

REFERENCE MANUAL

BRITISH MARINE OBSERVATIONS

This reference manual was prepared for use with punched cards of the British Marine Deck. The cards were punched from logbooks of the several maritime units of the United Kingdom on a Hollerith card form supplied by the Air Ministry.

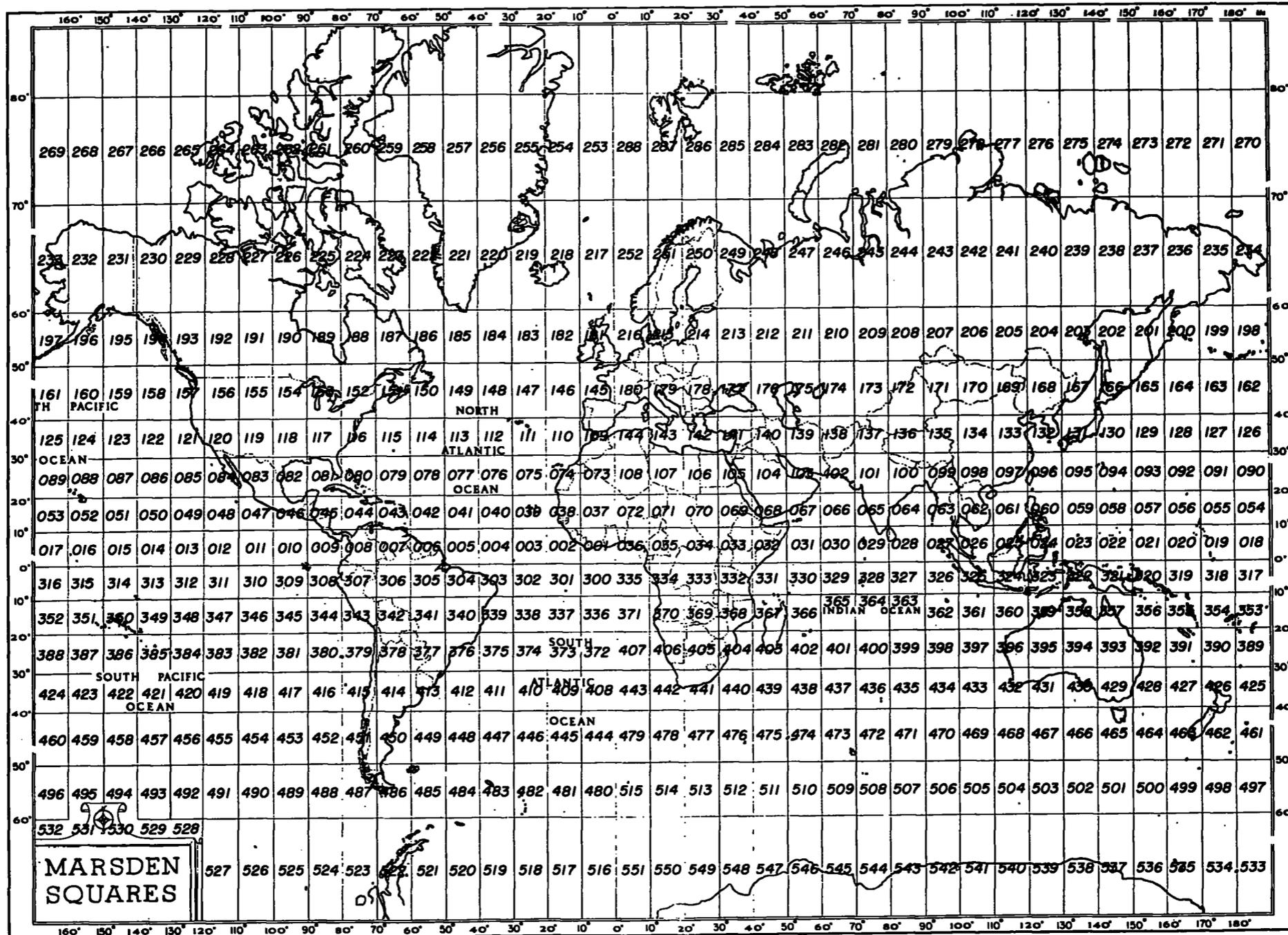
Observations total 3,351,600 and are distributed as follows:

Atlantic	1,535,300
Pacific East of 160°W	502,300
Pacific 100°E to 160°W	750,900
Indian	545,300
Arctic	8,000
Antarctic	9,800

Deviation from these totals are minor. To cite an example: Fixed ship observations for stations "India" and "Juliette" were an integral part of the Atlantic group. To facilitate tabulations, these 15,000 observations were recorded and reproduced into a special deck and are now a separate subdivision of Card Deck 116.

Recently, an IBM card has been produced which labels all 80 columns correctly. Inasmuch as the original Hollerith card form indicated the use of only 65 columns and some of those were labelled erroneously, the new card form (electroplate #847838) is a helpful addition to all users. Reproduction onto this card form is anticipated in the near future but no large scale work has been accomplished toward this end, at the present time.

LOGBOOK	YEAR	MONTH	DAY	WIND	TEMP	SEA	SWELL	WAVES	...
0	0	0	0	0	0	0	0	0	...
1	1	1	1	1	1	1	1	1	...
2	2	2	2	2	2	2	2	2	...
3	3	3	3	3	3	3	3	3	...
4	4	4	4	4	4	4	4	4	...
5	5	5	5	5	5	5	5	5	...
6	6	6	6	6	6	6	6	6	...
7	7	7	7	7	7	7	7	7	...
8	8	8	8	8	8	8	8	8	...
9	9	9	9	9	9	9	9	9	...



CARD CONTENT					SOURCE CONTENT	
Col-umns	item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
1	Series	1	Abbreviated form, data for 1856-1920	Contains wind, air temperature, sea temperature, humidity, cloud amount and weather. Some data for 1920 in this series.		Data for years previous to 1920 - coded in the 1930 code.
		2	Data for 1921-1929			Data in 1921 code.
		3	Data for 1930-1950	Data in 1930 code.		
		4	Admiralty logs	Prior to 1949 in 1930 code. From 1949-1950 in 1949 code.		1950 is the last year available at time of writing this manual.
		6	Ocean weather ship logs	Prior to 1949 in 1930 code. From 1949-1950 in 1949 code.		
		7	Synoptic logs	Prior to 1949 in 1930 code. From 1949-1950 in 1949 code.		
2-6	Folio	00000 to 99999	The number of the log in which the observations are recorded			
7-8	Year	56-99	1856 - 1899			1950 is the last year available at time of writing this manual.
		00-50	1900 - 1950			
9-10	Month	1-9	January - September	Column 10 punched, column 9 being blank.		Both systems shown were used for recording and punching month.
		0	October			
		X	November			
		Y	December			
		01-12	January - December	Column 10 may be punched X over code 11, or Y over code 12 for November and December, respectively.		
11-13	Marsden Square Number	001-288	10° square			The globe is divided into ten degree squares according to the Marsden chart and the position of the observation is given by the Marsden square number from that chart. See chart on page 2.
		300-551				
14	5° Square	1	Square A	Not punched for most of the deck.		<p>Square A is defined as the 5° square within a 10° Marsden square which is nearest equator and the Greenwich Meridian.</p>
		2	Square B			
		3	Square C			
		4	Square D			
		15-16	Day			

CARD CONTENT					SOURCE CONTENT																											
Col- umns	Item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices																										
17	Watch	1	0400			The hour (ATS) at which the observation was made. Believe that ATS means actual time aboard ship and therefore is probably IST. ATS is Area Time Standard, LST or Local Standard Time, or Local Zone Time.																										
		2	0800																													
		3	1200																													
		4	1600																													
		5	2000																													
		6	Midnight		Punched as 00 of the day beginning.																											
18-19	Hour	00-23	0000 to 2300 GMT			When these columns are blank, times of observations can be found by converting column 17, watch, to GMT.																										
20-21	Marsden Sub-Square Number	00-99	1° square			Each Marsden square is sub-divided into 100 parts. The number of the sub-square is obtained by taking the unit figure of the whole number of degrees of the latitude disregarding minutes, for the tens position, and the unit figure of the whole number of degrees of longitude, disregarding minutes for the units position.																										
22	1/6 Degree of Latitude	Blank				1921 code.																										
		0	0' - 9'			1930 and 1949 code. Minutes of latitude divided by 10 and neglecting remainder.																										
		1	10' - 19'																													
		2	20' - 29'																													
		3	30' - 39'																													
		4	40' - 49'																													
		5	50' - 59'																													
9	No minutes of latitude given																															
23	Sub-sub Square (1921 Code)	0	Ship under way			<p>SUB-SUB SQUARES</p> <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td></td> <td></td> <td></td> <td>60'</td> <td></td> </tr> <tr> <td>9</td> <td>8</td> <td>7</td> <td rowspan="3">40'</td> <td rowspan="3">NORTH LAT.</td> </tr> <tr> <td>6</td> <td>5</td> <td>4</td> </tr> <tr> <td>3</td> <td>2</td> <td>1</td> </tr> <tr> <td></td> <td></td> <td></td> <td>0'</td> <td></td> </tr> <tr> <td colspan="3"></td> <td>60'</td> <td>WEST LONG.</td> </tr> </table> <p>1921 code. Sub-sub squares may be determined for south latitude and east longitude in a manner similar to determination of 5ⁿ squares.</p>				60'		9	8	7	40'	NORTH LAT.	6	5	4	3	2	1				0'					60'	WEST LONG.
					60'																											
		9	8	7	40'		NORTH LAT.																									
		6	5	4																												
		3	2	1																												
					0'																											
					60'		WEST LONG.																									
		1	Ship stationary	Ship in Sub-sub square 1																												
		2		Ship in Sub-sub square 2																												
		3		Ship in Sub-sub square 3																												
4		Ship in Sub-sub square 4																														
5		Ship in Sub-sub square 5																														
6		Ship in Sub-sub square 6																														
7		Ship in Sub-sub square 7																														
8		Ship in Sub-sub square 8																														
9		Ship in Sub-sub square 9																														
23	1/6 Degree of Longitude (1930, 1949 Codes)	0	0' - 9'			1930 and 1949 codes. Minutes of longitude divided by 10 and neglecting remainder.																										
		1	10' - 19'																													
		2	20' - 29'																													
		3	30' - 39'																													
		4	40' - 49'																													
		9	No minutes of longitude given																													
24-25	Wind Direction	00	Calm	Light and variable airs.	C	1921 code.																										
		01	North by East		NxE																											
		02	North Northeast		NNE																											
		03	Northeast by North		NExN																											
		04	Northeast		NE																											
		05	Northeast by East		NExE																											
		06	East Northeast		ENE																											
		07	East by North		ExN																											
		08	East		E																											
		09	East by South		ExS																											
		10	East Southeast		ESE																											
		11	Southeast by East		SExE																											

CARD CONTENT					SOURCE CONTENT	
Col- umns	item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
24-25	Wind Direction (Continued)	12	Southeast		SE	
		13	Southeast by South		SExS	
		14	South Southeast		SSE	
		15	South by East		SxS	
		16	South		S	
		17	South by West		SxW	
		18	South Southwest		SSW	
		19	Southwest by South		SWxS	
		20	Southwest		SW	
		21	Southwest by West		SWxW	
		22	West Southwest		WSW	
		23	West by South		WxS	
		24	West		W	
		25	West by North		WxN	
		26	West Northwest		WNW	
		27	Northwest by West		NWxW	
		28	Northwest		NW	
		29	Northwest by North		NWxN	
		30	North Northwest		NNW	
		31	North by West		NxW	
32	North		N			
		XX	No observation			
		00	No observation			1930 and 1949 code, changes from 1921 code. Other codes remain as in 1921 code.
		99	Calm	Light and variable airs.	C	1921 code.
26-27	Wind Force	00	Less than 1 mph	Calm		
		01	1 to 3 mph	Light winds		
		02	4 to 7 mph			
		03	8 to 12 mph			
		04	13 to 18 mph	Moderate winds		
		05	19 to 24 mph			
		06	25 to 31 mph	Moderate winds		
		07	32 to 38 mph			
		08	39 to 46 mph	Gales		
		09	47 to 54 mph			
		10	55 to 63 mph			
		11	64 to 72 mph			
		12	73 mph and over			
		XX	No observation			
		00	No observation			1930 and 1949 code, changes from 1921 code. Other codes remain as in 1921 code. (Corrected for temperature and gravity and reduced to sea level).
28-32	Barometer	09000-10999	900.0 to 1099.9 mb.			1921 code.
		XXXXX	No observation			1930 and 1949 code.
		00000	No observation			
33-34	Air Temperature	00 - 99	0°F to 99°F			1921 code. Temperatures over 100°F are punched in tens and units digits only. The hundreds unit being dropped.
		XX	No observation			1921 code.
		00	No observation			1930 and 1949 code. When temperature of 100°F occurs, 00 is punched. The only way to differentiate between no observation and 100° is to note the wet bulb. When columns 35-36 are punched 00, there was no observation, when wet bulb is punched with values other than 00, air temperature is 100°F.
35-36	Wet Bulb	00 - 99	0°F to 99°F			1921 code.
		XX	No observation			
		00	No observation			1930 and 1949 code.

CARD CONTENT					SOURCE CONTENT	
Col- umns	Item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
37-38	Humidity	Blank				1921 code.
		01-08	1% to 8%			1930 code.
		09	9% and 10%			
		11-99	11% to 99%			
		10	100%			
		00	No observation			
39-40	Sea Temperature	Blank				1949 code.
		00-99	0°F to 99°F			
		XX	No observation			1921 code.
		00	No observation			1930 and 1949 codes.
41	Weather A (Visibility)	0	Ordinary visibility			1921 code, Beaufort Notation
		1	Exceptional visibility		V	
		2	Haze		Z	
		3	Mist		K	
		4	Fog		F	
		X	No observation			
		0	No observation			1930 code changes from 1921 code, other codes remain as in 1921 code.
		9	Ordinary visibility			
		0	No observation			1949 code, Beaufort notation.
		1	Exceptional visibility			
		3	Mist or haze	With visibility 94, International 1949 code.	m or z	1/2 nautical mile (500 meters).
		4	Fog	With visibility 90-93.	f or F	< 50 yards (50 meters) to 1/4 nautical mile (500 meters).
		9	Ordinary visibility	With visibility 95-99.		1 nautical mile (2000 meters) to > 25 nautical miles (50 km.).
		42-44	Weather B	0	None of the active weather elements reported	
1	Snow				S	Example: Snow, Squalls = 120
2	Squalls				w	Rain = 300
3	Rain				h	Thunder, Hail, Lightning = 678
4	Passing showers				P	
5	Drizzle				D	
6	Thunder				T	
7	Hail				H	
8	Lightning				L	
X	No observation					
000	No observation					1930 code, Beaufort notation.
9	None of the active weather elements reported					Example: Snow, Squalls = 129
						rain = 399
						Thunder, Hail, Lightning = 678
						1949 code.
						If more than one of the "precipitation" letters are reported:
						rd = d = 5 sr = s+r = 13
						pr = p = 4 sh = s+h = 17
						pd = d = 5 rh = h = 7
						ps = s = 1 ph = h = 7
				Examples: fpd = 4-599 These examples show the use of		
				prq = 9-429 columns 41-44, weather A and		
				vsrq = 1-132 weather B.		
45	Past Weather	Blank	No observation			1921 code and 1930 code. In general, the 1930 code has made no provision for Past Weather. Some cards are punched with a 9 to indicate a missing observation.
		0	Fair	Clear or slightly clouded.		1949 code.
		1	Variable sky			NOTE: 1 cable length = 120 fathoms = 240 yards.
		2	Mainly overcast			
		3	Duststorm	Visibility less than 5 cables.		

CARD CONTENT					SOURCE CONTENT			
Col- umns	item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices		
45	Fast Weather (Continued)	4	Fog or thick dust haze	Visibility less than 5 cables				
		5	Drizzle					
		6	Rain					
		7	Snow or sleet					
		8	Showers					
		9	Thunderstorm	With or without precipitation				
		X	No observation					
		46	Visibility	0	Dense fog	Objects not visible at 50 yards		1921 code. NOTE: 1 cable length = 120 fathoms = 240 yards.
				1	Thick fog	Objects not visible at 1 cable		
				2	Fog	Objects not visible at 2 cables		
3	Moderate fog			Objects not visible at 1/2 nautical mile				
4	Mist, haze or very poor visibility			Objects not visible at 1 nautical mile				
5	Poor visibility			Objects not visible at 2 nautical miles				
6	Moderate visibility			Objects not visible at 5 nautical miles				
7	Good visibility			Objects not visible at 10 nautical miles				
8	Very good visibility			Objects not visible at 30 nautical miles				
9	Excellent visibility			Objects visible at more than 30 nautical miles				
X	No observation							
0	No observation						1930 Code.	
1	Dense fog			Objects not visible at 50 yards				
	Thick fog			Objects not visible at 1 cable				
2	Fog			Objects not visible at 2 cables				
3	Moderate fog			Objects not visible at 1/2 nautical mile				
4	Mist or haze or very poor visibility			Objects not visible at 1 nautical mile				
5	Poor visibility			Objects not visible at 2 nautical miles				
6	Moderate visibility			Objects not visible at 5 nautical miles				
7	Good visibility			Objects not visible at 10 nautical miles				
8	Very good visibility	Objects not visible at 30 nautical miles						
9	Excellent visibility	Objects visible at more than 30 nautical miles						
		0	Less than 50 yards			1949 code.		
		1	50 - 200 yards					
		2	200 - 500 yards					
		3	500 - 1000 yards					
		4	1000 yards - 1 nautical mile					
		5	1-2 nautical miles					
		6	2-5 nautical miles					
		7	5-10 nautical miles					
		8	10-25 nautical miles					
		9	25 nautical miles or over					
47-48	Lower Cloud Type	0	Stratus	Space for two cloud types available, if but one was reported, that type was punched in column 47, and column 48 was punched Y in the 1921 code or 9 in the 1930 and 1949 codes.	St	1921 code.		
		6	Stratocumulus		St Cu			
		7	Nimbus		Nb			
		8	Cumulus		Cu			
		9	Cumulonimbus		Cu Nb			
		X	No observation					
		Y	No lower cloud					
		00	No observation				1930 and 1949 code.	
		1	Stratocumulus		Not used in 1949 code	St Cu, Sc		
		2	Nimbus			Nb		
3	Cumulus		Cu					
4	Cumulonimbus		Cu Nb, Cb					
5	Stratus		St					

CARD CONTENT					SOURCE CONTENT		
Col- umns	item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices	
47-48	Lower Cloud Type (Continued)	6	Scud				
		7	Nimbostratus		Ns		
		88	Overcast				
		99	No lower cloud				
49	Middle Cloud Type	4	Alto cumulus		A Cu	1921 code.	
		5	Altostratus		A St		
		X	No observation				
		Y	No middle cloud				
		0	No observation			1930 and 1949 code.	
		1	Alto cumulus		A Cu		
		2	Altostratus		A St		
		3	Alto cumulus and Altostratus		A Cu and A St		
		9	No middle cloud				
50	Upper Cloud Type	1	Cirrus		Ci	1921 code.	
		2	Cirrostratus		Ci St		
		3	Cirrocumulus		Ci Cu		
		X	No observation				
		Y	No upper cloud				
		0	No observation			1930 and 1949 code.	
		1	Cirrus		Ci		
		2	Cirrostratus		Ci St		
		3	Cirrocumulus		Ci Cu		
		4	Cirrus and Cirrostratus		Ci and Ci St		
		5	Cirrus and Cirrocumulus		Ci and Ci Cu		
		6	Cirrostratus and Cirrocumulus		Ci St and CiCu		
		9	No upper cloud				
		51	Amount of Lower or Middle Cloud	Blank			
0	No observation					1930 code.	
1	0 to 1 tenth				0-1/10		
2	2 tenths				2/10		
3	3 tenths				3/10		
4	4 tenths				4/10		
5	5 tenths				5/10		
6	6 tenths				6/10		
7	7 tenths				7/10		
8	8 tenths				8/10		
9	9 or 10 tenths			9/10 or 10/10			
Amount of Low Cloud	0		No low clouds			1949 code.	
	1 to 8		1 eighth to 8 eighths		1/8 to 8/8		
	9		Sky obscured	Cloud amount cannot be estimated owing to darkness			
	X		No observation				
52	Total Cloud Amount	0	Clear sky			1921 code.	
		1 to 9	1 tenth to 9 tenths		1/10 to 9/10 or .1 to .9		
		X	No observation				
		Y	Overcast				
		0-9	Same as 1930 code for amount of lower or middle cloud			1930 code.	
		0-9, X	Same as 1949 code for amount of lower or middle cloud			1949 code.	

CARD CONTENT					SOURCE CONTENT			
Col- umns	item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices		
53	Height of Lower or Middle Cloud	Blank				1921 code.		
		Blank				1930 code. In general, no data are punched in this column, except for ocean		
		0	0 - 149 feet			1949 code. weather ships' logs. Any punches in this column conform to 1949 code.		
		1	150 - 299 feet					
		2	300 - 599 feet					
		3	600 - 999 feet					
		4	1000 - 1999 feet					
		5	2000 - 2999 feet					
		6	3000 - 4999 feet					
		7	5000 - 6499 feet					
		8	6500 - 7999 feet					
		9	No cloud below 8000 ft.					
X	No height given							
54-56		Blank	Not used					
57-58	Sea Direction	00	No disturbance			1921 code.		
		01 - 32	Same as wind direction columns 24-25					
		50	Confused sea					
		51 - 82	50 added to direction of wind to indicate confused sea from that direction					
		XX	No observation					
		00	No observation					
		01 - 32	Same as wind direction					
		50	Confused sea					
		51 - 82	50 added to direction of wind to indicate confused sea from that direction					
		99	No disturbance					
		Blank				1930 code.		
		Blank				Not used with 1949 code.		
59	Sea Amount	0	No disturbance			1921 code.		
		1	Smooth	Wave height less than 1 foot				
		2	Slight	Wave height 1-3 feet				
		3	Moderate	Wave height 3-5 feet				
		4	Rough	Wave height 5-8 feet				
		5	Very rough	Wave height 8-12 feet				
		6	High	Wave height 12-20 feet				
		7	Very high	Wave height 20-40 feet				
		8	Precipitous	Wave height over 40 feet				
		9	Confused					
		X	No observation					
		0	No observation					
				Blank				1930 code. Same as 1921 code except that "0" may mean "No disturbance" or "No observation".
				Blank				Not used in 1949 code.
60-61	Swell Direction		Same as sea direction					
62	Swell Amount	0	No swell			1921 code.		
		1	Slight					
		2						
		3	Moderate					
		4	Rather rough					
		5	Rough					

CARD CONTENT					SOURCE CONTENT	
Col- umns	Item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
62	Swell Amount (Continued)	6	Heavy			1930 code.
		7				
		8	Very heavy			
		9	Abnormal			
		0	No observation			
		0	No swell			
		1	Low swell	Short or average length		
		2	Low swell	Long		
		3	Moderate swell	Short		
		4	Moderate swell	Average length		
		5	Moderate swell	Long		
		6	Heavy swell	Short		
		7	Heavy swell	Average length		
		8	Heavy swell	Long		
		9	Confused			
63-64	Air Temperature	Blank				1949 code, not used.
		00-99	0° - 99°C			For Marsden squares 253, 254, 282, 283, 284, 285, 286, 287, 288 only. Punched for use with German, Dutch decks.
65	Significant Cloud Type	Blank				1921 code, 1930 code, not used.
		0	Stratus or Fractostratus		St or Fs	
		1	Cirrus		CI	
		2	Cirrostratus		CS	
		3	Cirrocumulus		Cc	
		4	Alto cumulus		Ac	
		5	Altostratus		As	
		6	Stratocumulus		Sc	
		7	Nimbostratus		Ns	
		8	Cumulus or Fractocumulus		Cu cr Fc	
		9	Cumulimbus		Cb	
66	Significant Cloud Amount	Blank				
		0-8	0 eights to 8 eights			1949 code.
		9	Sky obscured	Cloud amount cannot be estimated owing to darkness		
		X	No observation			
67-68	Significant Cloud Height	Blank				1921 code, 1930 code, not used.
		00	Lower than 100 feet			For each code figure 01 to 80 inclusive, the height increases 100 feet. For code figures 90 to 99, a height that is exactly equal to the upper limit of one group is coded as the lower limit of the next higher group.
		01	100 feet			
		02	200 feet			
		03-80	300 feet to 8000 feet			
		81	9000 feet			
		82	Not used			
		83	10,000 - 12,000 feet			
		84	13,000 - 15,000 feet			
		85	16,000 - 19,000 feet			
		86	20,000 - 22,000 feet			
		87	23,000 - 25,000 feet			
		88	26,000 - 29,000 feet			
		89	≥ 30,000 feet			
		90	0 feet - 150 feet			
		91	150 feet - 300 feet			
		92	300 feet - 600 feet			
		93	600 feet - 1000 feet			
94	1000 feet - 2000 feet					
95	2000 feet - 3000 feet					
96	3000 feet - 5000 feet					

CARD CONTENT					SOURCE CONTENT	
Col- umns	Item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
67-68	Significant Cloud Height (Continued)	97	5000 feet - 6500 feet			
		98	6500 feet - 8000 feet			
		99	8000 feet or more or no clouds			
		XX	No observation			
69-70	Direction of Waves	Blank				1921 code, 1930 code, not used.
		01 to 36	010° to 360°	In tens of degrees.		1949 code.
		49	Confused	Height less than 15 feet		
		99	Confused	Height greater than 15 feet		
71	Period of Waves	Blank				1921 code, 1930 code, not used.
		2	5 seconds or less			1949 code.
		3	6-7 seconds			
		4	8-9 seconds			
		5	10-11 seconds			
		6	12-13 seconds			
		7	14-15 seconds			
		8	16-17 seconds			
		9	18-19 seconds			
		0	20-21 seconds			
		1	Over 21 seconds			
72	Mean Maximum Height of Waves	Blank				1921 code, 1930 code, not used.
		0	Less than 1 foot	When 50 is added to direction of waves: 16 feet		The lower code figure was punched when the wave height was exactly between two code figures.
		1	1 1/2 feet	17 1/2 feet		
		2	3 feet	19 feet		
		3	5 feet	21 feet		
		4	6 1/2 feet	22 1/2 feet		
		5	8 feet	24 feet		
		6	9 1/2 feet	25 1/2 feet		
		7	11 feet	27 feet		
		8	13 feet	29 feet		
		9	14 feet	30 1/2 feet		
		X	Height impossible to determine waves < 14 ft.	Height impossible to determine, waves > 14 feet.		
73-76		Blank				1921 code, 1930 code, not used.
				Same as columns 69-72.		1949 code. Provision made for double wave train, but not usually recorded.
77-78	Air Linus Sea Temperature	Blank				1921 code, 1930 code, not used.
		00-49	0°F to 49°F			Difference between air temperature and sea temperature in whole degrees Fahrenheit. If air temperature is below sea temperature, 50 is added to the value of the difference in coding the data. 1949 code.
		50-99	-0°F to -49°F			
		XX	No value obtainable			
79-80	Dew Point	Blank				1921 code, 1930 code, not used.
		00-99	0°F to 99°F			1949 code.
		XX	No observation			