

each observation being 30 ft., the ship having made 32 m. on a 258° course during the interval between the observations.

Required—The line of position, and the true bearing of the sun, when the first altitude was observed; and the position of the ship when the second altitude was observed.

4. CHART.

Time allowed 3 hours.

1. A ship in lat. by D.R. 55° 6' N., long. by observation 9° 2' W., the true bearing of the sun being East, obtained a wireless bearing from sea view 260° (sea view lat. 50° 22' N., long. 7° 19½' W.).
Using deviation-card No. 10, find the course to steer by compass from this position to a position off Belfast Lough with Black Head bearing 260° and Corsewall Pt. 032°, also the distance on each course. NOTE.—Alter course when Inishtrahull Lt. is abeam on approaching course distant 5 m., and again when crossing the meridian of 6° west longitude, passing 2 m. off Altacarry Hd. Lt. when abeam.
2. With the ship's head on the first compass course, Tory Island Lt. bore by compass S. 65° W., and the horizontal sextant angle it made with Fanad Pt. was 67°.
Find the ship's position, also the set and drift experienced, supposing the expected position to be with Fanad Pt. bearing S. 3° W. (mag.), distant 10 m.; also, the distance the ship passed off Tory Island when abeam.
3. With the ship's head on the third compass course, Altacarry Hd. Lt. bore by compass N. 44° W., and after continuing on the same course one hour Sanda Is. Lt. bore N. 44° E.
Find the position of the ship and her distance from Sanda Island Lt., making due allowance for tidal stream one hour before H.W. at Dover, ship steaming 12 knots.
4. Find the course to steer by compass from Altacarry Hd., bearing 295°, Mull of Cantyre bearing 043°, to Black Hd., bearing 260°, distant 10.5 m., to counteract the effect of a current which set 157° at the rate of 2.8 m. per hour, the ship making by log 12 knots; also, the time it would take to reach the latter position.
5. The following horizontal sextant angles were taken to determine the ship's position: Mew Island Lt. 45°, Black Hd. Lt. 44°, Maiden's Lt.
Find the latitude and longitude, using a station pointer.
6. On 3rd March, 1925, 1 hour before H.W. p.m., being off Belfast Lough, took a cast of the lead:
Required—The correction to be applied to the depth obtained by the lead-line before comparing it with the depth marked on the chart.

5. METEOROLOGY.

Time allowed 1½ hours.

1. Describe the atmospheric conditions which (a) increase terrestrial radiation, and (b) retard terrestrial radiation.
2. In what localities have the sun's rays the greatest effect? Give the reasons for this, and state how these effects are modified in certain places.
3. How does the observed velocity of the wind compare with the theoretical velocity as calculated from the gradient? What reasons have been assigned for the difference so found?
4. What proportion of an iceberg is immersed? How is this proportion arrived at?
5. Describe fully the tracks usually followed by cyclones in the Bay of Bengal, stating where they originate and the months during which they are most likely to occur.
6. When there is reason to believe that a revolving storm is approaching, what two points is it necessary for seamen to know, and how can these best be determined?