, water-tight construction.
- Efficient candlepower output high visibility with low power consumption.
- Low initial cost.
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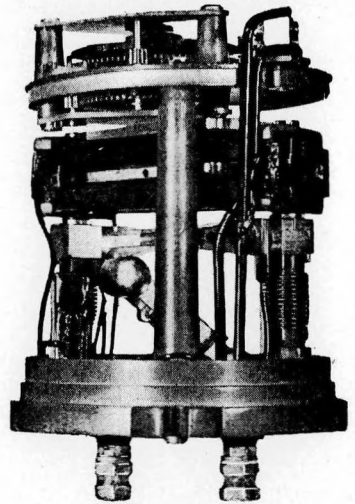


Wallace and Tiernan  
150 mm. Lantern

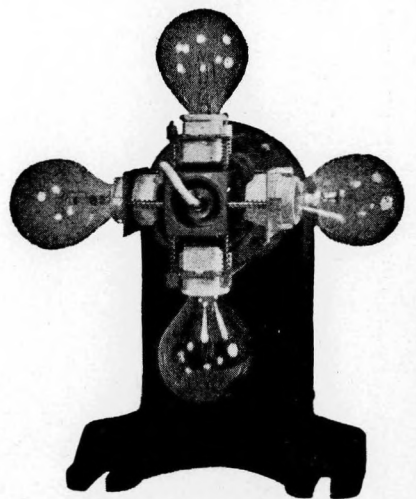
Wallace and Tiernan Specialists on aids to navigation will be glad to make recommendations on your problem without obligation—either on new installations or on the conversion of old gas or oil lights to modern electric operation. Such conversions, utilizing existing optics and structures, are both economical and practical.

### WALLACE & TIERNAN AIDS TO NAVIGATION INCLUDE :

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|--|--|
| <ul style="list-style-type: none"> <li>. Lighthouse beacons and Lanterns from 90 mm. to 500 mm.</li> <li>. Buoys and Structures.</li> <li>. Flasher mechanisms.</li> </ul> | <ul style="list-style-type: none"> <li>. Automatic lamp changers.</li> <li>. Range light lanterns.</li> <li>. Fog signals.</li> <li>. Batteries of all types.</li> </ul> |
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Wallace and Tiernan Flasher mechanism

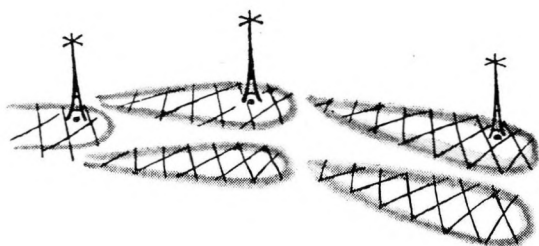


Wallace and Tiernan Lamp changer,  
for electrifying large optics

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## FROM NEW FOUNDLAND TO NEW GUINEA

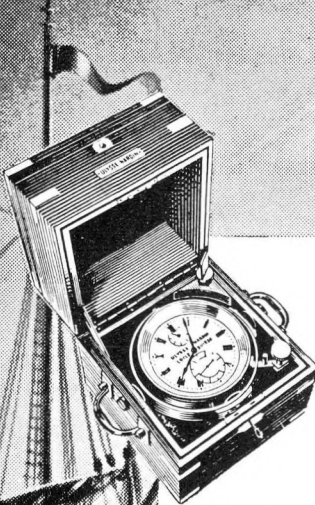
...more than 20 mobile Decca chains are currently deployed to cover marine, air and ground survey and exploration projects. In addition of the ships and aircraft (now numbering nearly 4,500) using the permanent Decca Navigator networks in Europe and Canada, a considerable proportion employ the service as aid to survey and other operations needing continuous position-fixing of high accuracy. The mobile Decca chains at present in use for hydrography are divided about evenly between the « hyperbolic » and « two-range » layouts. A recent development for two-range



operation is known as the « 12f » system, in which the master frequency is doubled; this secures a useful margin of radiated power from the ship-borne master station even in intense tropical noise levels, and also permits the size of the transmitting aerial to be reduced sufficiently for installation on comparatively small survey craft. The 12f system is an important addition to the Decca survey technique and has already been used very successfully in the Caribbean — yet another area in which Decca now aids the Hydrographer.

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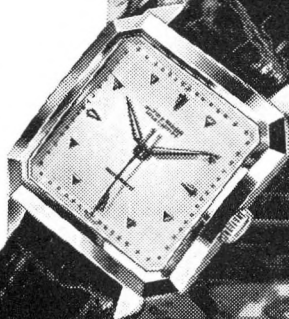
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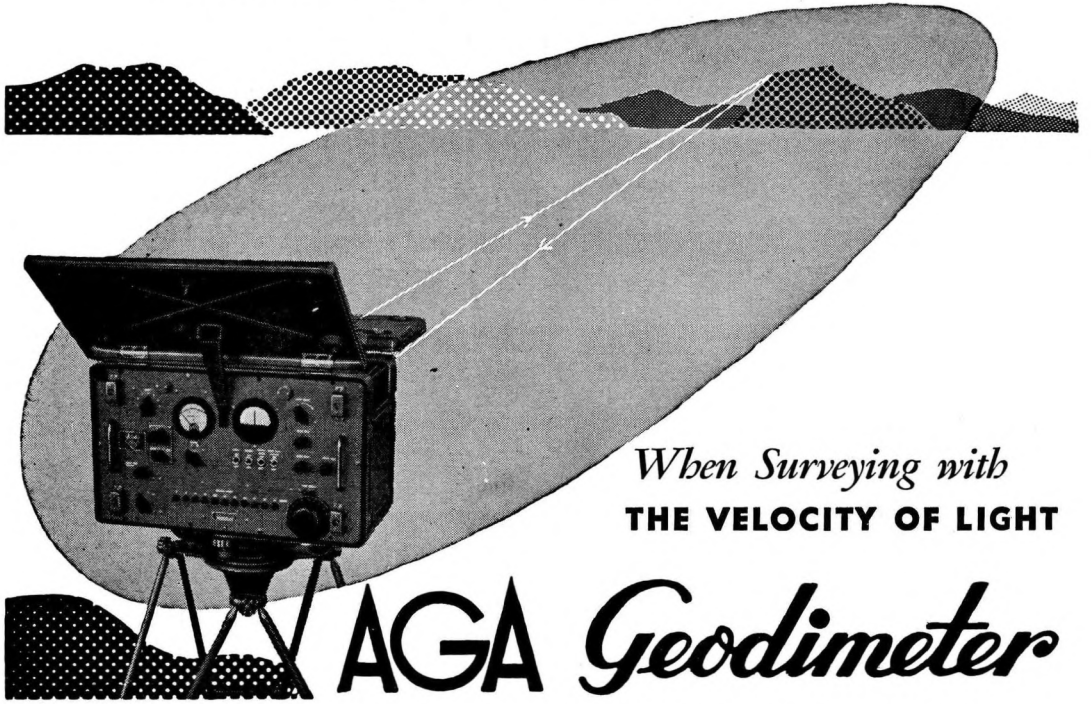
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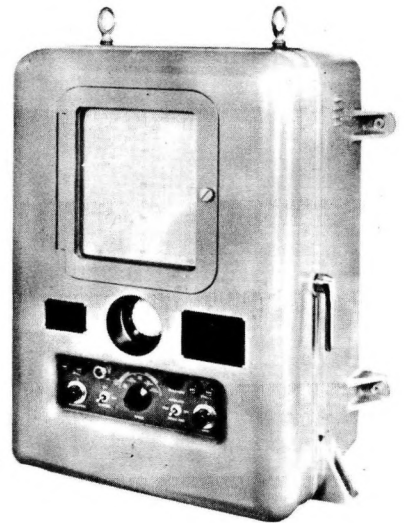
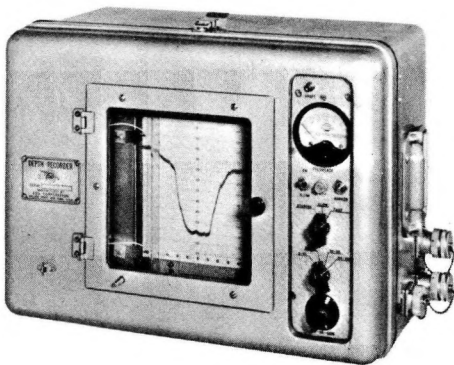


## Foremost in Hydrography

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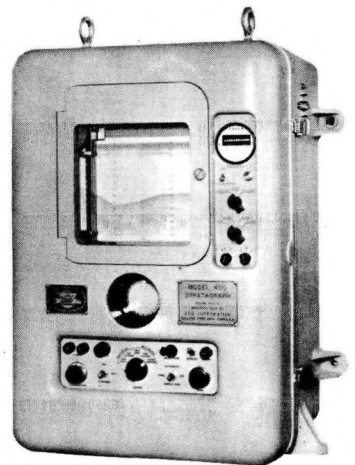
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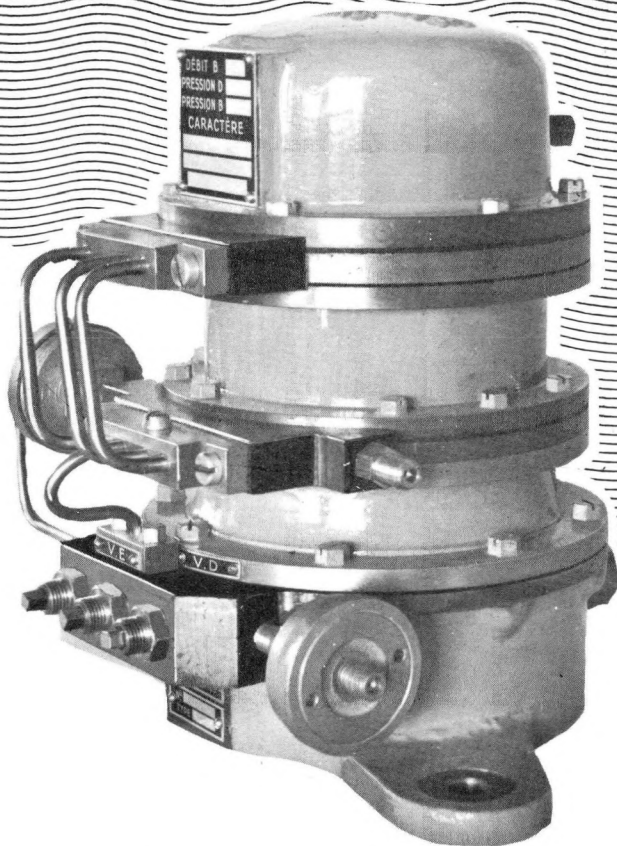
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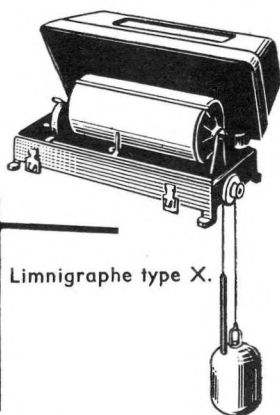
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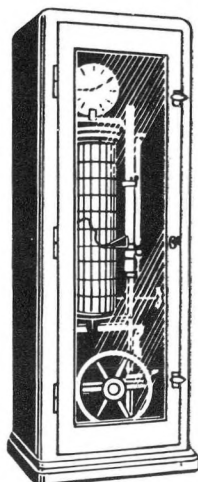
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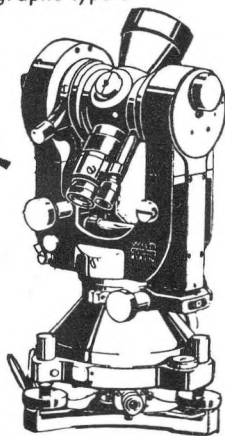
Limnigraphe type X.

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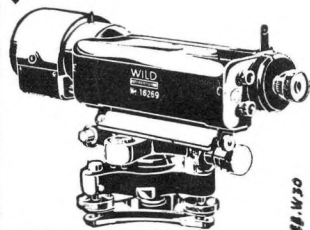
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**THE  
INTERNATIONAL HYDROGRAPHIC REVIEW**

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The International Hydrographic Review is dependent for its value and interest on original contributions from its readers, as well as on the re-publication, in English and French, of appropriate articles which have already appeared in other publications.

Articles on any branch of hydrographic surveying, navigation and allied subjects, such as radio and other aids to navigation, new instruments, hints to hydrographic surveyors, etc., as well as articles dealing with the history and organization of hydrographic offices with descriptions of surveying ships and boats and their equipment, are of great interest to all Hydrographic Offices.

The Directing Committee of the International Hydrographic Bureau will carefully consider all articles received for publication. They have decided that an honorarium of 15 gold francs per page of 600 words will be made to the authors of all original articles accepted. In addition, the Bureau will, upon request, supply each author free of charge with a total of 50 reprints of his article in one of the two official languages of the Bureau (or with 25 in English and 25 in French).

Articles should be typewritten if possible in duplicate, either in English or French, and addressed to

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They should reach the Bureau not later than 31 January or 31 July for the July and January numbers respectively. However, in order to achieve a well-balanced distribution of subject matter in the various issues of the « Review » (see Index of Authors and Articles), the Directing Committee reserve the right to print the articles submitted to them at whatever time appears most suitable.

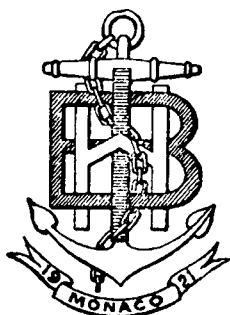
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