1. Plane sailing
2. Middle-latitude sailing.
3. Mercator sailing.

The term plane sailing here means the relationship between rhumb line distance, *d.* lat., departure, and course angle. Middle-latitude sailing means the relationship between departure, *d.* long. and latitude. Mercator sailing means the relationship between *d.* long., meridional *d.* lat. and course angle.

Parallel sailing and meridian sailing are omitted, as they are simply special cases of middle-latitude sailing. When converting departure into *d.* long., or vice versa, the middle latitude should always be used. Even if the correction to apply to the mean latitude to obtain the middle latitude is small enough to be ignored, the name given to the angle used for the conversion should be 'middle' latitude. For this reason, 'mean-latitude sailing' does not appear in my classification.

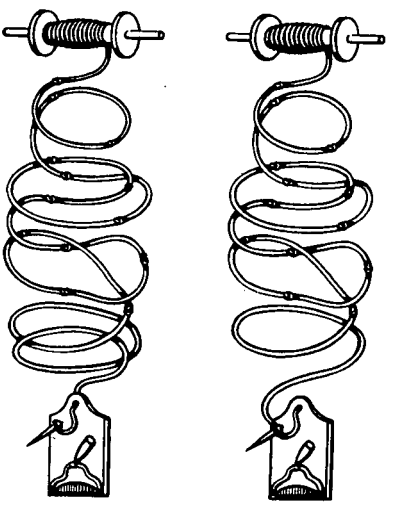
Students should note that in order to solve either of the general sailing problems as defined in the opening paragraph, a combination of either plane and mercator, or plane and middle-latitude sailings must always be used.

[Mr. Sadler's paper Spheroidal Sailing and the Middle Latitude, printed on p. 371, deals with some of the same problems as Captain Cotter's, though both were of course conceived and written quite independently.—*Ed.*]

Champlain's English Log

from D. Chilton

In Lieutenant-Commander Waters' paper 'The Development of the English and the Dutchman's Log' (this *Journal*, **9**, 70) there is an illustration (Fig. 1, p. 73) of the English log, reproduced from Champlain's *Les Voyages de la Nouvelle France Occidentale*. The device illustrated, though no doubt correct in intention, could not have performed the function stated, namely, of floating 'vertically in the water presenting its full face to the ship's wake' (p. 74). This raises the suspicion that Champlain had not examined the log minutely enough, if at all, or at least had failed to instruct his draughtsman properly.



(*a*) (*b*)

A simple modification of the illustration would correct it, and the original and a suggested modification are reproduced herewith. In the modification (*b*) the stray-line ends at the hole in the log-chip and the pin is attached at a suitable distance from the end. When the pin is plugged firmly into the socket the 'crow foot' is formed and, if the line runs freely, the log-chip will then float vertically resisting 'any tendency of the log-line to draw it home to the ship' (*loc. cit.*). With this arrangement, if the stray-line is pulled taut, the pin will be jerked out of its socket and the log may easily be hauled-in.

As far as I know, there is no extant example of this simple, early log, but the Science Museum Collections include a similar log rather fancifully shaped like a fish. The log-chip is a triangular piece of wood of side about 5 in. long, weighted at its lower edge with a strip of lead and hinged at its apex to the body of the fish. (An illustration appears in this *Journal*, 8, 363.)

A line attached at one end to the bottom of the hinged flap and at its other end to the belly of the fish, prevents the flap from hinging beyond the vertical position. The exact arrangement of the log-line is conjectural, but there is a remnant of line securely fixed in the open mouth of the fish, and along the back of the fish is a device consisting of a small, pivoted catch working against a wooden leaf-spring.

I suggest that the stray-line was attached firmly in the mouth of the fish and looped over the pivoted catch. So long as the log-line ran freely, the log would remain stationary in the water with the fish heading away from the ship, but as soon as the line was pulled the loop in the stray line would slip the catch and the log could be hauled in, fish head first.

Visual Navigation in Enclosed Waters

from J. B. Mitchell

(*Master Mariner*)

Most shipmasters making a tortuous passage through a strait or among reefs and islands, after a long passage on one course in a vessel equipped only with magnetic compasses, are worried out of all proportion to the hazards of the manœuvre by reason of not knowing in all certainty what compass errors will pertain on widely different courses. Of course there is the Azimuth Record Book, but the last time similar courses were used could have been in the other hemisphere or under different conditions of trim, &c.

Given time, weather conditions and other suitable opportunity a prudent master will have conducted a swing to ascertain the errors before approaching the stretch of dangerous water. This may not be possible and, again, he knows in his mind that azimuths taken under these circumstances, with little time to waste, do not always conform to the later findings.

There is a very sure method of keeping the vessel under absolute control with regard to courses of extreme variance in rapid succession which I practise, and which, once you have acquired faith in the method, relieves you from a very great deal of strain induced by anxiety and allows a full measure of confidence. This is an old method, no doubt practised since the days of the great navigators, but I think it worth bringing to the notice of the seafarers of today because in these days of electronics and over-complication simple commonsense, such as Lecky taught, is apt to be considered too old fashioned to bother with. Hence the strain when you first take command. I am quite sure that this method was in common practice with Cook, Flinders and Tasman &c.

When there is little time to check errors, or the day is dull, and yet it is necessary to enter an involved channel, having approached with cross bearing or astronomical fixes in which you have every confidence, your proposed courses having been carefully considered and drawn in on the chart, use your compass