

2. Day's work : 1925, July 3rd, at noon, departure taken from Cape Blanco in lat.  $42^{\circ} 52' N.$  and long.  $124^{\circ} 47' W.$ , which bore by compass  $N. 40^{\circ} E.$ , 10 m., ship's head being  $S. 65^{\circ} W.$  by compass, deviation and variation as per log, the ship sailing as follows during the next 24 hours :—

Hours	Compass Courses	Knots	10ths	Winds	Lee-way	Devn	Remarks &c.
1	S $65^{\circ} W$	20	5	SSE	0	$5^{\circ} E$	Varn $20^{\circ} E$
2	"	"	"	"	"	"	
3	"	"	—	"	"	"	
4	"	"	—	"	"	"	
5	"	20	5	"	"	"	
6	"	"	"	"	"	"	
7	"	"	"	"	"	"	
8	"	"	6	"	"	"	
9	"	20	—	"	"	"	
10	"	"	5	"	"	"	
11	"	"	"	"	"	"	
12	"	"	—	"	"	"	
1	"	21	—	"	"	"	
2	"	"	—	"	"	"	
3	"	"	—	"	"	"	
4	"	"	—	"	"	"	
5	"	20	5	"	"	"	
6	"	"	"	"	"	"	
7	"	"	"	"	"	"	
8	"	"	"	"	"	"	
9	"	20	"	"	"	"	
10	"	"	"	"	"	"	
11	"	"	"	"	"	"	
12	"	"	"	"	"	"	

Find the course and distance made good from Cape Blanco, and the latitude and longitude in by dead reckoning, also the set and drift experienced during the day's run supposing the ship was found to be in lat.  $42^{\circ} 30' N.$ , long.  $136^{\circ} 10' W.$  by observation at noon of 4th July.

3. On 8th June, 1925, in long.  $110^{\circ} 15' W.$ , the observed meridian altitude of the sun's L.L. was  $61^{\circ} 56'$ , bearing north, index error,  $1' 30''$  to add, height of eye 21 ft.

Required—The latitude.

4. On 18th June, 1925, in lat. by account  $39^{\circ} 17' S.$ , long.  $47^{\circ} 16' E.$ , time by chronometer 04 h. 11 m. 13 s., which was 3 m. 18 s. slow for mean time at Greenwich, the sun rose bearing by compass  $E. 3^{\circ} S.$

Required—True amplitude, and error of the compass; and, supposing the variation to be  $24^{\circ} 30' W.$ , required the deviation of the compass for the direction of the ship's head.

5. On 27th May, 1925, in lat. by account  $51^{\circ} 58' N.$ , long.  $54^{\circ} 56' W.$ , when a chronometer correct for mean time at Greenwich indicated 19 h. 35 m. 00 s., the sun bore by compass  $N. 62^{\circ} W.$

Required—The true azimuth and error of the compass, by time azimuth tables; and, supposing the variation to be  $32^{\circ} 30' W.$ , required the deviation of the compass for the direction of the ship's head.

6. Define the terms "azimuth," "amplitude," and "refraction."

2. NAUTICAL ASTRONOMY AND TRIGONOMETRY.

Time allowed 2 hours.

Draw suitable figures and give the necessary description for each problem.

1. On 18th May, 1925, a.m. at ship, the observed altitude of the sun's L.L. was  $17^{\circ} 23'$  height of eye, 19 ft., the sun's bearing

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