A NEW DEPARTURE IN SHIP LOGS.

Mariners have long been looking for a ship log or speed-recording instrument which can be sufficiently relied upon to determine accurately a vessel's location in foggy or stormy weather, when observations cannot be obtained. The usual method of towing a heavy float or propelling wheel on a line many feet in length involves many difficulties. Whenever the ship stops the line must be immediately attended to, lest it, with its attachments, be lost; and every time the vessel starts, the log must be cast overboard, and care taken that the line does not foul the wheel. The log is also liable to injury from driftwood, and heavy seas interfere with its accuracy. A radical departure from the towing type of log has been introduced by the Nicholson Ship Log Company, of Cleveland, Ohio. The new log comprises, essentially, two tubes which project through the bottom of the vessel and extend vertically to an indicator mechanism located in the pilot house or any other convenient location. One of these pipes, which is shown on the left in our diagram, is open at the bottom and, therefore, permits water to flow in to a height equal to the draft of the vessel; while in the other pipe, since the bottom is closed and the opening is in the side of the projecting portion, the water will rise above the load-water line to a height proportional to the pressure caused by the speed of the vessel. Each tube is provided with a float. The float in the "speed-tube" is arranged to communicate its variations of level through suitable gearing to a vertical feed shaft. The upper end of this shaft is threaded, and at each end of this threaded portion a disk is mounted. These disks are connected by rods, which pass through a nut or hub threaded on to the shaft. It is evident that any change of water level in the speed-pipe will cause the feed shaft to rotate, thus raising or lowering the hub, which is kept from turning by the rods above mentioned. In order to compensate for changes in level due to variations in the load of the vessel, connection is made between the float in the "level-pipe" and the disks mounted on the feed-shaft, so that a rise or fall of this float will result in a compensating rotation of the disks and the rods which connect them. Thus the hub is rotated and fed up or down the feed-shaft according to the load of the vessel. The adjustment is such that when the vessel is at rest the hub will always remain at its lowest position, no matter what the level of water in the level-pipe. Suitably connected with the hub is a rack, which rises and falls with the same. This rack governs the motions of the pointer in the speed-indicator. It has been found that the water level in the speed-pipe varies approximately as the square of the speed, and therefore, it would obviously be confusing to have the rack operate directly on the pointer. A train of intermediate gearing is therefore used, as shown in our detailed view. This train includes a pair of compensating gear wheels, which are so designed that the upper member of the pair will move through the same arc for every corresponding increase of speed of the vessel. Thus a perfect record of speed is at all times indicated on the dial.

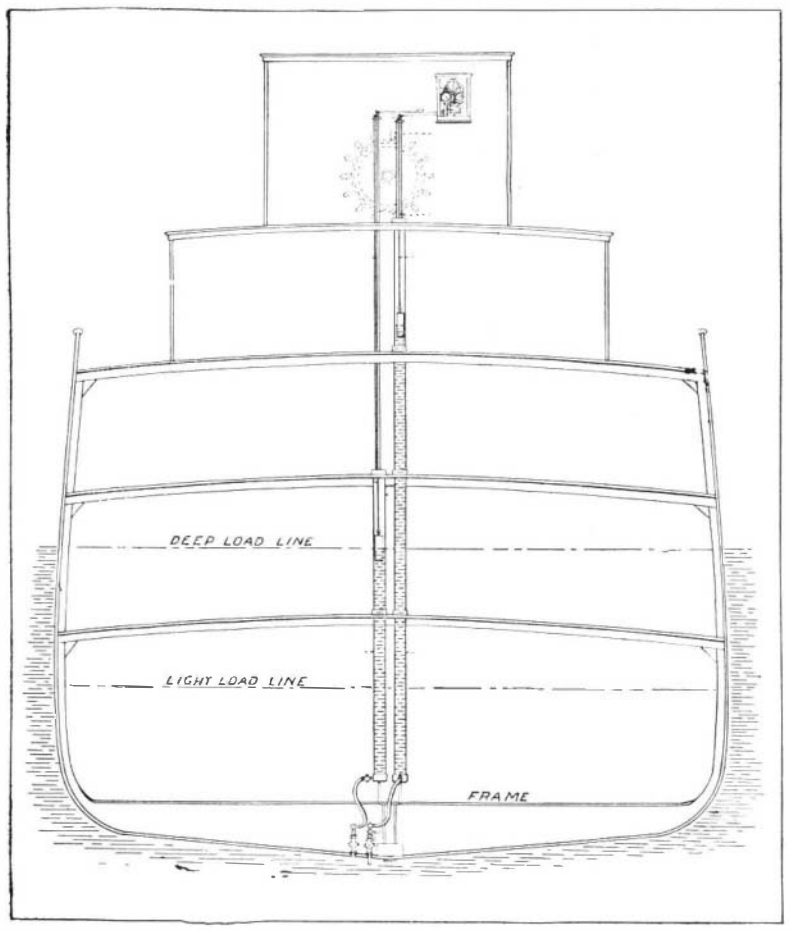
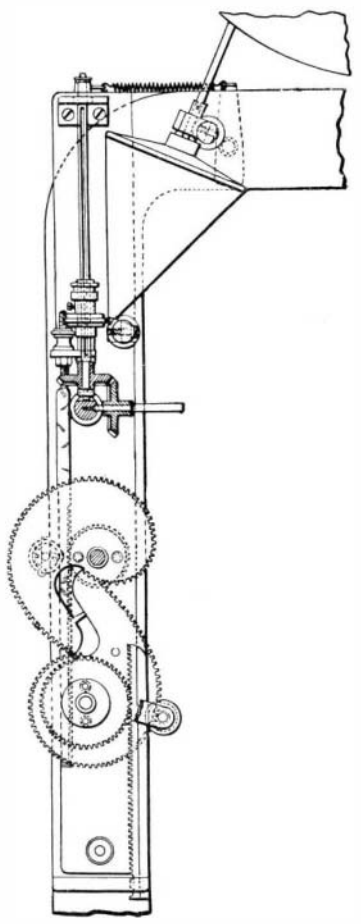


DIAGRAM SHOWING LOG INSTALLED IN A VESSEL.

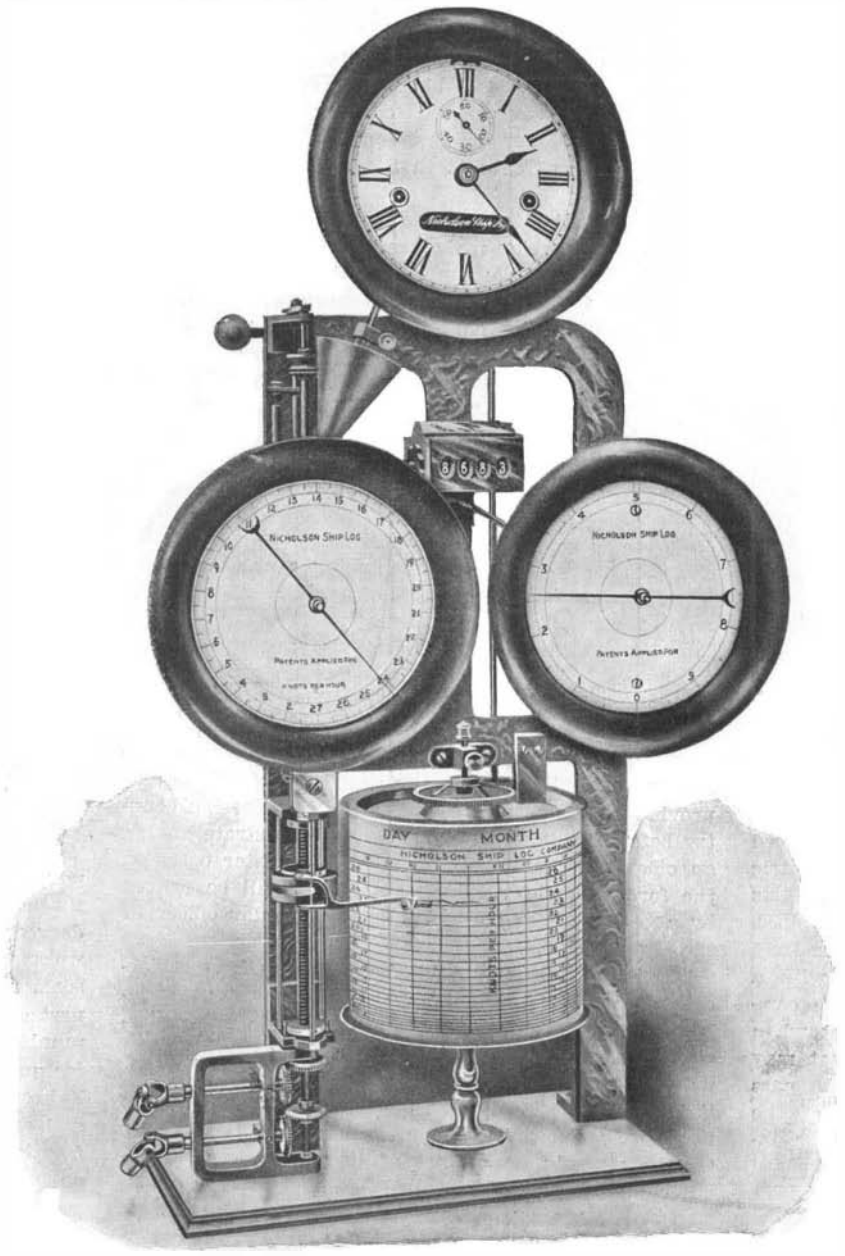
In addition to the speed-indicating mechanism is a speed-recording mechanism, which comprises a chart drum rotated at a uniform speed by clockwork. A pencil or marker is arranged to slide up and down with the speed-indicator hub, and all the variations of speed are recorded on the chart.

The distance-recording mechanism, as shown in our detail view, comprises a friction wheel, which is splined to a vertical shaft and rotated by engagement with the face of an inverted cone driven at a uniform rate by the clockwork at the top of the ship log. This motion serves to operate a small counter through the medium of a pair of miter gears. Since the distance covered by the vessel is equal to the time multiplied by the speed, a rack and gear connection is provided between the speed-indicator shaft and the friction wheel, whereby the latter is moved upward along the face of the cone as the speed increases. This causes the friction wheel to rotate more rapidly, so that the miles are counted off with a proportionately higher speed on the distance recorder. To the right of the counter is a dial which indicates fractions of a mile or knot, as desired.

A trial of the Nicholson ship log was recently made by the United States Navy, the torpedo boat "Porter" being equipped with this apparatus. The results of the trial were very favorable. The desirable features reported are briefly as follows: The actual speed of the vessel is shown on the speed dial at all times. Its accuracy is not affected by the conditions of the sea. It will not foul readily, though, in case of fouling, provision is made for clearing it by withdrawal of the tube. No towing line is required. The only portion of the log outside the hull of the vessel is a one-inch pipe sufficiently long to clear the eddy set up by the skin friction. The only attention required is the daily winding of the clockwork. The undesirable features mentioned are as follows: The height of float-pipe required is objectionable, particularly for vessels of low freeboard, such as the "Porter," on which it was necessary to rig a 3-inch pipe 20 feet or more above the deck. The size of the recording mechanism (31 x 19 x 9 inches) is large compared with that of logs in general use. The speed and recording dials should be graduated in tenths of knots, and the chronograph should be omitted. In regard to the first of these objections, the builders inform us that this has been entirely overcome, and pipes can be stored away between decks on the fastest vessels of low freeboard type without reduction of delicacy in registration. Obviously the second objection is far outweighed by the advantages offered by the log, and the third undesirable feature is merely a matter of detail, which can be easily remedied to suit requirements. In summing up these features, the Navy Bureau of Equipment consider that the inlet pipes are liable to become fouled when navigating in shoal water, where mud and sand may be stirred up. However, no such complaints have been received from users of the log. The Nicholson ship log has been installed on a number of the Lake steamers, and has given perfect satisfaction.



THE SPEED GEARS AND DISTANCE RECORDING MECHANISM.



IMPROVED SHIP LOG COMPRISING A SPEED INDICATOR, A DISTANCE RECORDER, AND A SPEED CHART.

Save Your Eyes.

If your eyesight is good, take care of it. Look away off yonder every time you get to the bottom of a page in reading. If it is defective, let no foolish pride prevent you from wearing the proper glasses.

There is no sense in handicapping yourself in life when a piece of glass before each eye will make your vision as good as it possibly can be. The oculist will not advise you to wear glasses if you do not need them any more than he will prescribe a drug you do not need.

Plenty of people, though, do not know that they have defective sight because they have never really seen at all. They have headaches, inflamed eyes, sties, even much graver troubles, from the strain of trying to see with eyes that were put up wrong. There are cases where homicidal insanity has been completely cured when impaired vision has been corrected.—Harvey Sutherland in Ainslee's Magazine.

Prof. W. Noel Hartley, F.R.S., of Dublin, presented a report to the chemical section of the British Association, the first part of which deals with phloroglucinol and its derivatives. The aqueous solutions of phloroglucinol, prepared in different ways, all gave the same absorption band, and the benzenoid structure is confirmed. The second part, on the "Curves of Molecular Vibration of Quinone, p-Nitrosophenol, and Similarly-derived Substances," investigated by the same author, is interesting chiefly because it does not support the view that the special structure of quinone is common to colored organic substances. Von Baeyer and Villinger have recently studied the so-called halochromism—the formation of highly colored salts from colorless substances; there is no quininoid structure in these cases, so far as the spectroscopic evidence goes.