

## REPORT ON THE MARINE DEPARTMENT.

objects *not right ahead*, it is essential to note at the same time the direction of the ship's head, as otherwise the correct bearings of the objects can never be properly ascertained: all such bearings requiring to be corrected for the deviation of the compass at the moment of observation, which is clearly the deviation due to the direction of the vessel's head. So important, indeed essential, is this precaution, that the fact of the deviation of the ship's head being noted may be considered as a very reliable proof that bearings are to be depended on; and, on the other hand, if any bearings are entered in a vessel's log without the corresponding direction of the vessel's head being noted, they must always be considered untrustworthy, and the officer in charge of the log will be exposed to suspicions of carelessness or of incompetency.

22. As it has in some instances been the custom in New Zealand (and elsewhere) to fill up the Deviation Table in terms of a theoretical or correct magnetic compass, instead of in terms of the vessel's own compass, as directed in Article 20, an example may be useful to show the errors which may result from so doing.

The following is a portion of an imaginary "Deviation and Steering Course" card of the old form:—

Deviation.	For Magnetic.	Steer.
$\frac{1}{2}$ W.	North.	$N. \frac{1}{2} E.$
1 W.	N. by E.	N.N.E.
2 W.	N.N.E.	N.E.
$2\frac{1}{2}$ W.	N.E. by N.	N.E. by $E. \frac{1}{2} E.$
&c.	&c.	&c.

Thus when the ship is heading North, correct magnetic, her compass has half a point of westerly deviation; and in order to make a course North, correct magnetic, she must be steered  $N. \frac{1}{2} E.$  by her compass: again, when she is heading N.N.E., correct magnetic, her compass has a deviation of two points westerly, and so on. This is perfectly true; but the information, in this form, is more likely to mislead than to be of service. For instance, if the master of the vessel, of which the above is supposed to represent the steering card, were to take any cross bearings when she was heading N.N.E. by her compass, and were to correct these bearings for two points of westerly deviation, as he would be most apt to do (especially if pressed for time) when provided with a card of the above form, his *corrected* bearings would be as far wrong as the original sights, but on the other side of the correct bearings. But an examination of the form will show that when the vessel is heading N.N.E. by her own compass, she is really heading N. by E., correct magnetic, and the deviation corresponding to that point is one point westerly; and 1 W. is the proper deviation to enter opposite N.N.E. for all practical purposes, as all bearings taken when the vessel is heading N.N.E. by her compass must be corrected for *one* point of westerly deviation, and not for two, as a glance at this form of card might lead one to suppose. The deviations corresponding to any point of the ship's compass may no doubt be ascertained more or less accurately, as above illustrated, even from cards filled up in this manner; but the operation frequently involves complex fractions of points, and takes time when time cannot well be spared. By filling up the deviation card in terms of the vessel's own compass, as prescribed in Article 20, this complication is avoided.

23. Every steamer which is allowed by Inspectors plying limits of such extent as to make a compass a necessary part of her equipments, is to be considered a sea-going vessel, in so far as regards the provisions of the Steam Navigation Act respecting the examination and adjustment of her compasses; and Inspectors are to satisfy themselves that every iron steamer is swung at least once a year, and also after undergoing any considerable repairs. Wooden vessels do not require to be swung so often, but even they should have their compasses examined after either the boiler or engines have undergone any extensive overhaul.

24. Every Licensed Adjuster is to forward to the Marine Department, Wellington, as soon as possible after he has swung any vessel, the following documents, in order that they may be examined and registered:—

- (a) Copy of any letter he may have written to the master relative to the state of the vessel's compasses. (Articles 2 and 7.)
- (b) The originals or copies of the rough "Records of Observations," to show how the deviations agree on the first and second operations.
- (c) A deviation curve for each compass laid down on the diagram of the Graphic Method; all actually observed points being marked by small ink crosses, so that it may be seen at a glance how nearly the curve coincides with the observations.
- (d) Copies of the steering-course and deviation cards actually issued to the shipmaster.

25. Any Adjuster who may be proved to perform his work in a careless manner, or who may omit to comply with the provisions of Article 24 or of any preceding article, will be liable to have his license withdrawn.

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