

AD A950790

N.O. PUB. 799-CE



1. / NO -



SEA AND SWELL CHA

NORTHWESTERN PACIFIC OCEAN,

SOUTHWESTERN PACIFIC OCEAN.

N.O. PUB. 799-CE

2



1. / NO -



A N D S W E L L C H A R T S,

N O R T H W E S T E R N P A C I F I C O C E A N,

2

S O U T H W E S T E R N P A C I F I C O C E A N,

S **DTIC**
ELECTE
JUL 28 1981
E

REPRINTED JUNE 1961 - OCTOBER 1971
RELEASABLE 1999

Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By _____	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A	

UNANNOUNCED

DISTRIBUTION STATEMENT A
Approved for public release;
Distribution Unlimited

PREPARED BY THE U.S. NAVAL HYDROGRAPHIC OFFICE, WASHINGTON, D.C.

UNDER THE AUTHORITY OF THE SECRETARY OF THE NAVY

11/0

017

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER NOP-799CE	2. GOVT ACCESSION NO. AD-A950 990	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Atlas of Sea and Swell Charts - Northwest and Southwest Pacific Ocean		5. TYPE OF REPORT & PERIOD COVERED
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s)		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS U.S. Navy Hydrographic Office Washington, DC		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS		12. REPORT DATE 1943
		13. NUMBER OF PAGES 12
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		18. SECURITY CLASS. (of this report) Unclassified
		18a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES Reprinted by the Naval Oceanographic Office in 1963, 1969, 1974 and 1976		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Sea Northwest Pacific Ocean Swell Southwest Pacific Ocean Waves Winds		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Sea and swell atlases show monthly, seasonal, or yearly charts, depending on data distribution. Winds, sea, and swell are shown monthly; persistence of waves and wave period-height and period-direction are presented seasonally.		



NORTHWESTERN PACIFIC OCEAN SEA AND SWELL CHART JANUARY

PREVAILING SEAS, SWELLS AND CALMS

The information shown on this chart has been compiled from observations made during the month by the cooperating observers of the Oceanographic Office to and including the year 1941, the majority of the observations having been taken during the years 1932 to 1940 inclusive. The Oceanographic Office has shown all information in its files, however slight, and in some areas where the number of observations is small the graphical presentation will convey a false impression unless examined thoroughly. In evaluating the reliability of the information for any given area consider the number of observations, the geographical position, the percentages of direction, and the adjacent coasts. THE COMPUTATIONS FOR SEA AND SWELL WERE MADE SEPARATELY AND ALTHOUGH THE CONDITIONS FOR BOTH ARE SHOWN ON THE SAME CHART FOR THE CONVENIENCE OF THE USER IT SHOULD BE UNDERSTOOD THAT THE DIRECTION OF SEA AND SWELL AS WELL AS THE CONDITIONS UNDER THOSE DIRECTIONS WILL NOT NECESSARILY BE IDENTICAL AT ANY GIVEN TIME OR PLACE.

METHOD OF PRESENTATION

The purpose of this chart is to show both graphically and with figures, by means of an eight point double rose, printed in black, the character of the seas and swells that have prevailed within the areas outlined on the brown base. THE SEA CONDITIONS ARE REPRESENTED BY THE LIGHT LINE ARROWS AND SLANTING TYPE, WHILE THE SWELL CONDITIONS ARE REPRESENTED BY THE HEAVY LINE ARROWS AND VERTICAL TYPE. No arrow is shown when the percent of direction is less than 7. In instances where the number of observations in any direction is 15 or over but the percent of direction is less than 7, the conditions within that direction may be shown in the usual manner without the arrow. The arrows point in the directions toward which the seas or swells move. The length of the arrow measured from the center mark, when placed on the attached scale and the numeral at the tail of the arrow, gives the number of times in each 100 observations that the seas or swells have been moving from or near the given point. In instances where the full length of the arrow cannot be shown, the shaft is shortened as much as necessary and the true percent at the tail of the arrow is placed in parentheses.

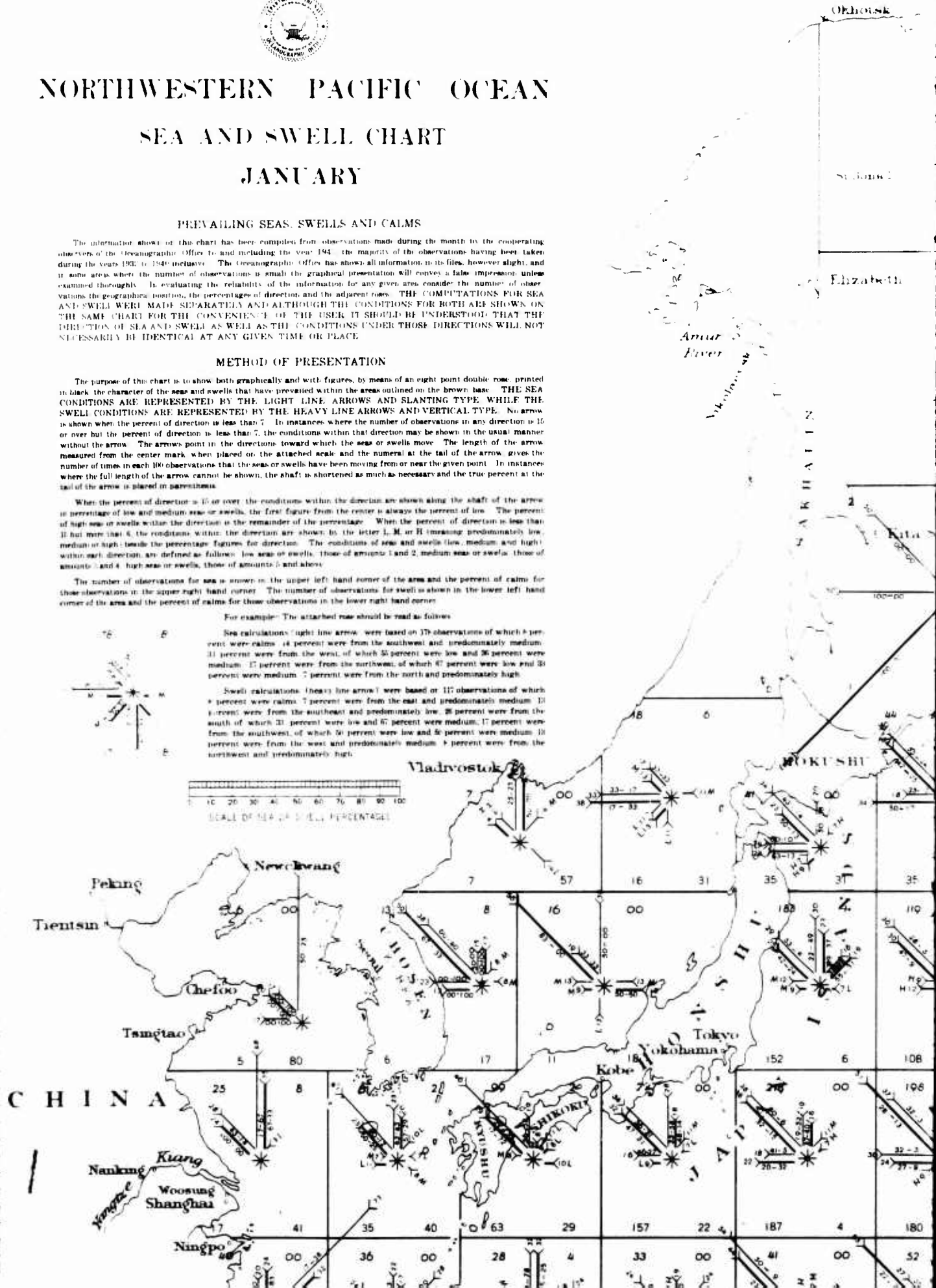
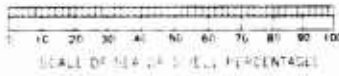
When the percent of direction is 15 or over, the conditions within the direction are shown along the shaft of the arrow in percentage of low and medium seas or swells, the first figure from the center is always the percent of low. The percent of high seas or swells within the direction is the remainder of the percentage. When the percent of direction is less than 15 but more than 8, the conditions within the direction are shown by the letter L, M, or H (meaning predominately low, medium or high) beside the percentage figures for direction. The conditions of seas and swells (low, medium, and high) within each direction are defined as follows: low seas or swells, those of amounts 1 and 2; medium seas or swells, those of amounts 3 and 4; high seas or swells, those of amounts 5 and above.

The number of observations for sea is shown in the upper left hand corner of the rose and the percent of calms for these observations in the upper right hand corner. The number of observations for swell is shown in the lower left hand corner of the rose and the percent of calms for these observations in the lower right hand corner.

For example: The attached rose should be read as follows:

Sea calculations (light line arrow) were based on 176 observations of which 8 percent were calms, 14 percent were from the southwest and predominately medium, 31 percent were from the west of which 51 percent were low and 36 percent were medium, 17 percent were from the northwest, of which 47 percent were low and 33 percent were medium, 7 percent were from the north and predominately high.

Swell calculations (heavy line arrow) were based on 117 observations of which 4 percent were calms, 7 percent were from the east and predominately medium, 31 percent were from the southeast and predominately low, 26 percent were from the south of which 31 percent were low and 67 percent were medium, 17 percent were from the southwest, of which 50 percent were low and 51 percent were medium, 13 percent were from the west and predominately medium, 4 percent were from the northwest and predominately high.



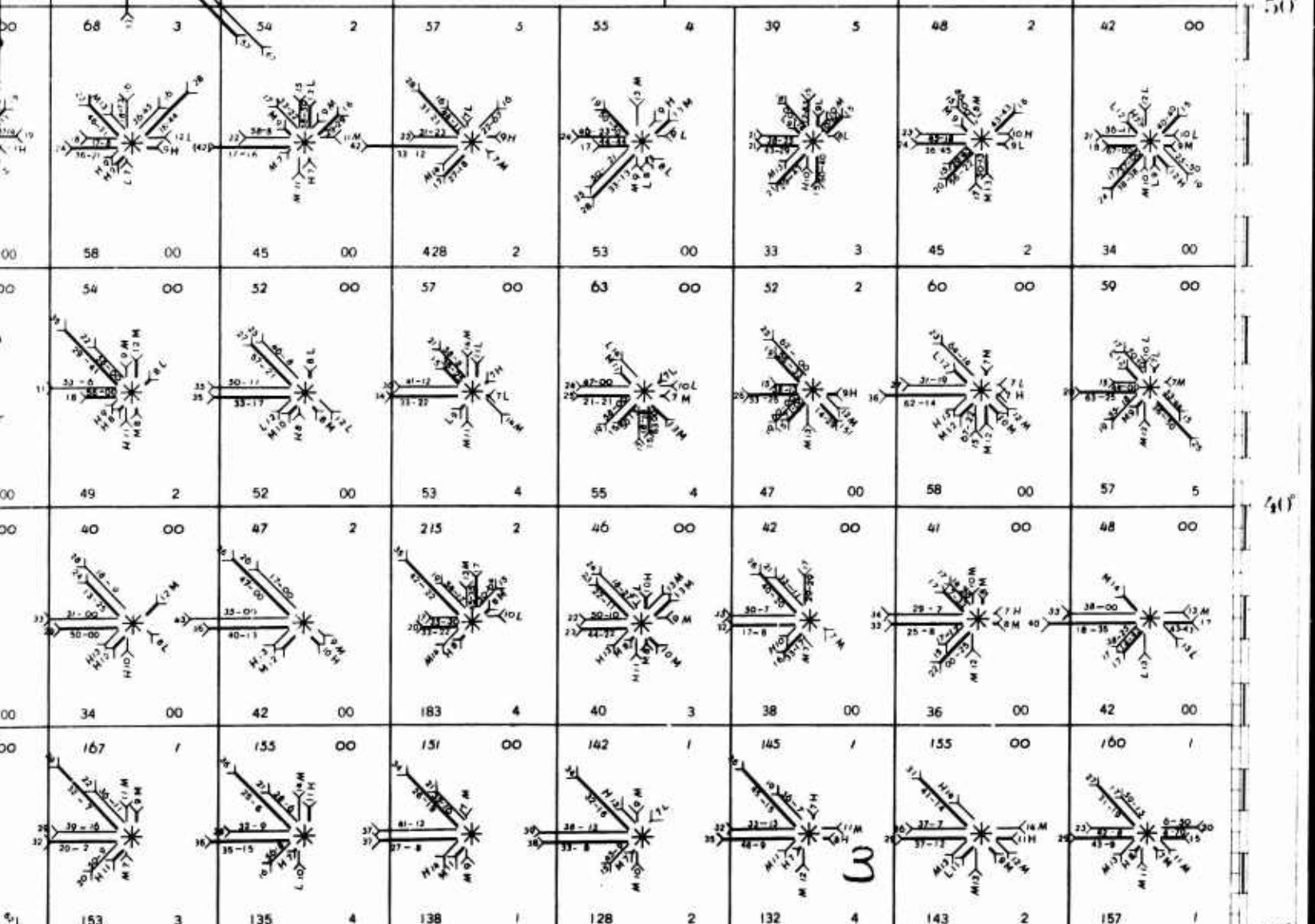
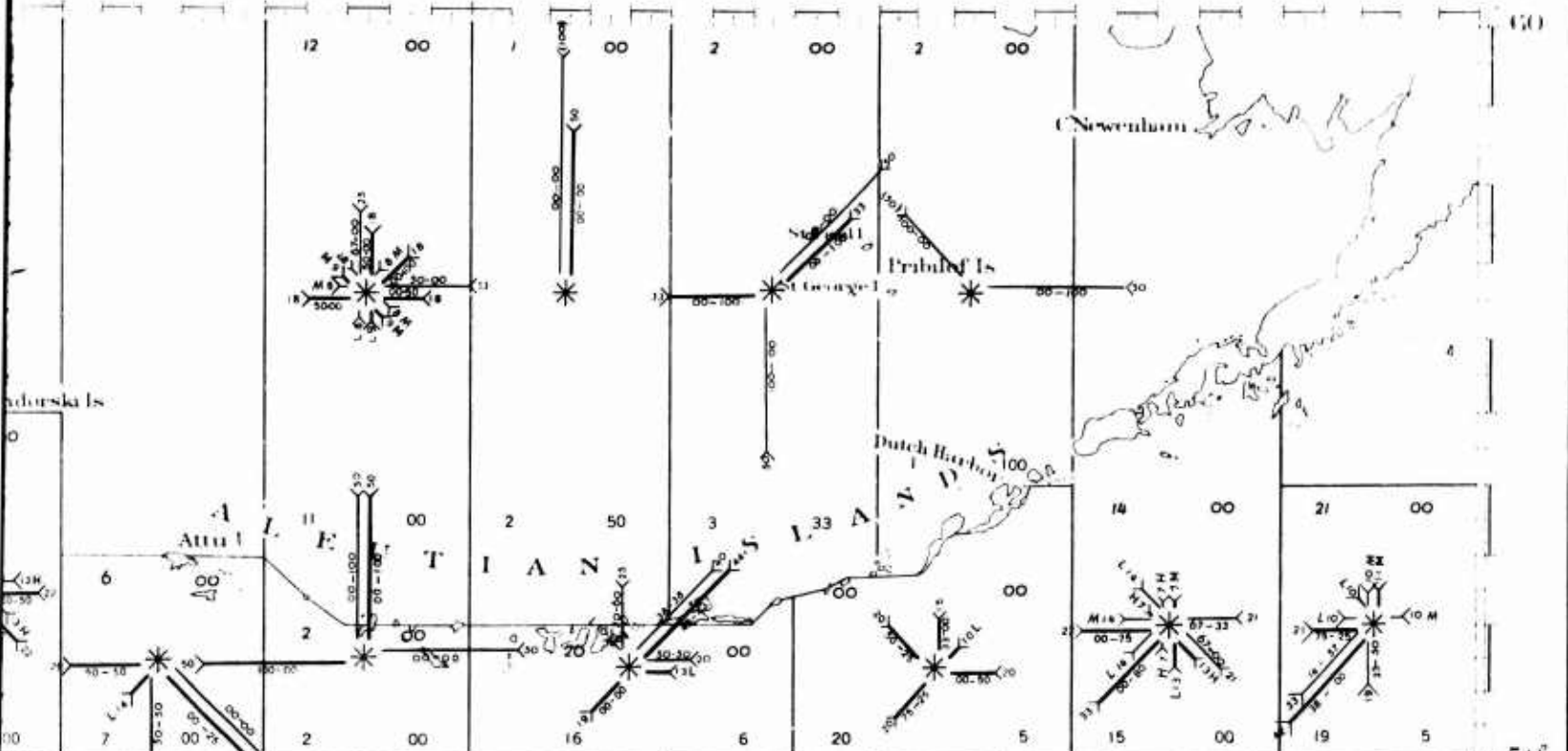
170°

180°

170°

160°

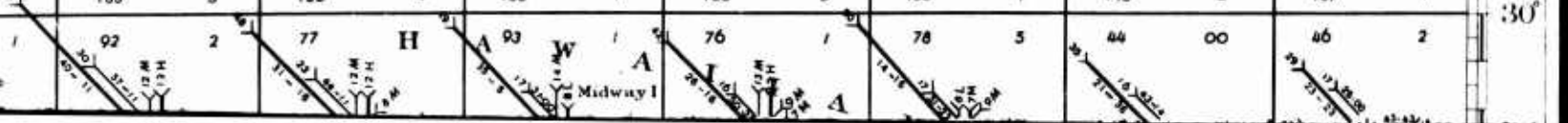
50

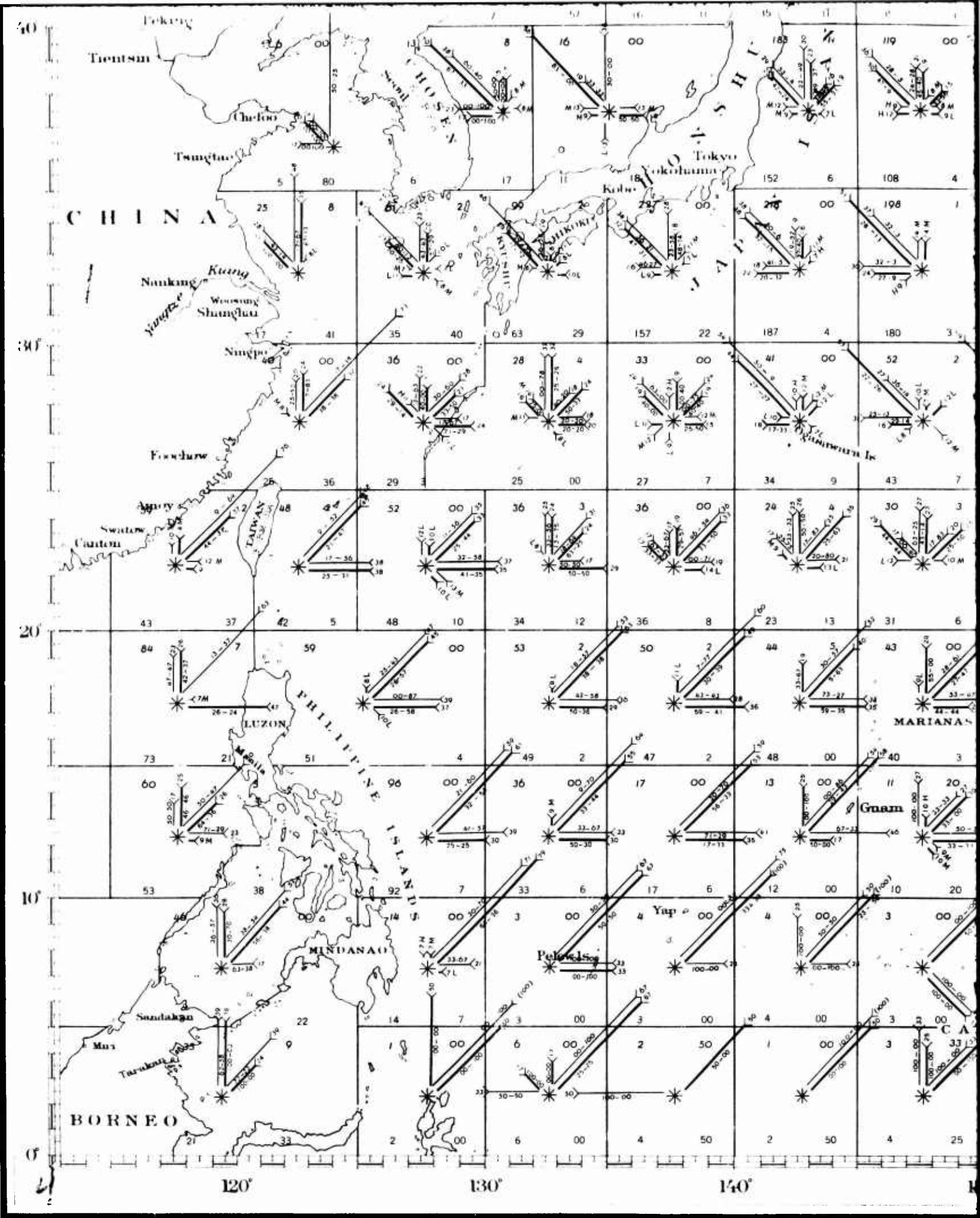


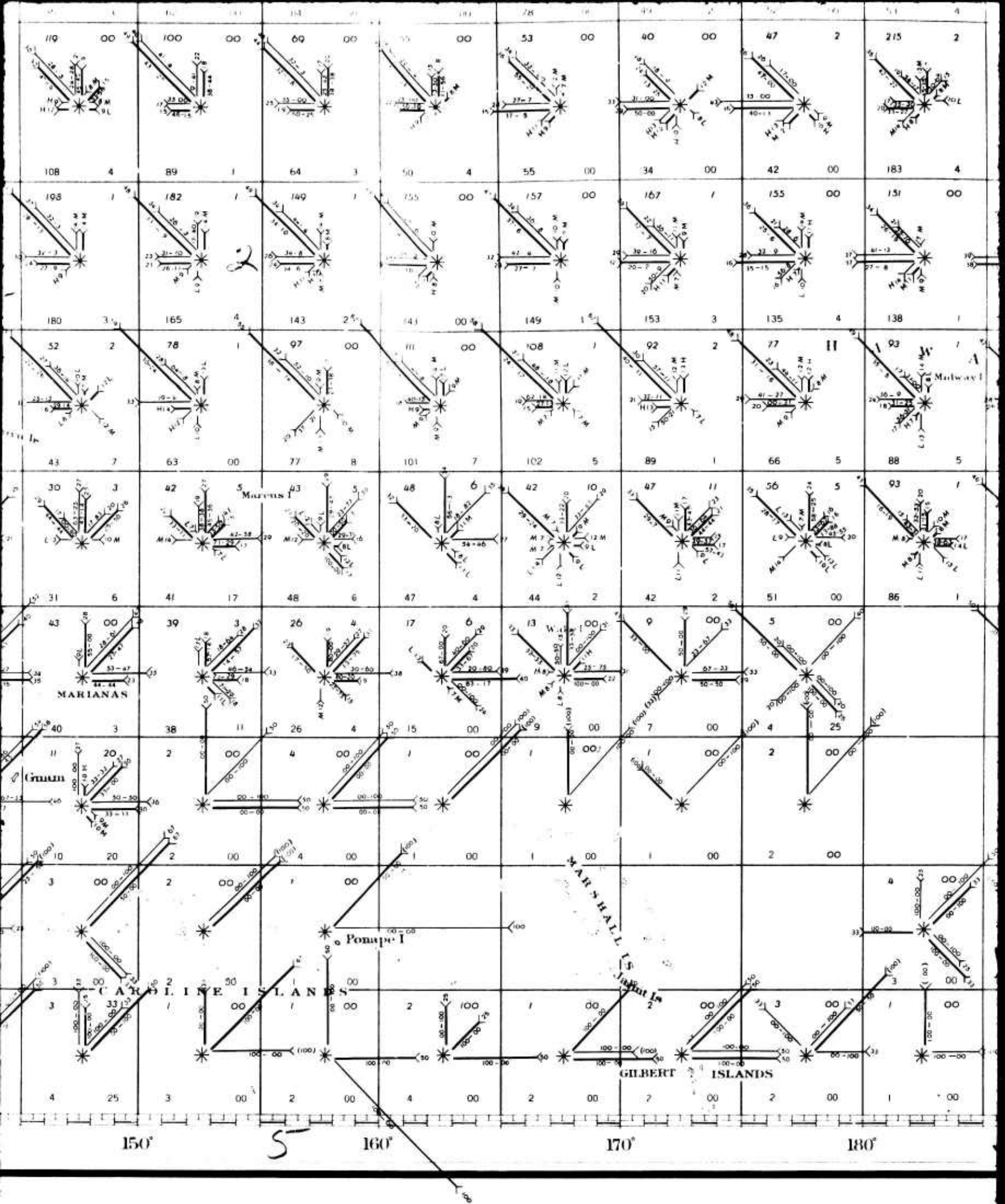
50°

40°

30°







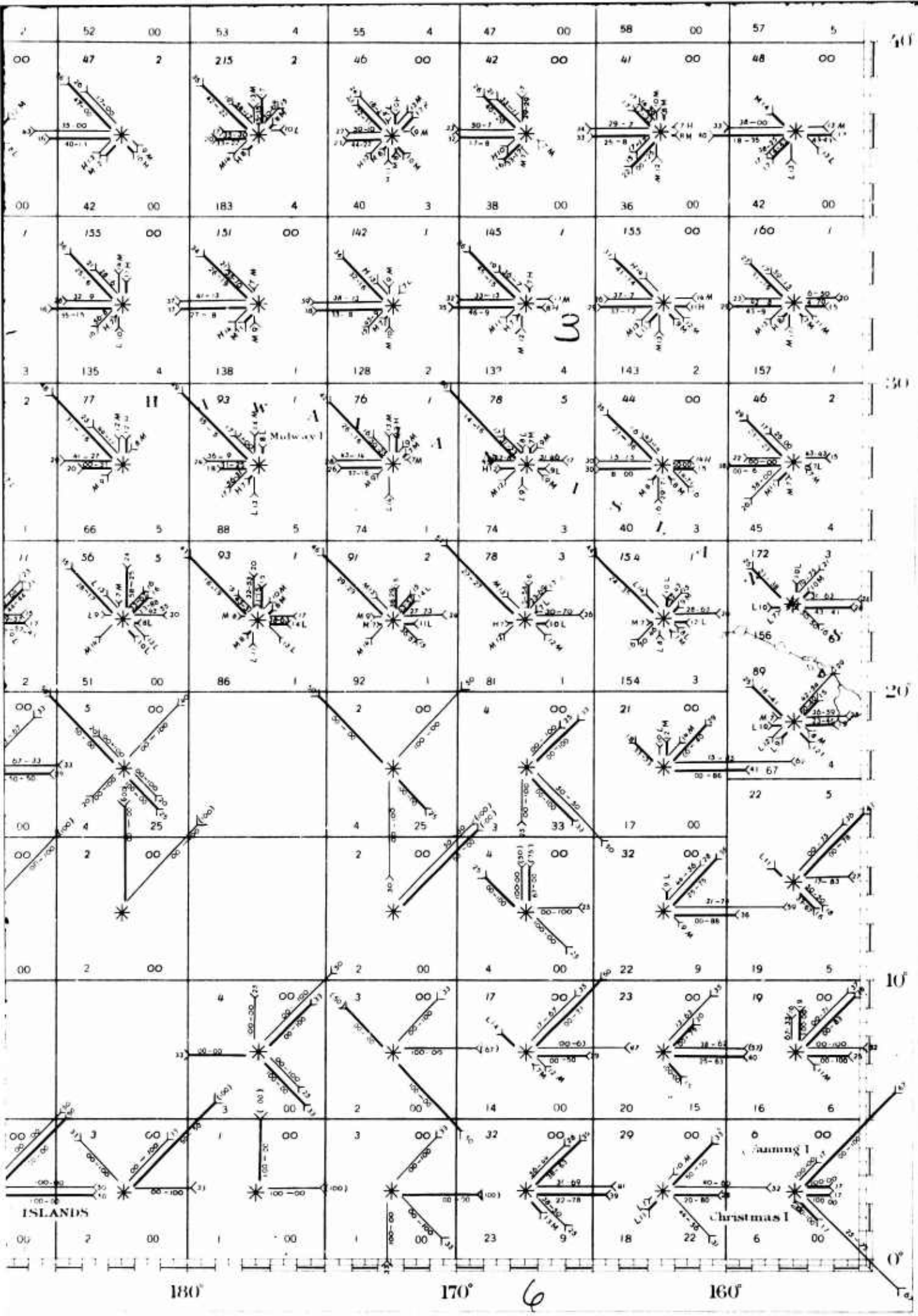
150°

S

160°

170°

180°





NORTHWESTERN PACIFIC OCEAN SEA AND SWELL CHART FEBRUARY

PREVAILING SEAS, SWELLS AND CALMS

The information shown on this chart has been compiled from observations made during the month by the cooperating observers of the Oceanographic Office to and including the year 1947, the majority of the observations having been taken during the years 1932 to 1940 inclusive. The Oceanographic Office has shown all information in its files, however slight, and in some areas where the number of observations is small the graphical presentation will convey a false impression unless examined thoroughly. In evaluating the reliability of the information for any given area consider the number of observations, the geographical position, the percentages of direction and the adjacent roses. THE COMPUTATIONS FOR SEA AND SWELL WERE MADE SEPARATELY AND ALTHOUGH THE CONDITIONS FOR BOTH ARE SHOWN ON THE SAME CHART FOR THE CONVENIENCE OF THE USER, IT SHOULD BE UNDERSTOOD THAT THE DIRECTION OF SEA AND SWELL AS WELL AS THE CONDITIONS UNDER THOSE DIRECTIONS WILL NOT NECESSARILY BE IDENTICAL AT ANY GIVEN TIME OR PLACE.

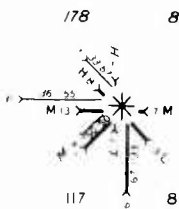
METHOD OF PRESENTATION

The purpose of this chart is to show both graphically and with figures, by means of an eight-point double rose, printed in black, the character of the seas and swells that have prevailed within the areas outlined on the brown base. THE SEA CONDITIONS ARE REPRESENTED BY THE LIGHT LINE ARROWS AND SLANTING TYPE, WHILE THE SWELL CONDITIONS ARE REPRESENTED BY THE HEAVY LINE ARROWS AND VERTICAL TYPE. No arrow is shown when the percent of direction is less than 7. In instances where the number of observations in any direction is 15 or over but the percent of direction is less than 7, the conditions within that direction may be shown in the usual manner without the arrow. The arrows point in the directions toward which the seas or swells move. The length of the arrow measured from the center mark, when placed on the attached scale and the numeral at the tail of the arrow, gives the number of times in each 100 observations that the seas or swells have been moving from or near the given point. In instances where the full length of the arrow cannot be shown, the shaft is shortened as much as necessary and the true percent at the tail of the arrow is placed in parenthesis.

When the percent of direction is 15 or over, the conditions within the direction are shown along the shaft of the arrow in percentage of low and medium seas or swells, the first figure from the center is always the percent of low. The percent of high seas or swells within the direction is the remainder of the percentage. When the percent of direction is less than 15 but more than 6, the conditions within the direction are shown by the letter L, M, or H (meaning predominately low, medium or high) beside the percentage figures for direction. The conditions of seas and swells (low, medium and high) within each direction, are defined as follows: low seas or swells, those of amounts 1 and 2; medium seas or swells, those of amounts 3 and 4; high seas or swells, those of amounts 5 and above.

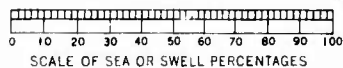
The number of observations for sea is shown in the upper left hand corner of the area and the percent of calms for those observations in the upper right hand corner. The number of observations for swell is shown in the lower left hand corner of the area and the percent of calms for those observations in the lower right hand corner.

For example—The attached rose should be read as follows:

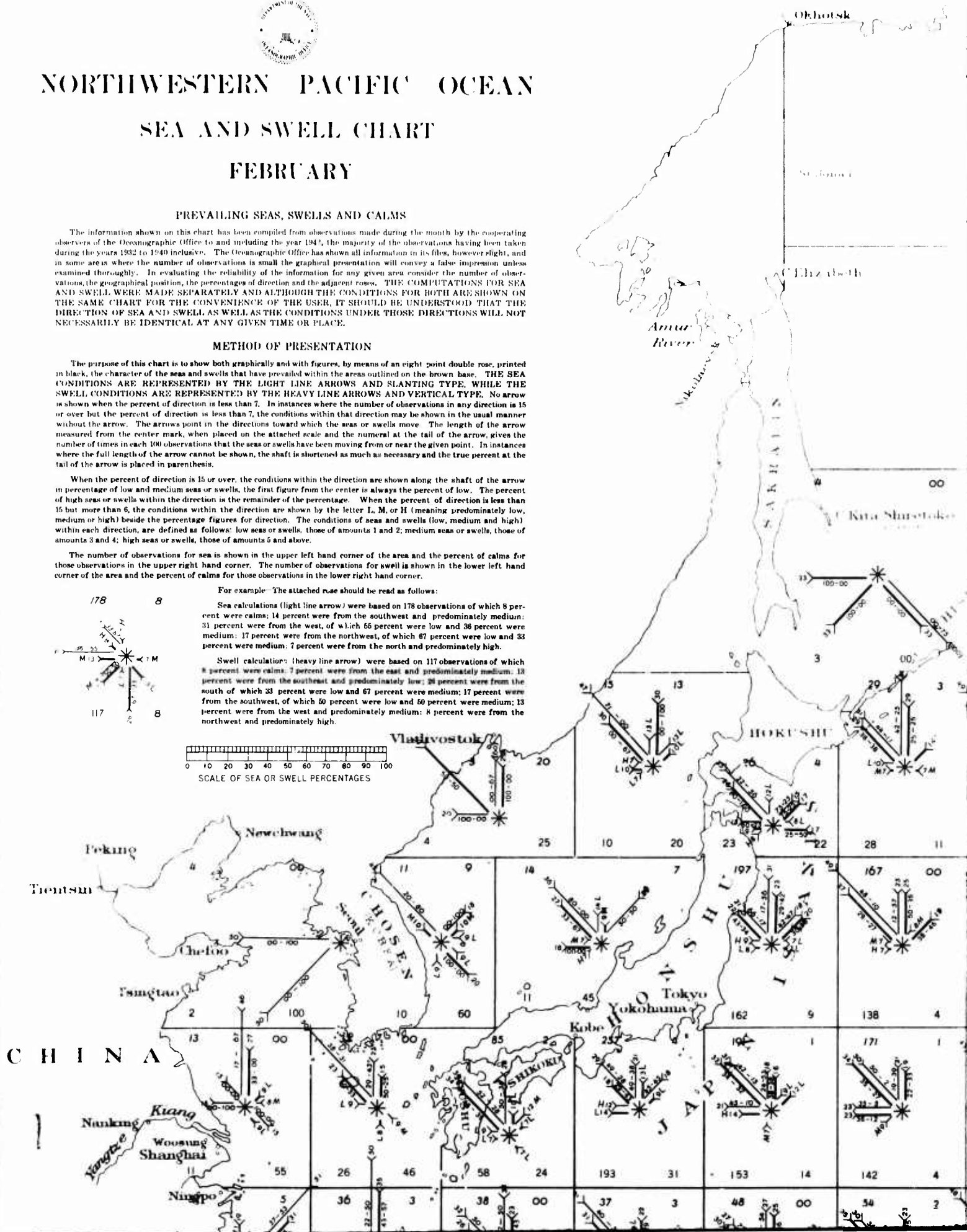


Sea calculations (light line arrow) were based on 178 observations of which 8 percent were calms; 14 percent were from the southwest and predominately medium; 31 percent were from the west, of which 56 percent were low and 36 percent were medium; 17 percent were from the northwest, of which 67 percent were low and 33 percent were medium; 7 percent were from the north and predominately high.

Swell calculation (heavy line arrow) were based on 117 observations of which 8 percent were calms; 7 percent were from the east and predominately medium; 13 percent were from the southeast and predominately low; 28 percent were from the south of which 33 percent were low and 67 percent were medium; 17 percent were from the southwest, of which 50 percent were low and 50 percent were medium; 13 percent were from the west and predominately medium; 8 percent were from the northwest and predominately high.



SCALE OF SEA OR SWELL PERCENTAGES



150

160

170

180

Obhotsk

Elizabeth

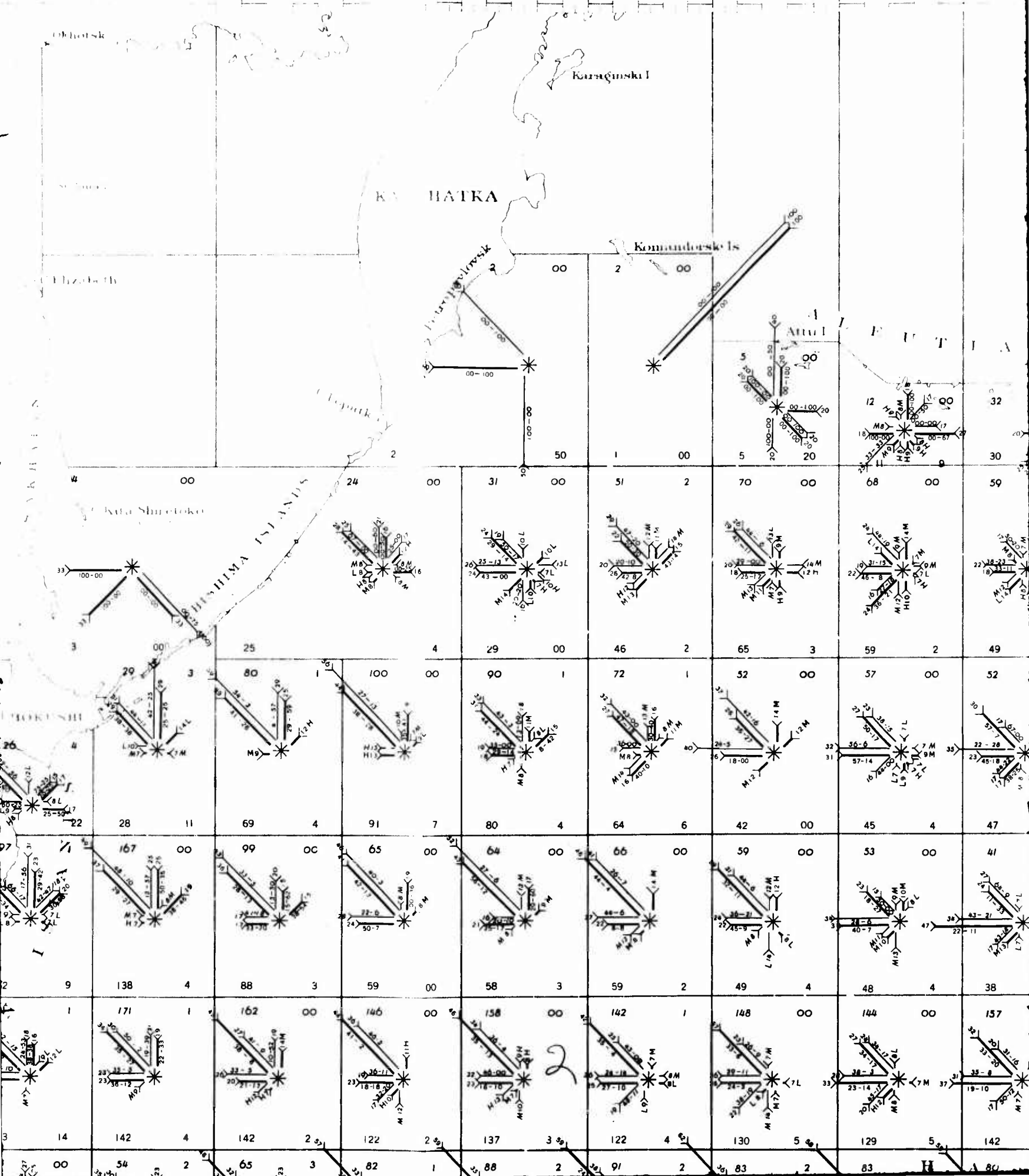
KAMATKA

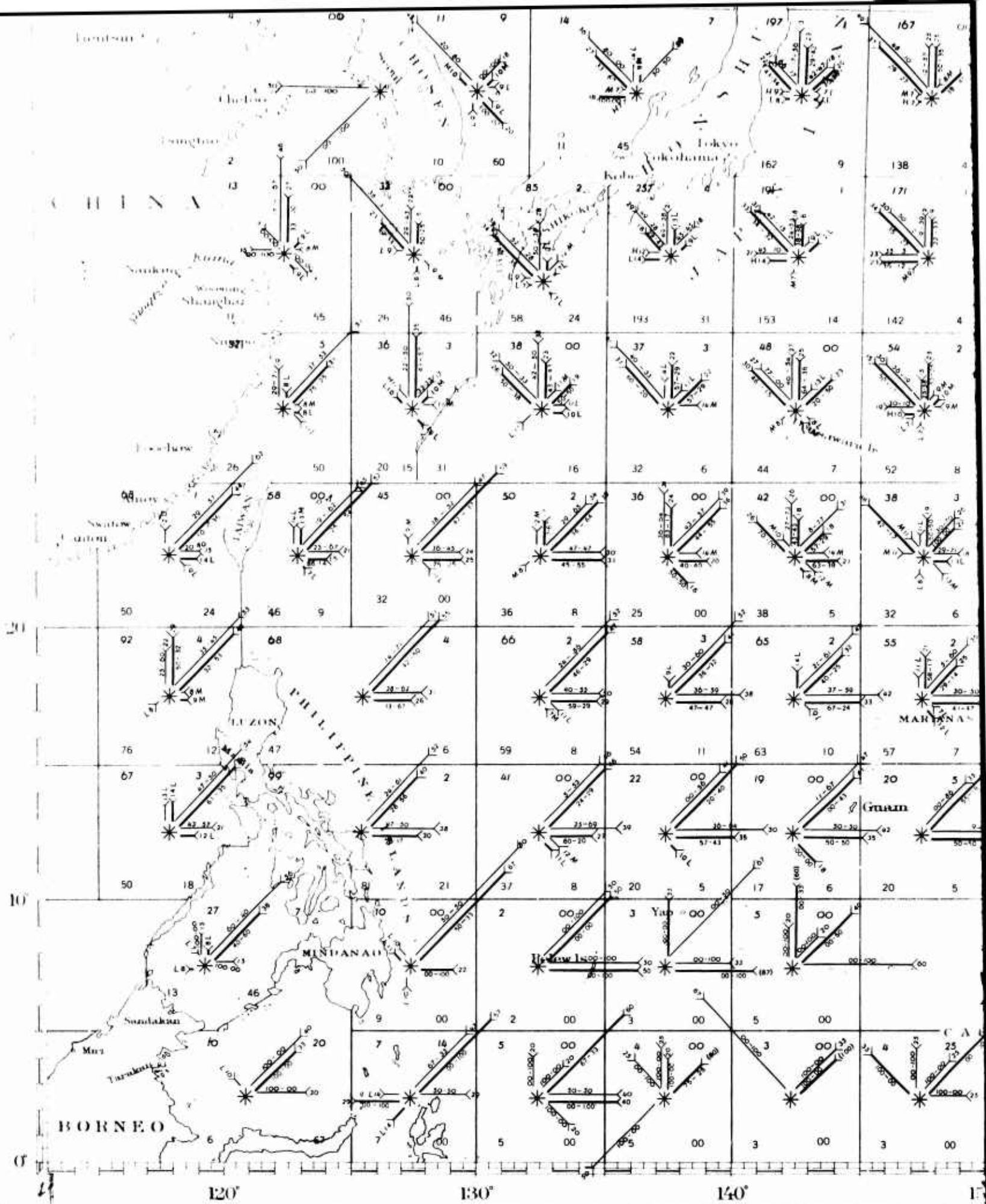
Kuraçmski I

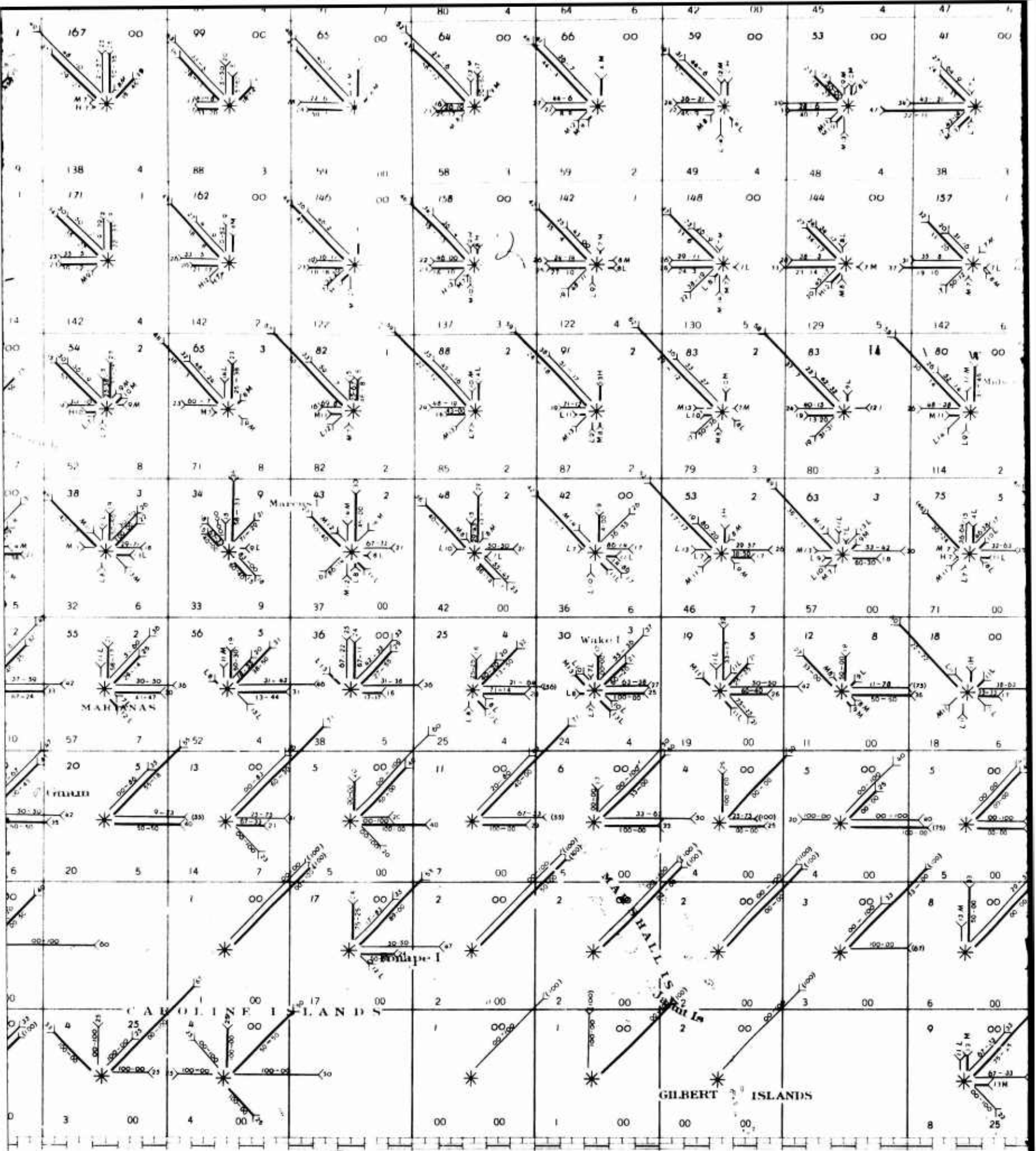
Komandorske Is

Attu I

ALUTIA







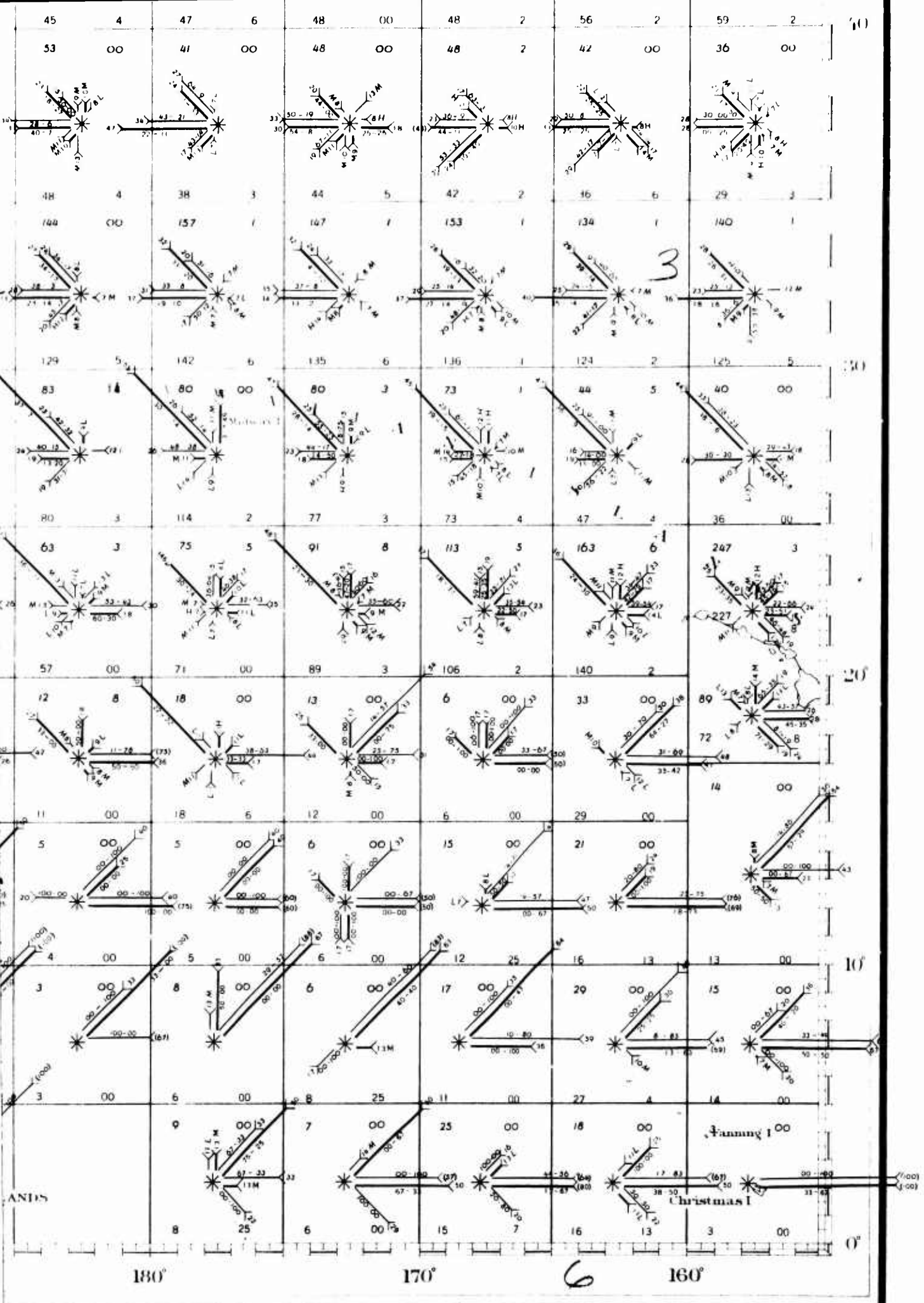
150°

S

160°

170°

180°





NORTHWESTERN PACIFIC OCEAN SEA AND SWELL CHART

MARCH

PREVAILING SEAS, SWELLS AND CALMS

The information shown on this chart has been compiled from observations made during the month by the cooperating observers of the Oceanographic Office and including the year 1911, the majority of the observations having been taken during the years 1932 to 1940 inclusive. The Oceanographic Office has shown all information in its files, however slight, and in some areas where the number of observations is small the graphical presentation will convey a false impression unless examined thoroughly. In evaluating the reliability of the information for any given area consider the number of observations, the geographical position, the percentages of direction and the adjacent roses. THE COMPUTATIONS FOR SEA AND SWELL WERE MADE SEPARATELY AND ALTHOUGH THE CONDITIONS FOR BOTH ARE SHOWN ON THE SAME CHART FOR THE CONVENIENCE OF THE USER, IT SHOULD BE UNDERSTOOD THAT THE DIRECTION OF SEA AND SWELL AS WELL AS THE CONDITIONS UNDER THOSE DIRECTIONS WILL NOT NECESSARILY BE IDENTICAL AT ANY GIVEN TIME OR PLACE.

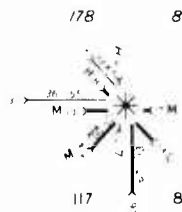
METHOD OF PRESENTATION

The purpose of this chart is to show both graphically and with figures, by means of an eight point double rose, printed in black, the character of the seas and swells that have prevailed within the areas outlined on the brown base. THE SEA CONDITIONS ARE REPRESENTED BY THE LIGHT LINE ARROWS AND SLANTING TYPE, WHILE THE SWELL CONDITIONS ARE REPRESENTED BY THE HEAVY LINE ARROWS AND VERTICAL TYPE. No arrow is shown when the percent of direction is less than 7. In instances where the number of observations in any direction is 15 or over but the percent of direction is less than 7, the conditions within that direction may be shown in the usual manner without the arrow. The arrows point in the directions toward which the seas or swells move. The length of the arrow measured from the center mark, when placed on the attached scale and the numeral at the tail of the arrow, gives the number of times in each 100 observations that the seas or swells have been moving from or near the given point. In instances where the full length of the arrow cannot be shown, the shaft is shortened as much as necessary and the true percent at the tail of the arrow is placed in parenthesis.

When the percent of direction is 15 or over, the conditions within the direction are shown along the shaft of the arrow in percentage of low and medium seas or swells, the first figure from the center is always the percent of low. The percent of high seas or swells within the direction is the remainder of the percentage. When the percent of direction is less than 15 but more than 6, the conditions within the direction are shown by the letter L, M, or H (meaning predominately low, medium or high) beside the percentage figures for direction. The conditions of seas and swells (low, medium and high) within each direction, are defined as follows: low seas or swells, those of amounts 1 and 2; medium seas or swells, those of amounts 3 and 4; high seas or swells, those of amounts 5 and above.

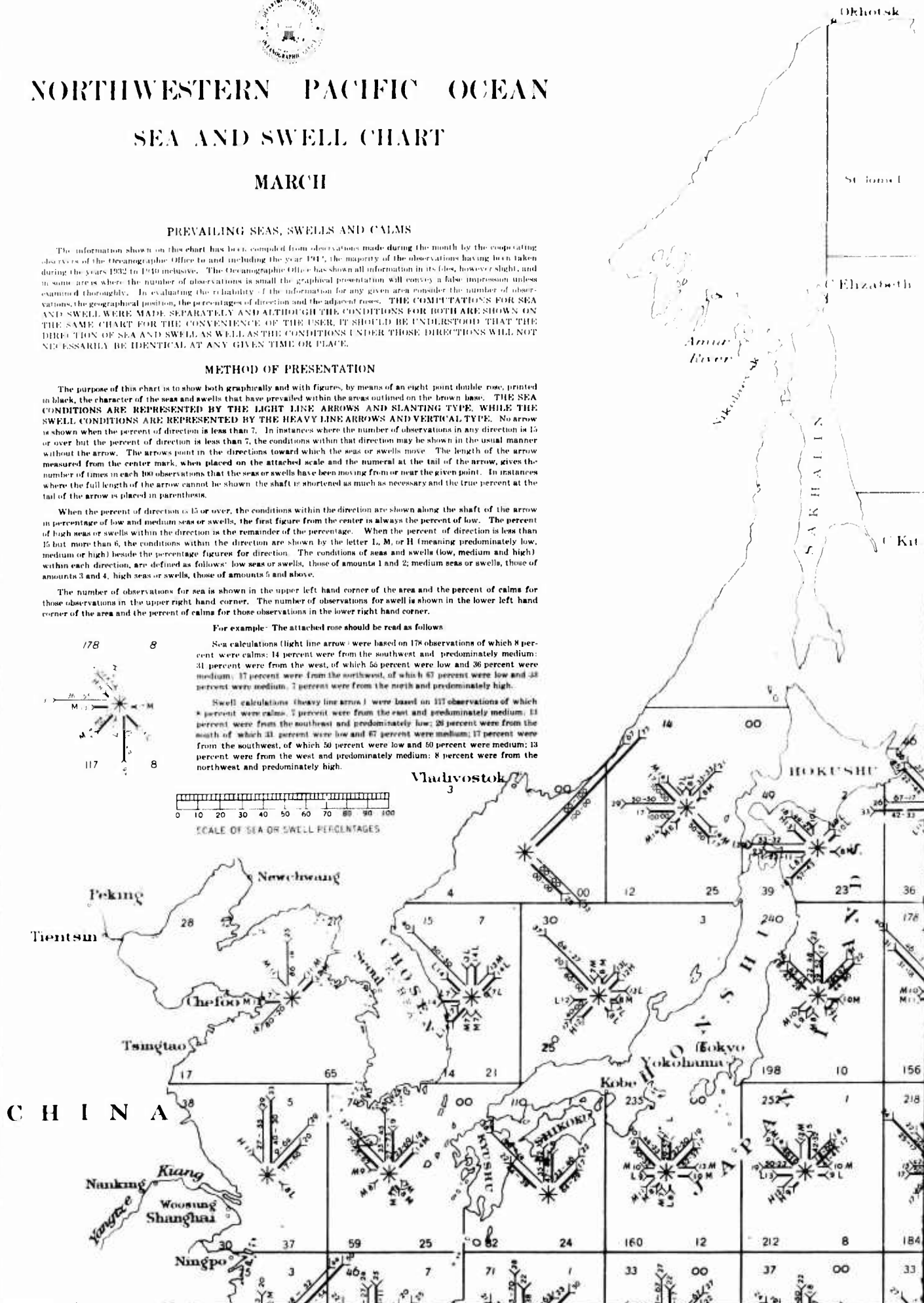
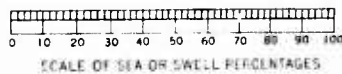
The number of observations for sea is shown in the upper left hand corner of the area and the percent of calms for those observations in the upper right hand corner. The number of observations for swell is shown in the lower left hand corner of the area and the percent of calms for those observations in the lower right hand corner.

For example: The attached rose should be read as follows:



Sea calculations (light line arrow) were based on 178 observations of which 8 percent were calms; 14 percent were from the southwest and predominately medium; 31 percent were from the west, of which 50 percent were low and 36 percent were medium; 17 percent were from the northwest, of which 67 percent were low and 33 percent were medium; 7 percent were from the north and predominately high.

Swell calculations (heavy line arrow) were based on 117 observations of which 8 percent were calms; 7 percent were from the east and predominately medium; 11 percent were from the southeast and predominately low; 28 percent were from the south of which 31 percent were low and 67 percent were medium; 17 percent were from the southwest, of which 50 percent were low and 50 percent were medium; 13 percent were from the west and predominately medium; 8 percent were from the northwest and predominately high.

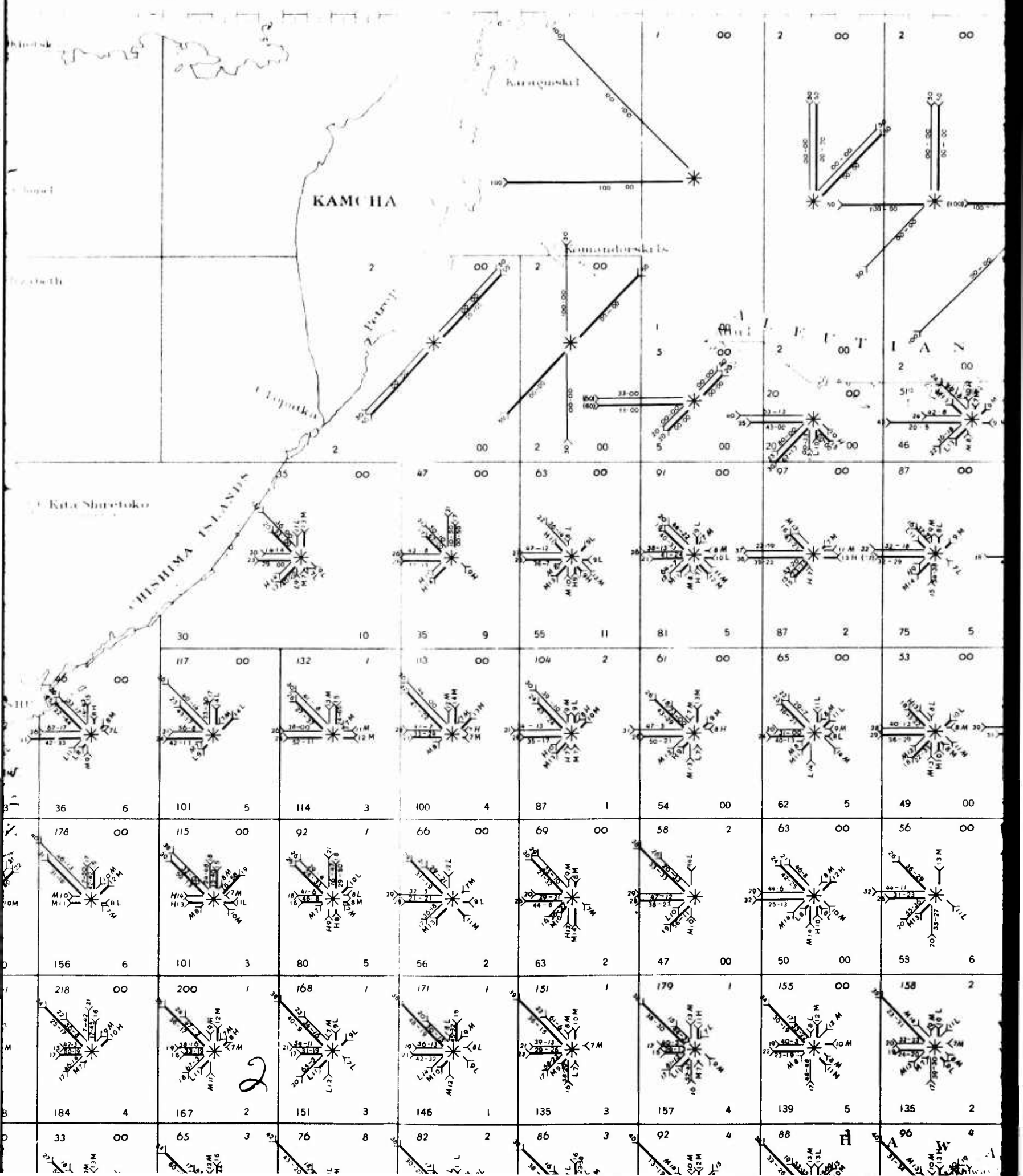


150

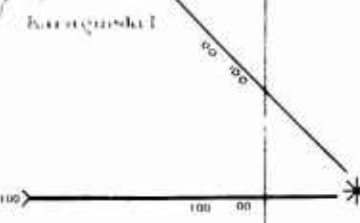
160

170

180



KAMOHIA



Komandorski Is.

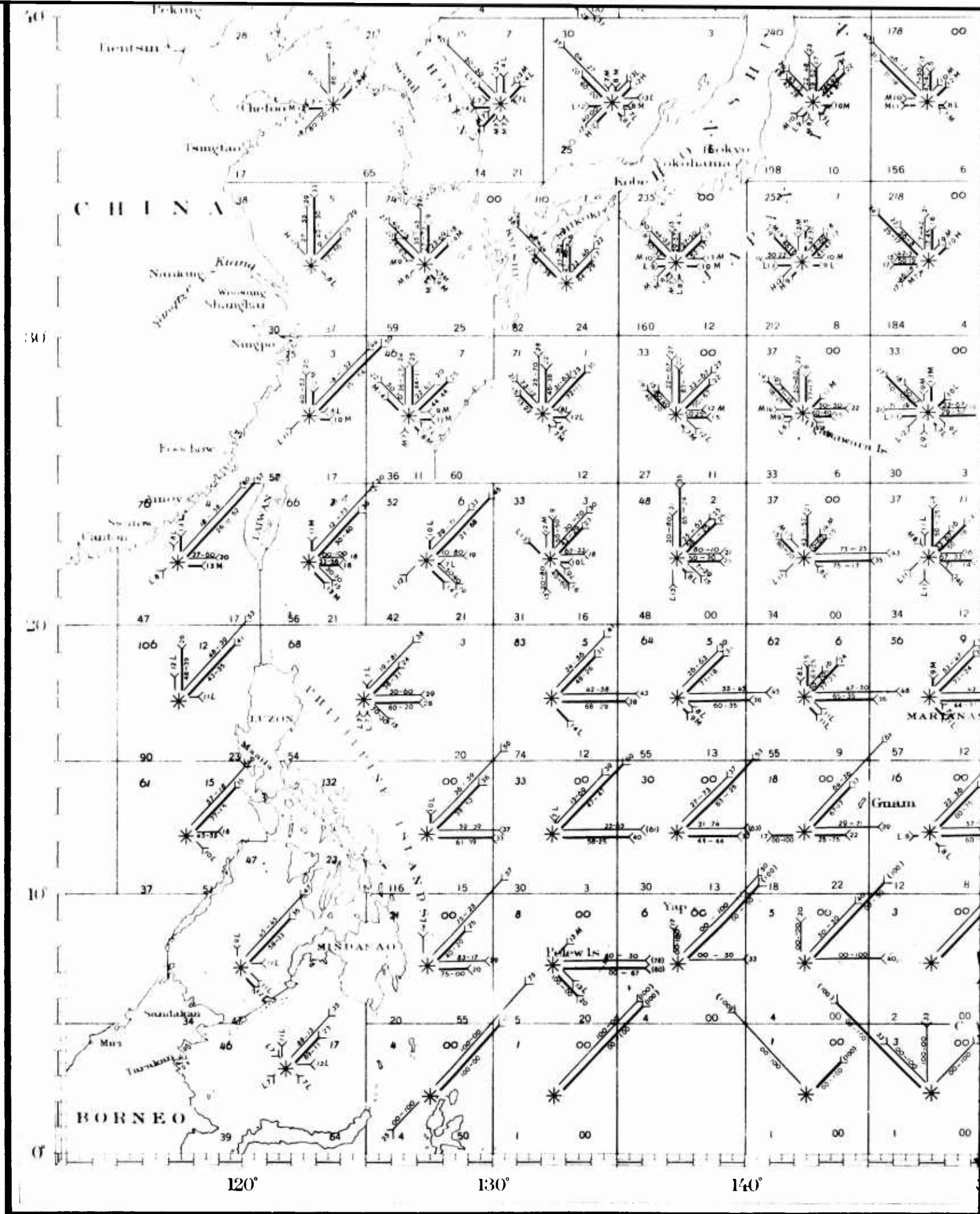
CHISHIMA ISLANDS

117	132	113	104	61	65	53
36	101	114	100	87	54	62
178	115	92	66	69	58	63
156	101	80	56	63	47	50
218	200	168	171	151	179	155
184	167	151	146	135	157	139
33	65	76	82	86	92	88

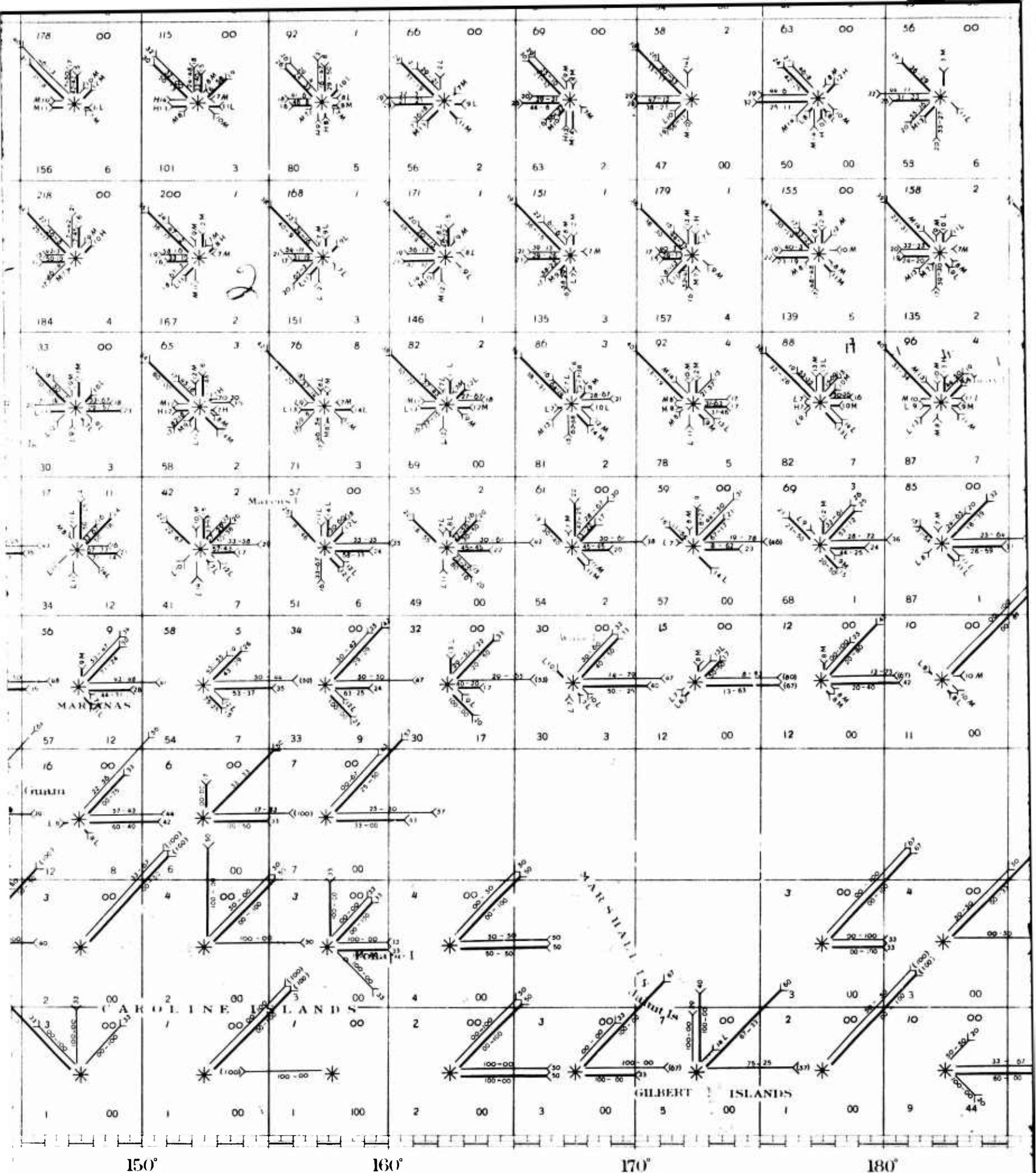
2

H

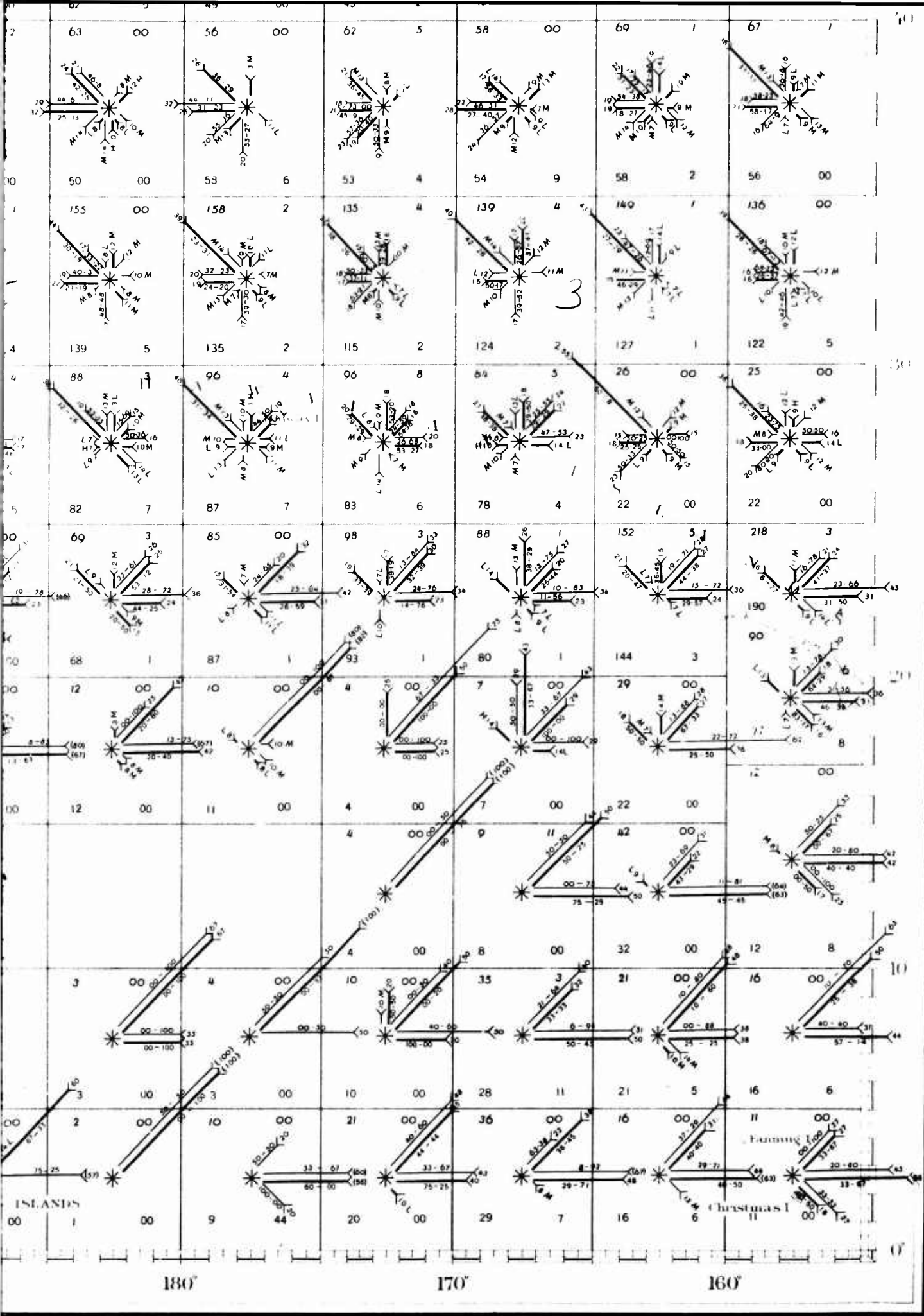
W



4



5



6

120°

130°

140°

60°



NORTHWESTERN PACIFIC OCEAN

SEA AND SWELL CHART

APRIL

PREVAILING SEAS, SWELLS AND CALMS

The information shown on this chart has been compiled from observations made during the month by the cooperating observers of the Oceanographic Office to and including the year 1942, the majority of the observations having been taken during the years 1932 to 1940 inclusive. The Oceanographic Office has shown all information in its files, however slight, and in some areas where the number of observations is small the graphical presentation will convey a false impression unless examined thoroughly. In evaluating the reliability of the information for any given area consider the number of observations, the geographical position, the percentages of direction and the adjacent roses. THE COMPUTATIONS FOR SEA AND SWELL WERE MADE SEPARATELY AND ALTHOUGH THE CONDITIONS FOR BOTH ARE SHOWN ON THE SAME CHART FOR THE CONVENIENCE OF THE USER, IT SHOULD BE UNDERSTOOD THAT THE DIRECTION OF SEA AND SWELL AS WELL AS THE CONDITIONS UNDER THOSE DIRECTIONS WILL NOT NECESSARILY BE IDENTICAL AT ANY GIVEN TIME OR PLACE.

METHOD OF PRESENTATION

The purpose of this chart is to show both graphically and with figures, by means of an eight point double rose, printed in black, the character of the seas and swells that have prevailed within the areas outlined on the brown base. THE SEA CONDITIONS ARE REPRESENTED BY THE LIGHT LINE ARROWS AND SLANTING TYPE, WHILE THE SWELL CONDITIONS ARE REPRESENTED BY THE HEAVY LINE ARROWS AND VERTICAL TYPE. No arrow is shown when the percent of direction is less than 7. In instances where the number of observations in any direction is 15 or over but the percent of direction is less than 7, the conditions within that direction may be shown in the usual manner without the arrow. The arrows point in the directions toward which the seas or swells move. The length of the arrow measured from the center mark, when placed on the attached scale and the numeral at the tail of the arrow, gives the number of times in each 100 observations that the seas or swells have been moving from or near the given point. In instances where the full length of the arrow cannot be shown, the shaft is shortened as much as necessary and the true percent at the tail of the arrow is placed in parenthesis.

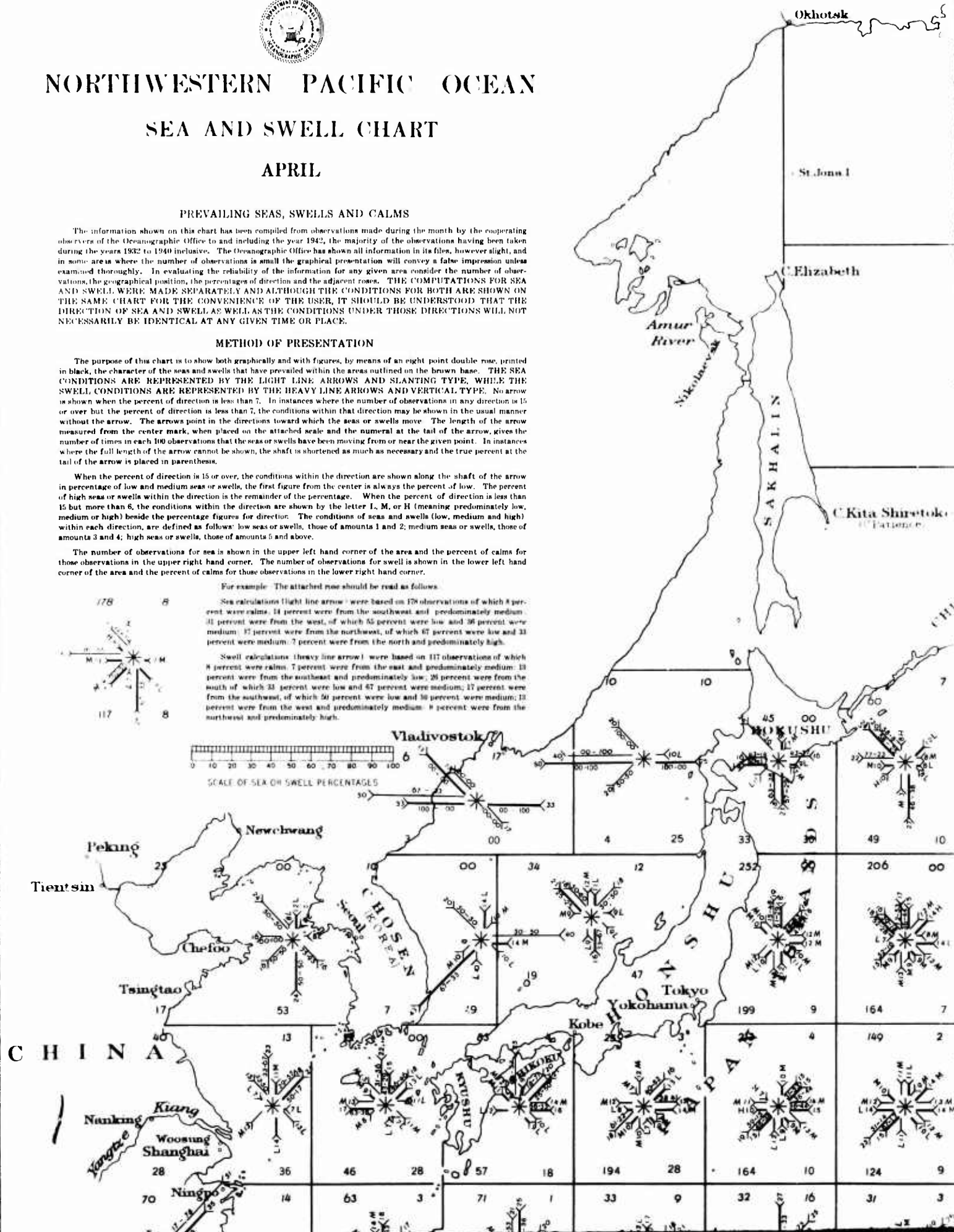
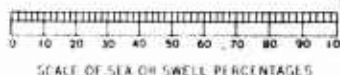
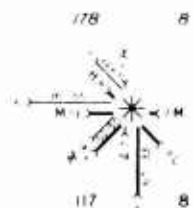
When the percent of direction is 15 or over, the conditions within the direction are shown along the shaft of the arrow in percentage of low and medium seas or swells, the first figure from the center is always the percent of low. The percent of high seas or swells within the direction is the remainder of the percentage. When the percent of direction is less than 15 but more than 6, the conditions within the direction are shown by the letter L, M, or H (meaning predominately low, medium or high) beside the percentage figures for direction. The conditions of seas and swells (low, medium and high) within each direction, are defined as follows: low seas or swells, those of amounts 1 and 2; medium seas or swells, those of amounts 3 and 4; high seas or swells, those of amounts 5 and above.

The number of observations for sea is shown in the upper left hand corner of the area and the percent of calms for those observations in the upper right hand corner. The number of observations for swell is shown in the lower left corner of the area and the percent of calms for those observations in the lower right hand corner.

For example: The attached rose should be read as follows:

Sea calculations (light line arrow) were based on 178 observations of which 8 percent were calms, 14 percent were from the southwest and predominately medium, 31 percent were from the west, of which 55 percent were low and 36 percent were medium, 17 percent were from the northwest, of which 67 percent were low and 21 percent were medium, 7 percent were from the north and predominately high.

Swell calculations (heavy line arrow) were based on 117 observations of which 8 percent were calms, 7 percent were from the east and predominately medium, 13 percent were from the southeast and predominately low, 26 percent were from the south of which 33 percent were low and 47 percent were medium, 17 percent were from the southwest, of which 50 percent were low and 30 percent were medium, 13 percent were from the west and predominately medium, 8 percent were from the northwest and predominately high.



50°

40°

30°

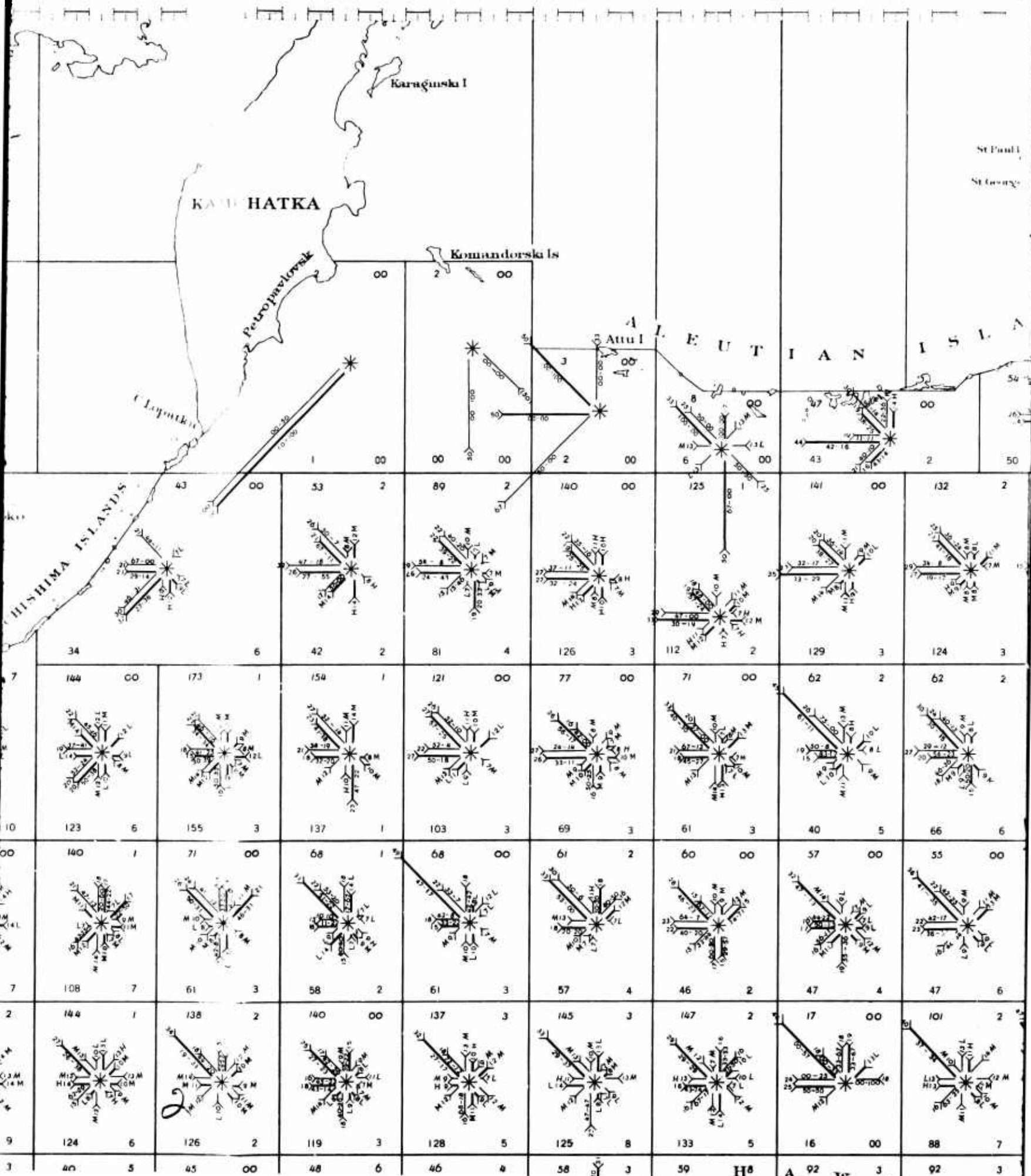
150°

160°

170°

180°

1°



180°

170°

160°

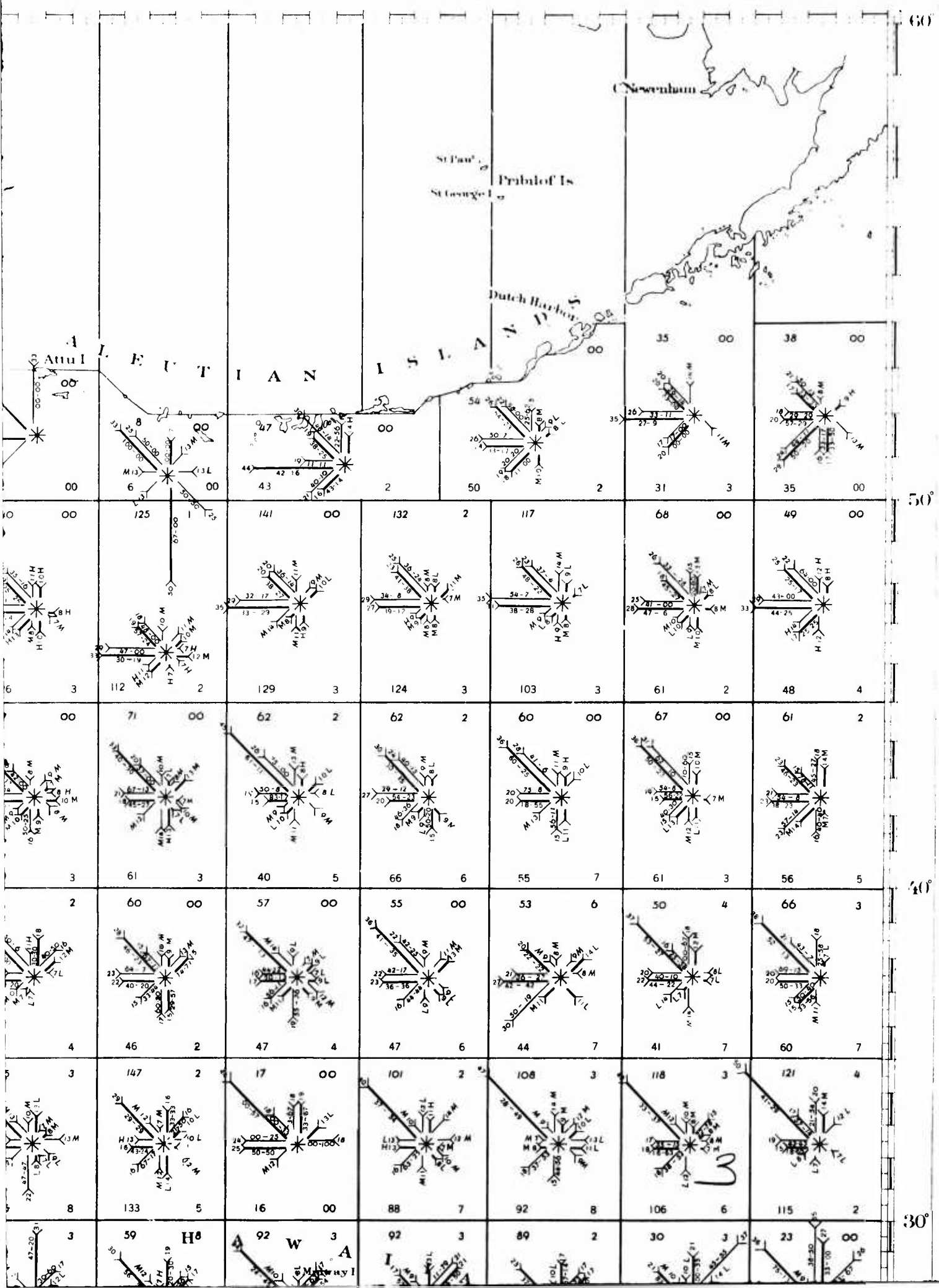
60°

Newenham

St Paul
St George I
Prudof Is

Dutch Harbor

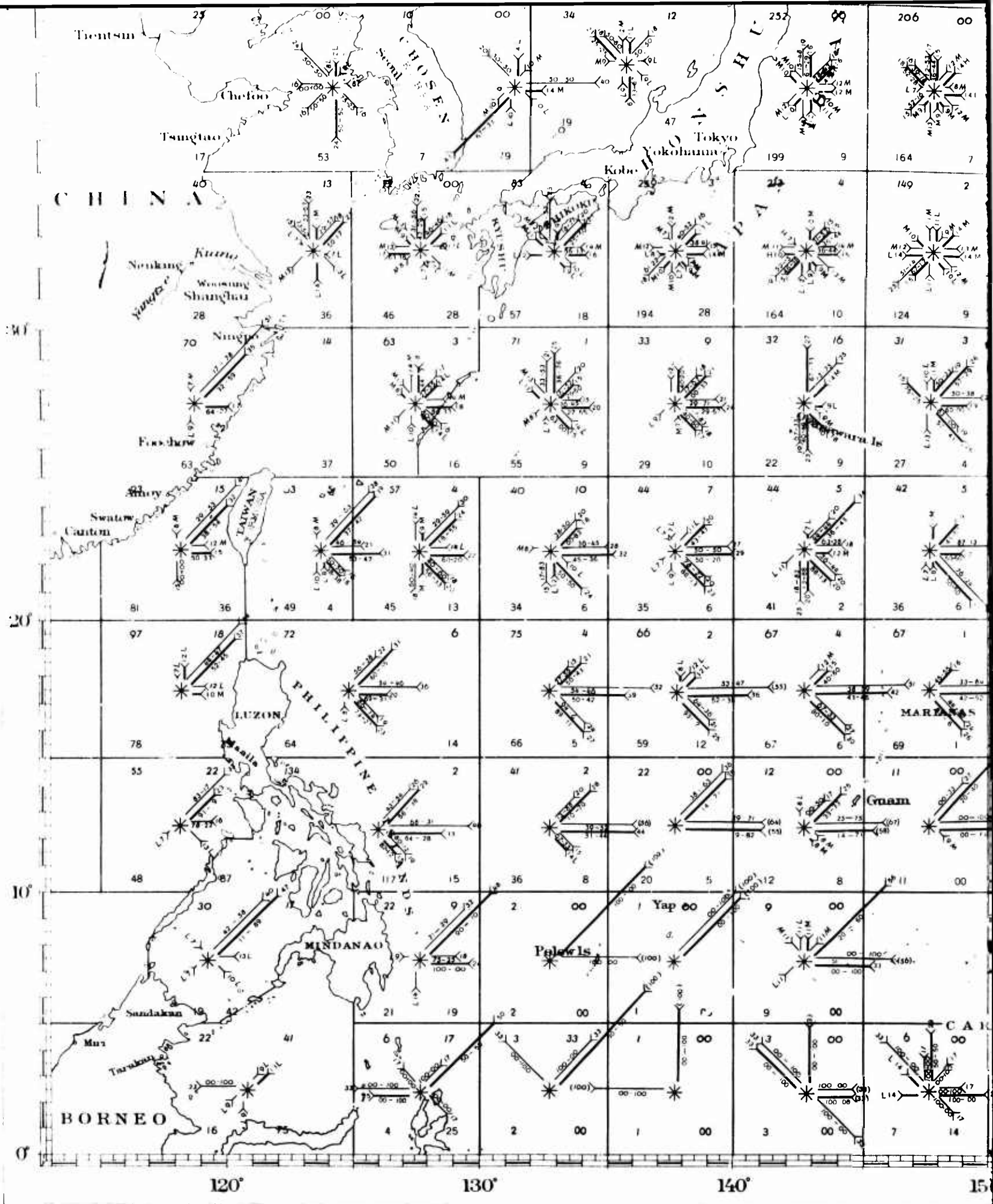
ATTUAN ISLANDS

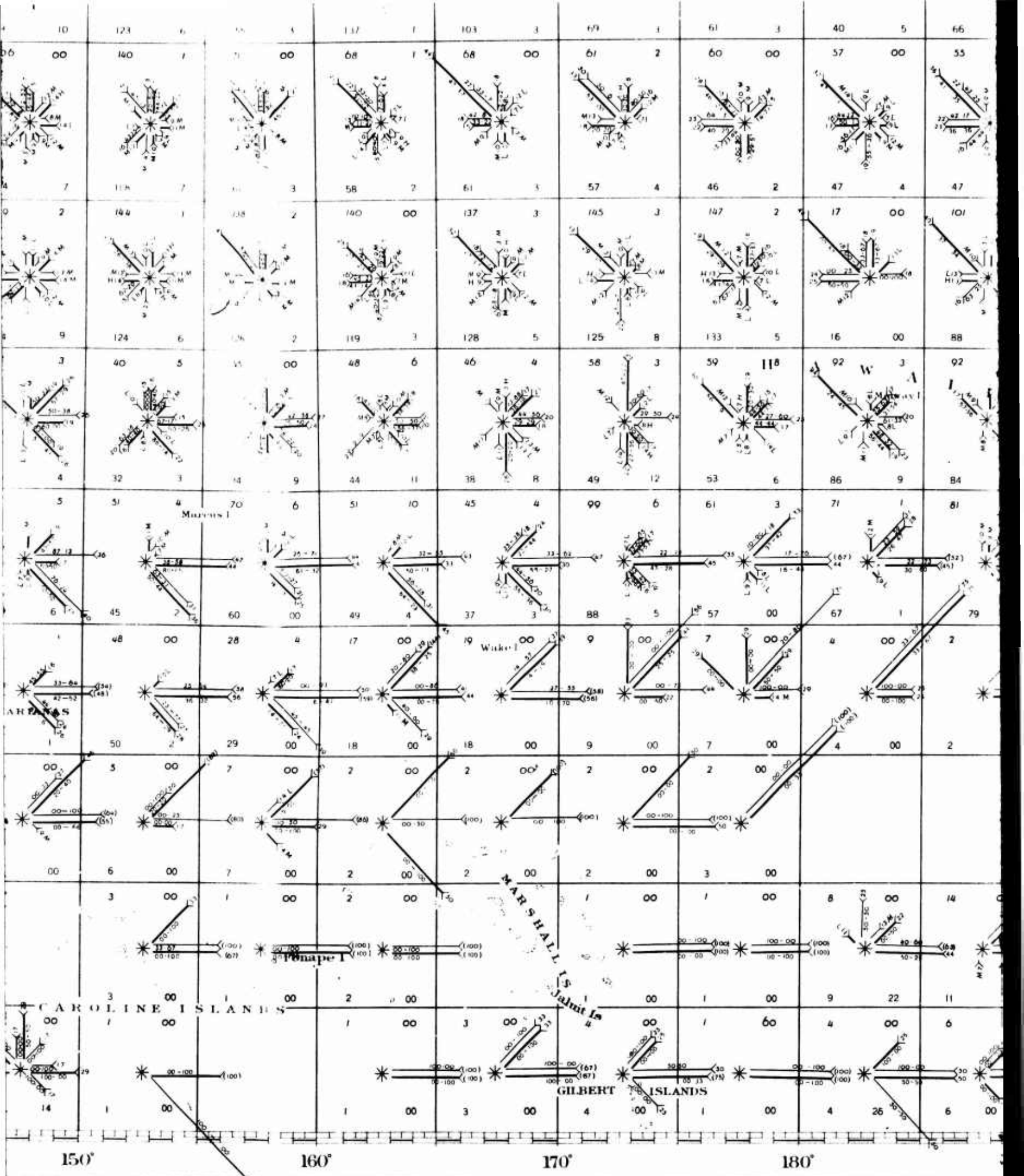


50°

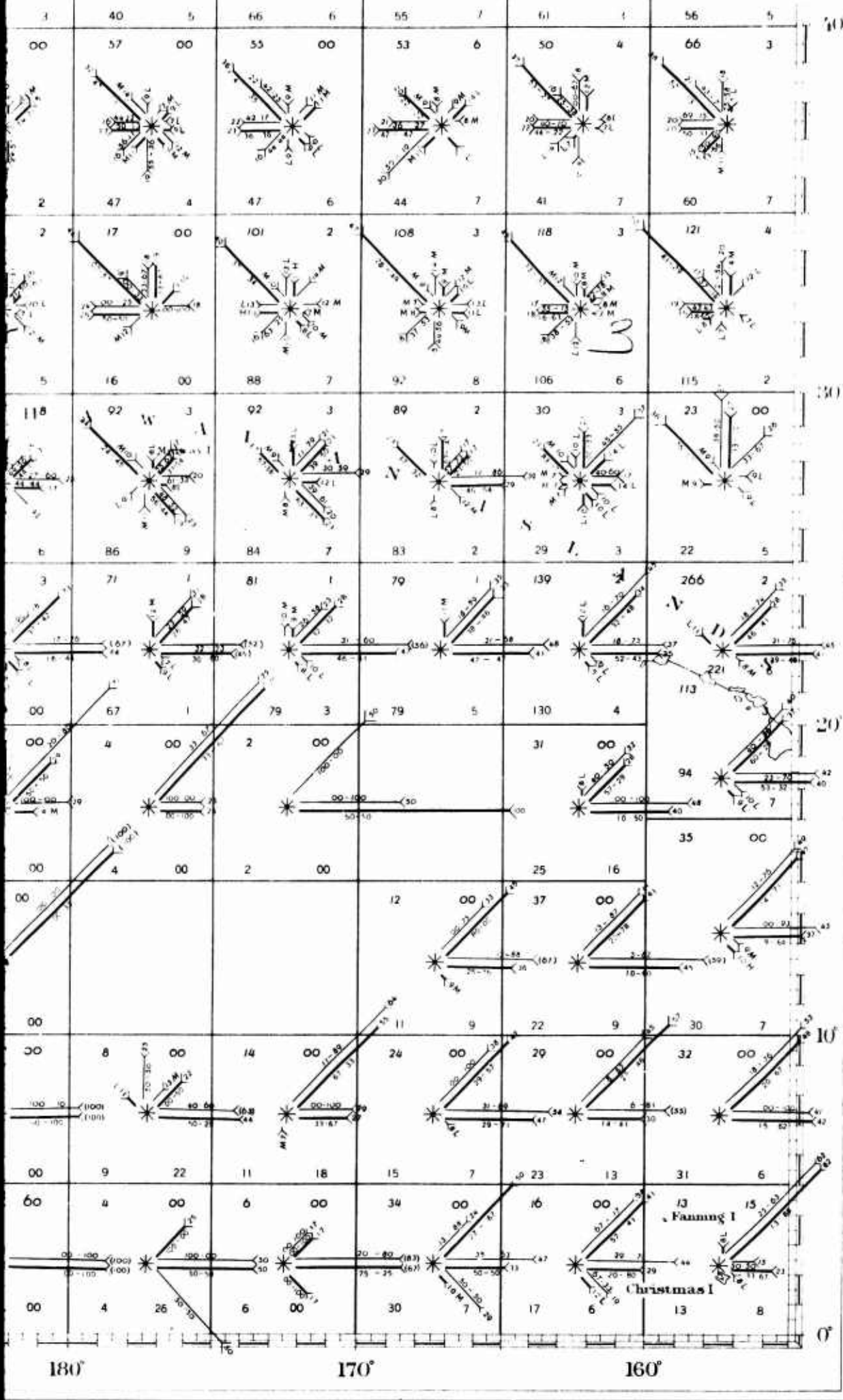
40°

30°





5





NORTHWESTERN PACIFIC OCEAN SEA AND SWELL CHART

MAY

PREVAILING SEAS, SWELLS AND CALMS

The information shown on this chart has been compiled from observations made during the month by the cooperating observers of the Oceanographic Office to and including the year 1917, the majority of the observations having been taken during the years 1912 to 1916 inclusive. The Oceanographic Office has shown all information in its files, however slight, and in some areas where the number of observations is small the graphical presentation will convey a false impression unless examined thoroughly. In evaluating the reliability of the information for any given area consider the number of observations, the geographical position, the percentages of direction and the adjacent coasts. THE COMPUTATIONS FOR SEA AND SWELL WERE MADE SEPARATELY AND ALTHOUGH THE CONDITIONS FOR BOTH ARE SHOWN ON THE SAME CHART FOR THE CONVENIENCE OF THE USER, IT SHOULD BE UNDERSTOOD THAT THE DIRECTION OF SEA AND SWELL AS WELL AS THE CONDITIONS UNDER THOSE DIRECTIONS WILL NOT NECESSARILY BE IDENTICAL AT ANY GIVEN TIME OR PLACE.

METHOD OF PRESENTATION

The purpose of this chart is to show both graphically and with figures, by means of an eight-point double rose, printed in black, the character of the seas and swells that have prevailed within the areas outlined in the brown base. THE SEA CONDITIONS ARE REPRESENTED BY THE LIGHT LINE ARROWS AND SLANTING TYPE, WHILE THE SWELL CONDITIONS ARE REPRESENTED BY THE HEAVY LINE ARROWS AND VERTICAL TYPE. No arrow is shown when the percent of direction is less than 7. In instances where the number of observations in any direction is 15 or over but the percent of direction is less than 7 the conditions within that direction may be shown in the usual manner without the arrow. The arrows point in the directions toward which the seas or swells move. The length of the arrow measured from the center mark, when placed on the attached scale and the numeral at the tail of the arrow, gives the number of times in each 100 observations that the seas or swells have been moving from or near the given point. In instances where the full length of the arrow cannot be shown, the shaft is shortened as much as necessary and the true percent at the tail of the arrow is placed in parenthesis.

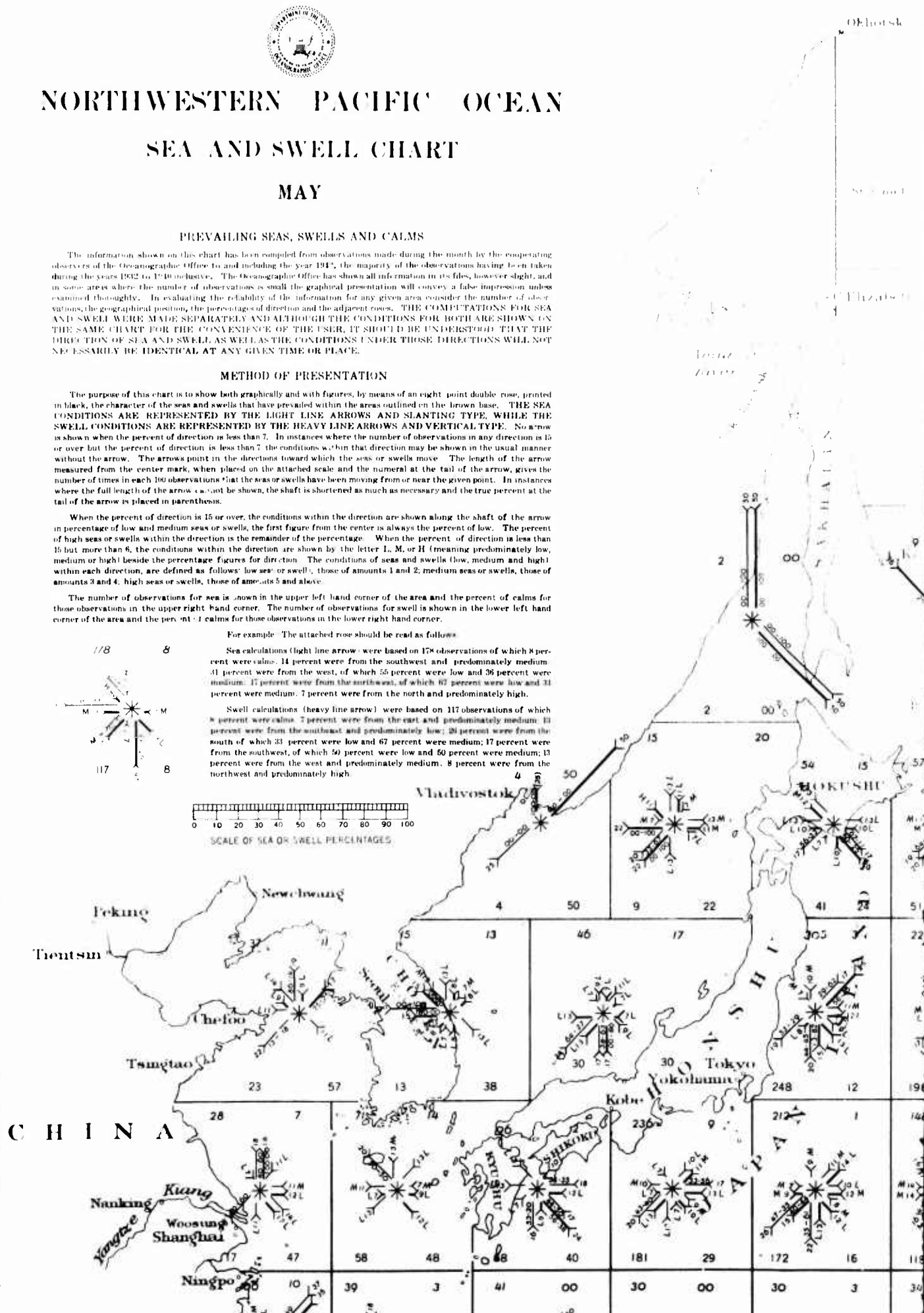
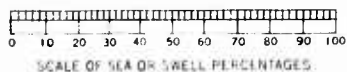
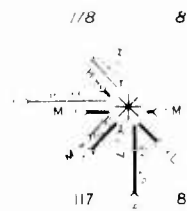
When the percent of direction is 15 or over, the conditions within the direction are shown along the shaft of the arrow in percentage of low and medium seas or swells, the first figure from the center is always the percent of low. The percent of high seas or swells within the direction is the remainder of the percentage. When the percent of direction is less than 15 but more than 8, the conditions within the direction are shown by the letter L, M, or H (meaning predominately low, medium or high) beside the percentage figures for direction. The conditions of seas and swells (low, medium and high) within each direction, are defined as follows: low seas or swells, those of amounts 1 and 2; medium seas or swells, those of amounts 3 and 4; high seas or swells, those of amounts 5 and above.

The number of observations for sea is shown in the upper left hand corner of the area and the percent of calms for those observations in the upper right hand corner. The number of observations for swell is shown in the lower left hand corner of the area and the percent of calms for those observations in the lower right hand corner.

For example: The attached rose should be read as follows:

Sea calculations (light line arrow) were based on 178 observations of which 8 percent were calms, 14 percent were from the southwest and predominately medium, 31 percent were from the west, of which 55 percent were low and 36 percent were medium, 17 percent were from the northwest, of which 67 percent were low and 31 percent were medium, 7 percent were from the north and predominately high.

Swell calculations (heavy line arrow) were based on 117 observations of which 8 percent were calms, 7 percent were from the east and predominately medium, 21 percent were from the southeast and predominately low, 26 percent were from the south of which 33 percent were low and 67 percent were medium, 17 percent were from the southwest, of which 50 percent were low and 50 percent were medium, 13 percent were from the west and predominately medium, 8 percent were from the northwest and predominately high.



150

11

170

180

6 100



KAMOHIA

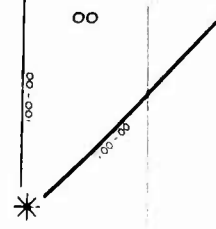
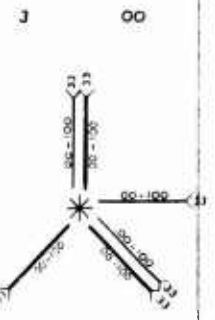
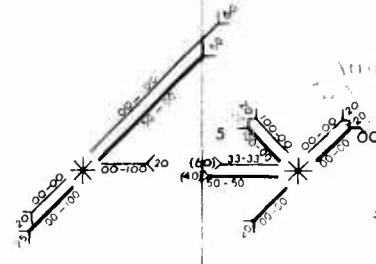
5 100

2 00



Kamohia

00



2 100

7

29

4

25

5

00

3

00

1

00

9 00

8

51

6

96

2

141

1

134

1

136

16

132

11

49

10

44

7

82

2

127

4

113

10

113

5

115

141

3

155

1

149

2

114

00

71

00

61

00

63

2

65

130

4

148

4

132

8

104

3

66

9

56

2

56

5

58

229

00

159

5

85

1

59

5

63

2

51

2

66

6

60

1

54

196

10

139

7

69

12

41

5

44

2

43

2

58

3

51

12

44

148

2

152

1

146

3

133

5

136

1

133

2

132

2

94

2

86

118

10

118

9

121

10

123

10

120

9

114

7

117

7

10

4

81

14

6

42

7

51

10

46

7

50

6

45

4

48

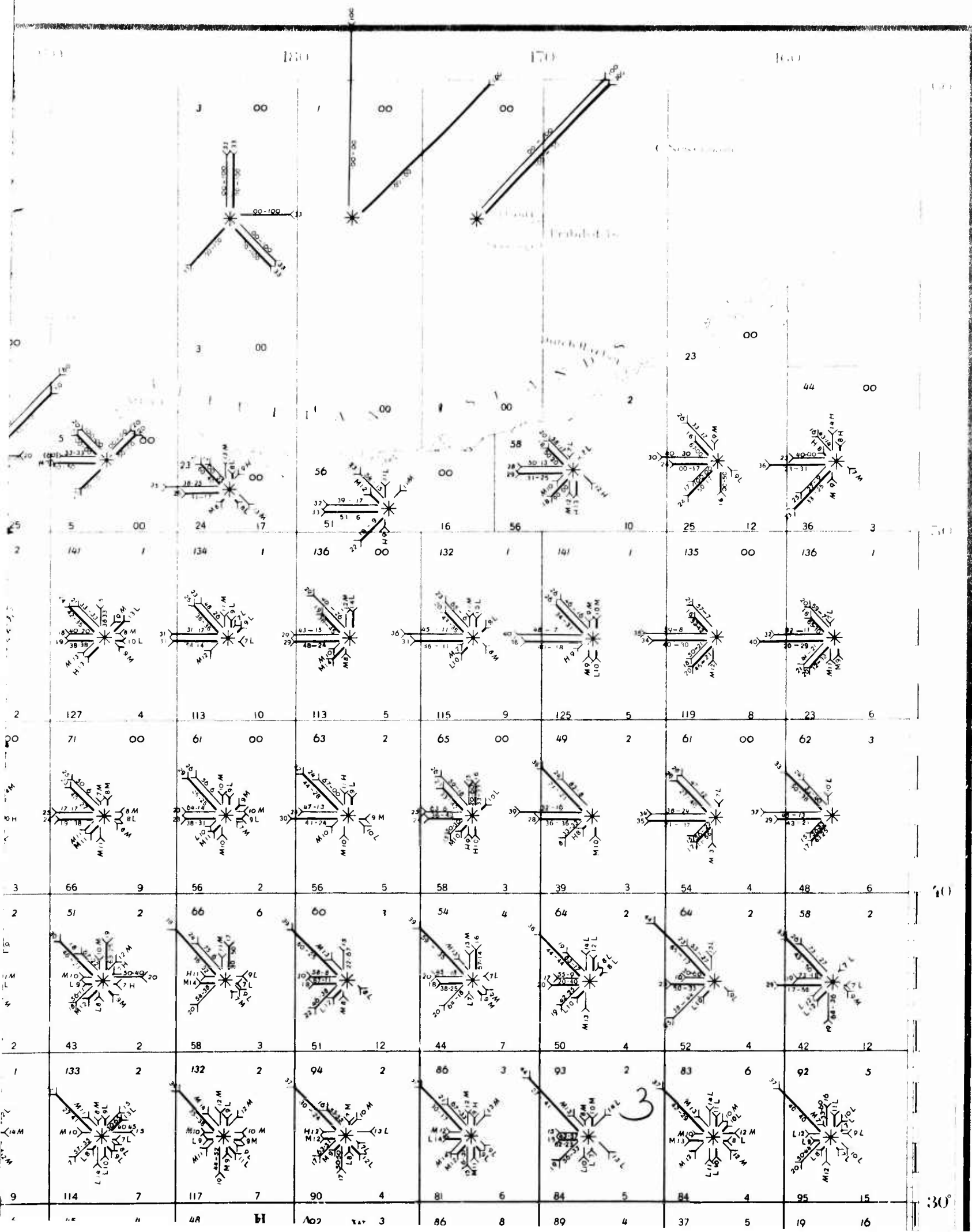
H

A12

W

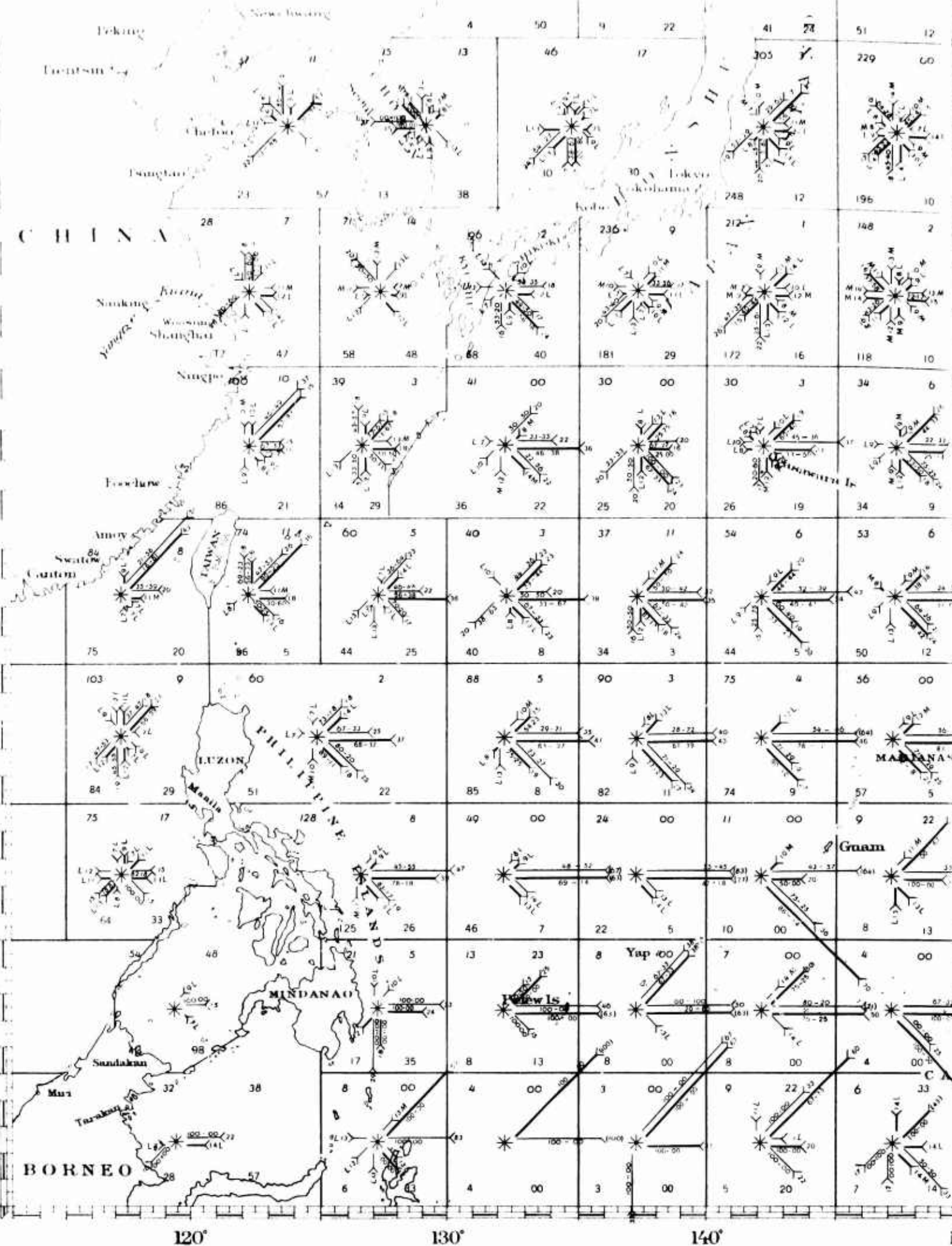
3

86

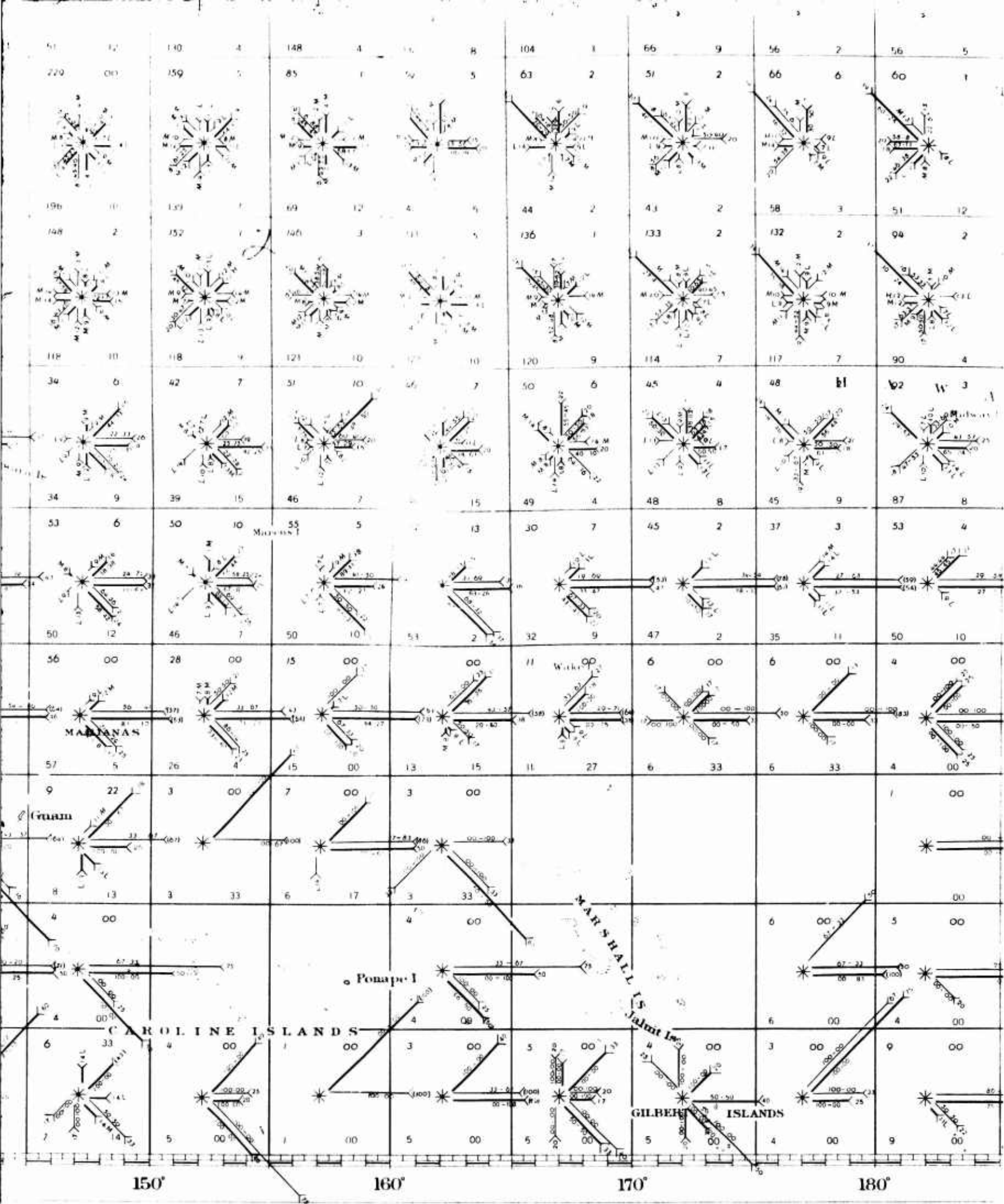


10

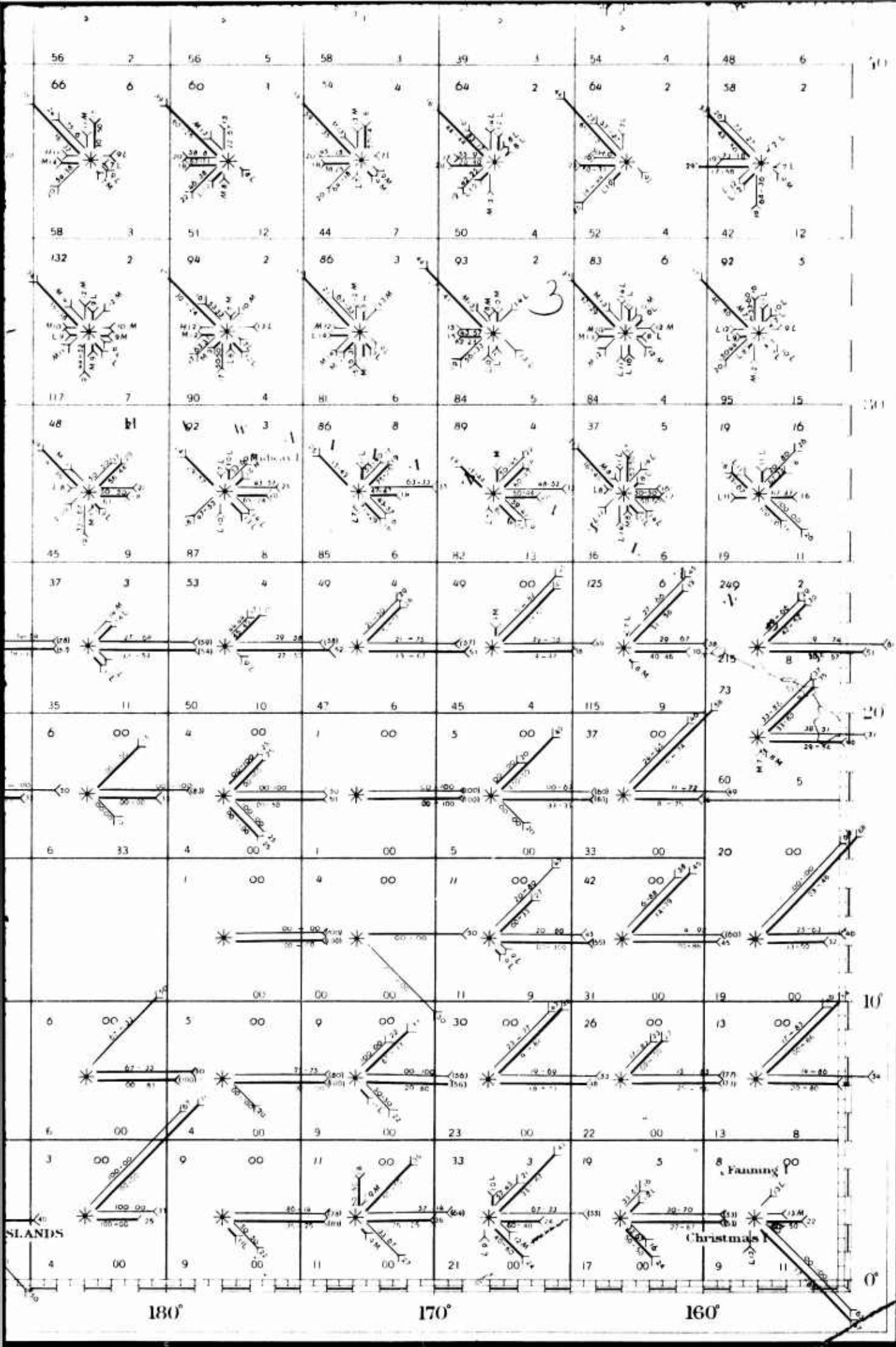
CHINA



4



5



6

120°

130°

140°

60



NORTHWESTERN PACIFIC OCEAN SEA AND SWELL CHART JUNE

PREVAILING SEAS, SWELLS AND CALMS

The information shown on this chart has been compiled from observations made during the month by the cooperating observers of the Oceanographic Office to and including the year 1943, the majority of the observations having been taken during the years 1932 to 1940 inclusive. The Oceanographic Office has shown all information in its files, however slight, and in some areas where the number of observations is small the graphical presentation will convey a false impression unless examined thoroughly. In evaluating the reliability of the information for any given area consider the number of observations, the geographical position, the percentages of direction and the adjacent roses. THE COMPUTATIONS FOR SEA AND SWELL WERE MADE SEPARATELY AND ALTHOUGH THE CONDITIONS FOR BOTH ARE SHOWN ON THE SAME CHART FOR THE CONVENIENCE OF THE USER, IT SHOULD BE UNDERSTOOD THAT THE DIRECTION OF SEA AND SWELL AS WELL AS THE CONDITIONS UNDER THOSE DIRECTIONS WILL NOT NECESSARILY BE IDENTICAL AT ANY GIVEN TIME OR PLACE.

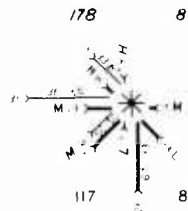
METHOD OF PRESENTATION

The purpose of this chart is to show both graphically and with figures, by means of an eight point double rose, printed in black, the character of the seas and swells that have prevailed within the areas outlined on the brown base. THE SEA CONDITIONS ARE REPRESENTED BY THE LIGHT LINE ARROWS AND SLANTING TYPE, WHILE THE SWELL CONDITIONS ARE REPRESENTED BY THE HEAVY LINE ARROWS AND VERTICAL TYPE. No arrow is shown when the percent of direction is less than 7. In instances where the number of observations in any direction is 15 or over but the percent of direction is less than 7, the conditions within that direction may be shown in the usual manner without the arrow. The arrows point in the directions toward which the seas or swells move. The length of the arrow measured from the center mark, when placed on the attached scale and the numeral at the tail of the arrow, gives the number of times in each 100 observations that the seas or swells have been moving from or near the given point. In instances where the full length of the arrow cannot be shown, the shaft is shortened as much as necessary and the true percent at the tail of the arrow is placed in parenthesis.

When the percent of direction is 15 or over, the conditions within the direction are shown along the shaft of the arrow in percentage of low and medium seas or swells, the first figure from the center is always the percent of low. The percent of high seas or swells within the direction is the remainder of the percentage. When the percent of direction is less than 15 but more than 6, the conditions within the direction are shown by the letter L, M or H (meaning predominately low, medium or high) beside the percentage figures for direction. The conditions of seas and swells (low, medium and high) within each direction, are defined as follows: low seas or swells, those of amounts 1 and 2; medium seas or swells, those of amounts 3 and 4; high seas or swells, those of amounts 5 and above.

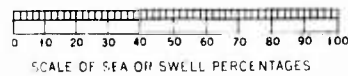
The number of observations for sea is shown in the upper left hand corner of the area and the percent of calms for those observations in the upper right hand corner. The number of observations for swell is shown in the lower left hand corner of the area and the percent of calms for those observations in the lower right hand corner.

For example—The attached rose should be read as follows



Sea calculations (light line arrow) were based on 178 observations of which 8 percent were calms; 14 percent were from the southwest and predominately medium; 31 percent were from the west, of which 55 percent were low and 36 percent were medium; 17 percent were from the northwest, of which 67 percent were low and 33 percent were medium; 7 percent were from the north and predominately high.

Swell calculations (heavy line arrow) were based on 117 observations of which 8 percent were calms; 7 percent were from the east and predominately medium; 11 percent were from the southeast and predominately low; 29 percent were from the south of which 33 percent were low and 67 percent were medium; 17 percent were from the southwest, of which 50 percent were low and 50 percent were medium; 13 percent were from the west and predominately medium; 8 percent were from the northwest and predominately high.

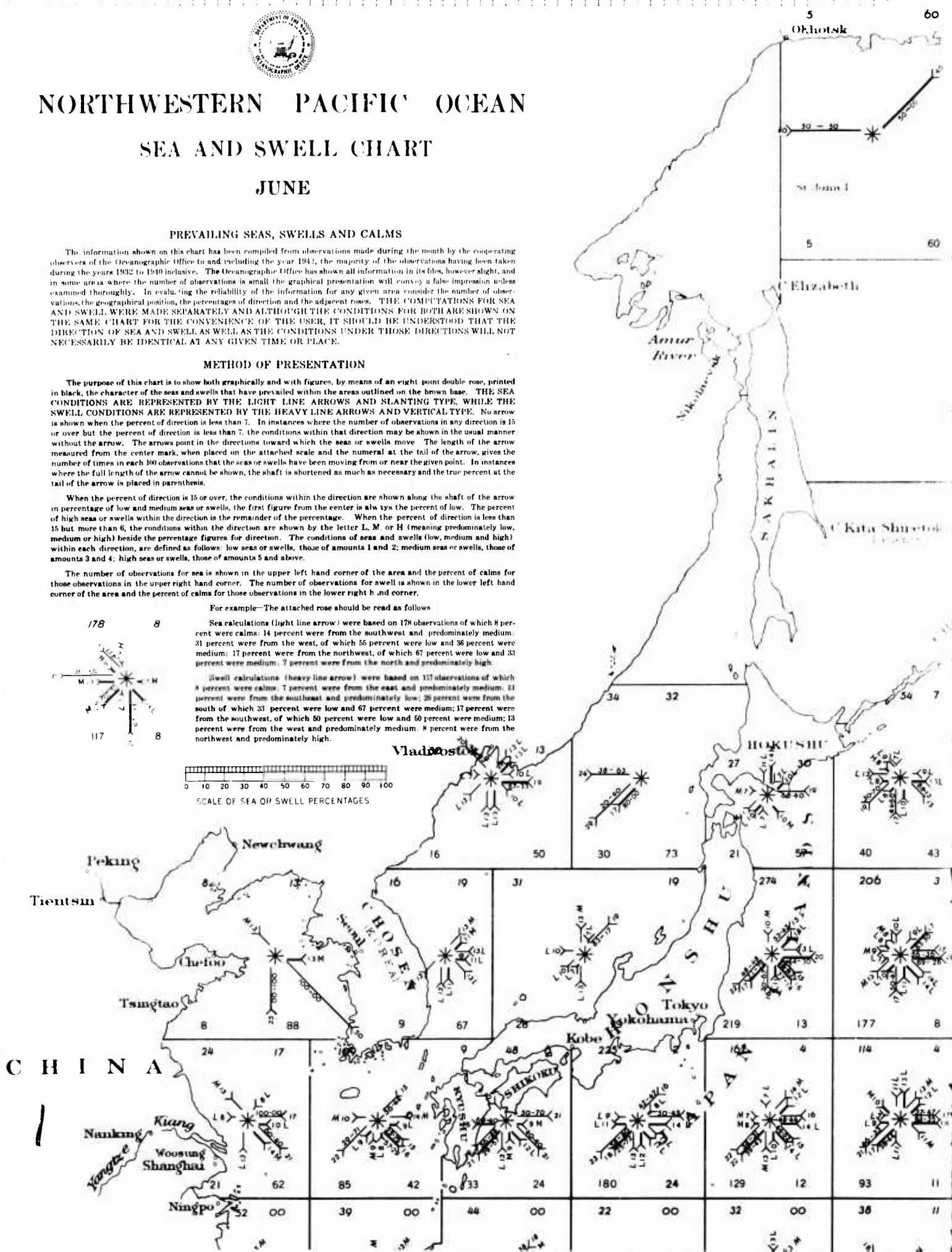


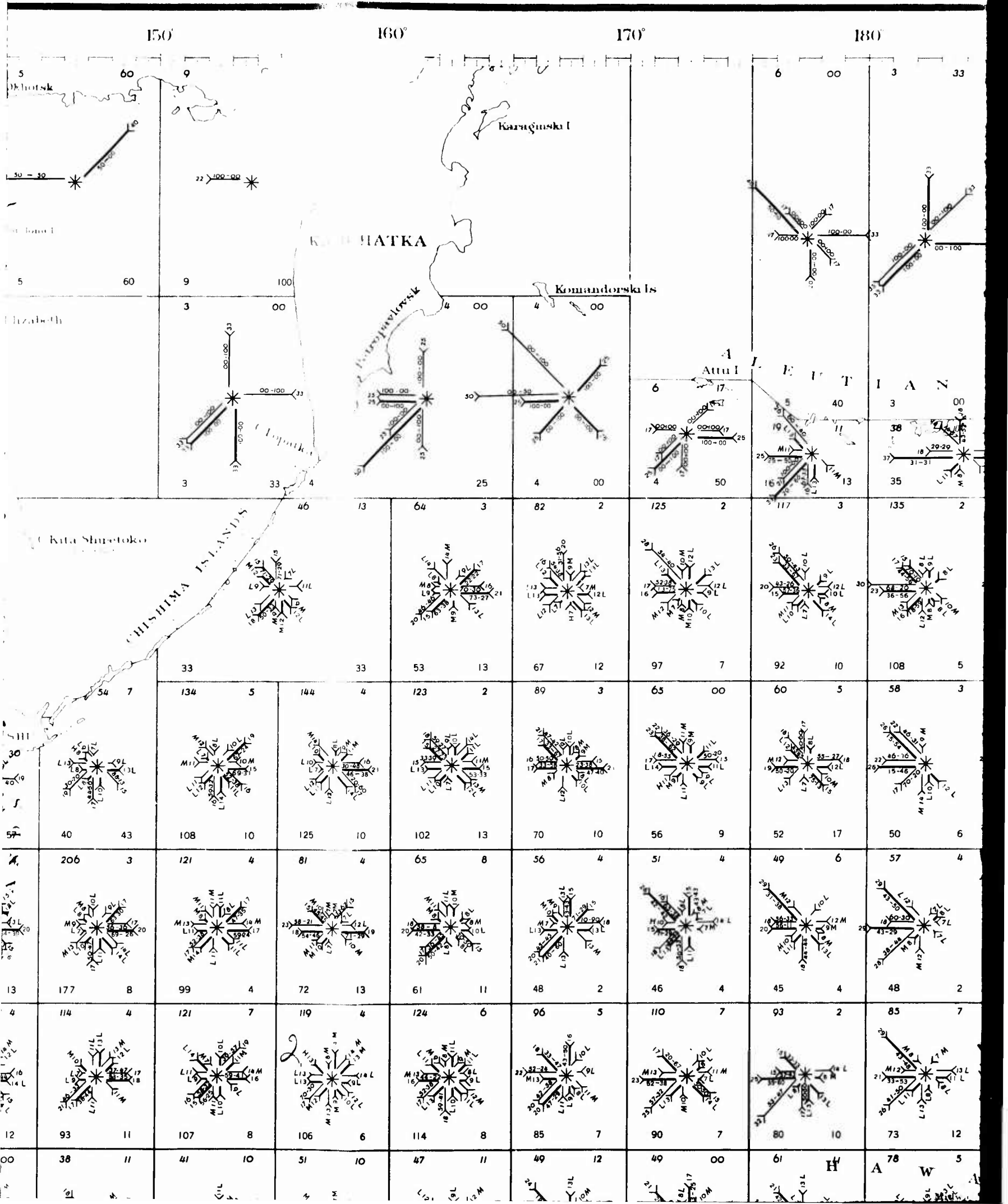
SCALE OF SEA OR SWELL PERCENTAGES

50

40

30



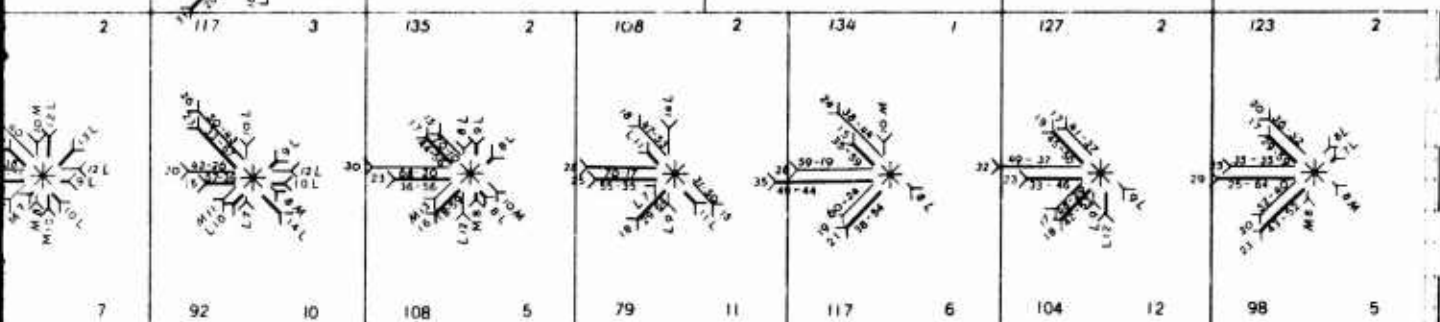
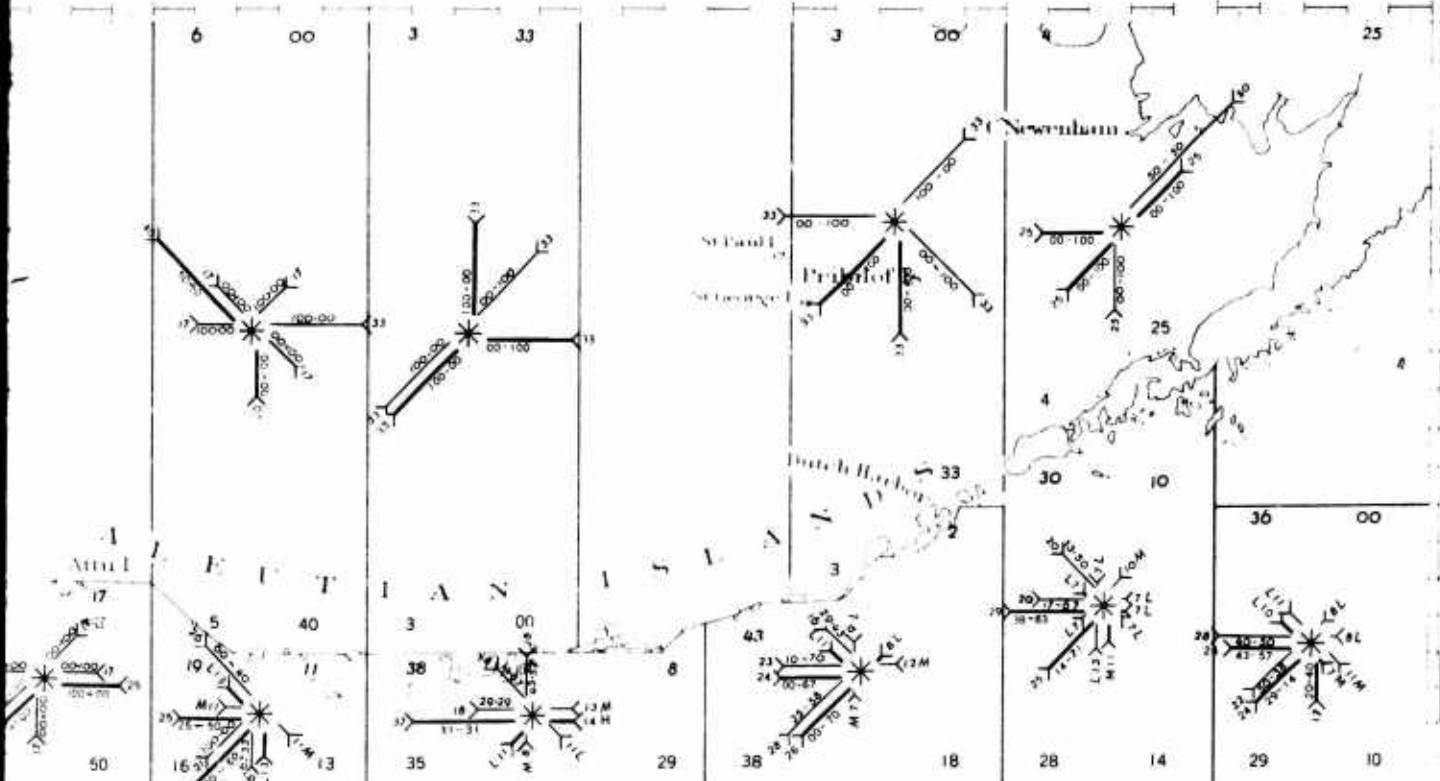


180

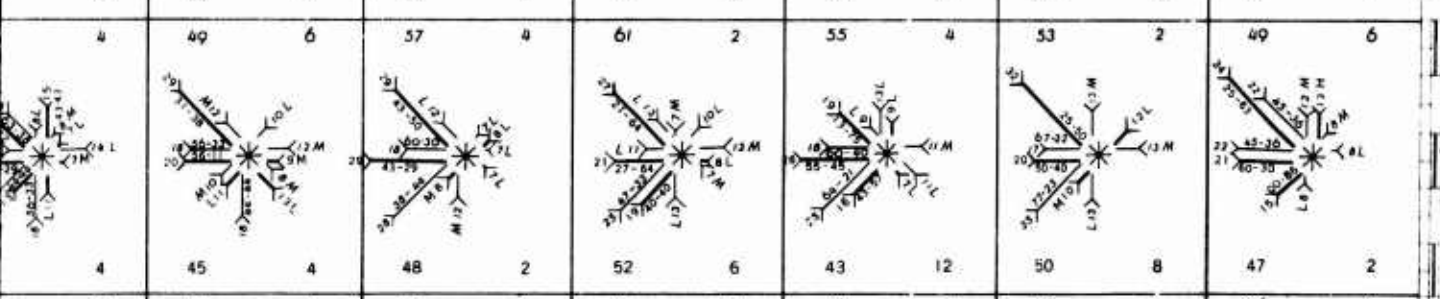
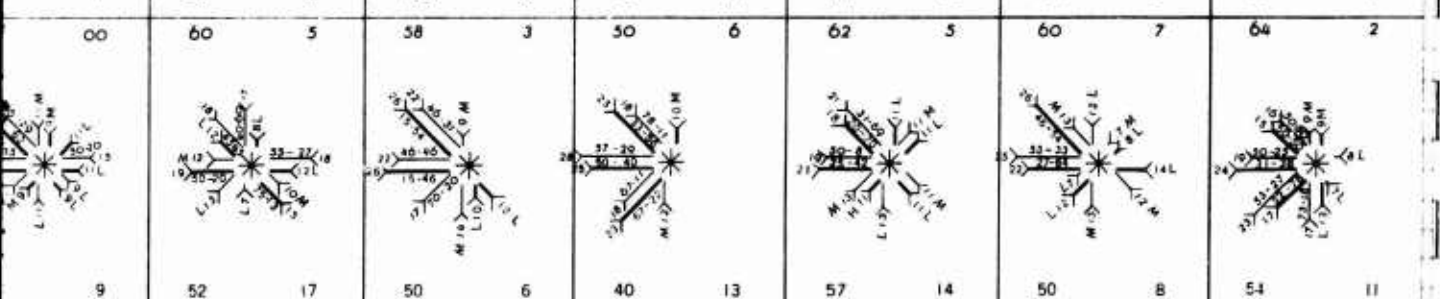
170

160

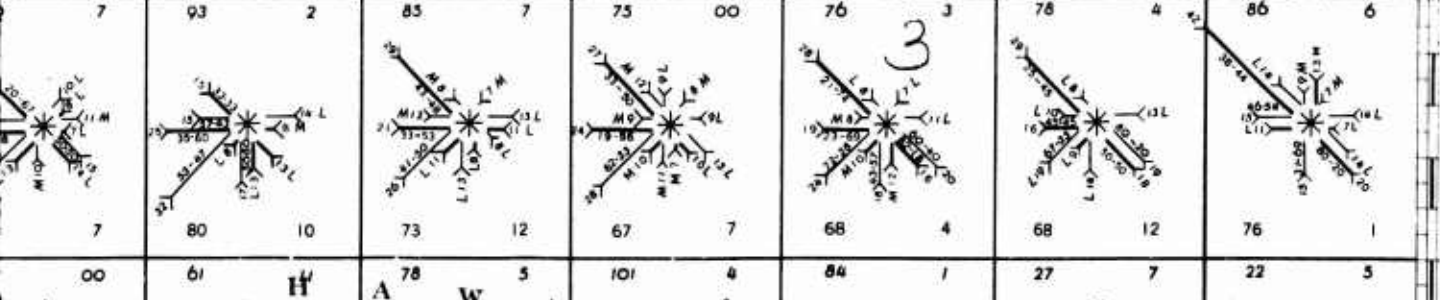
50



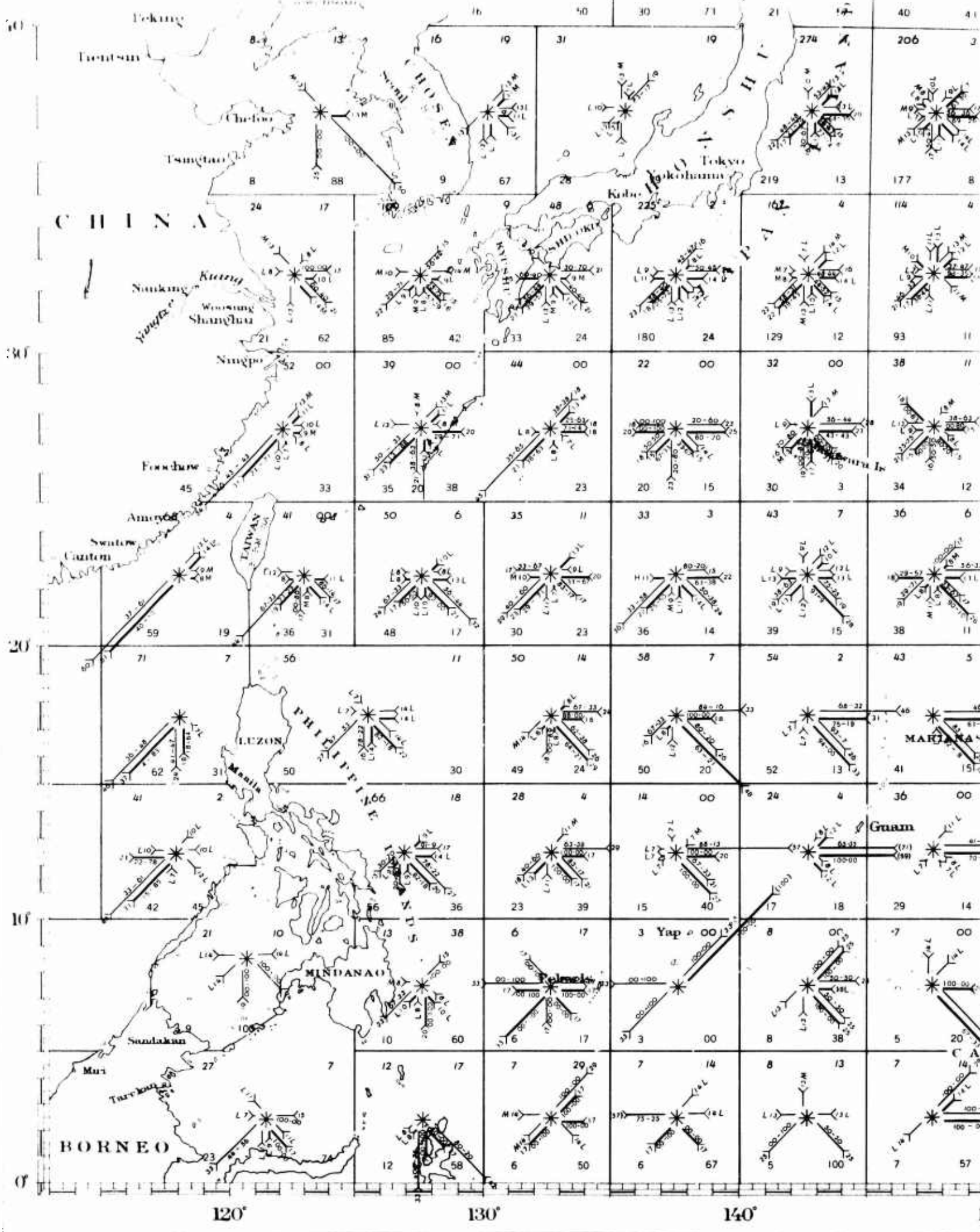
50

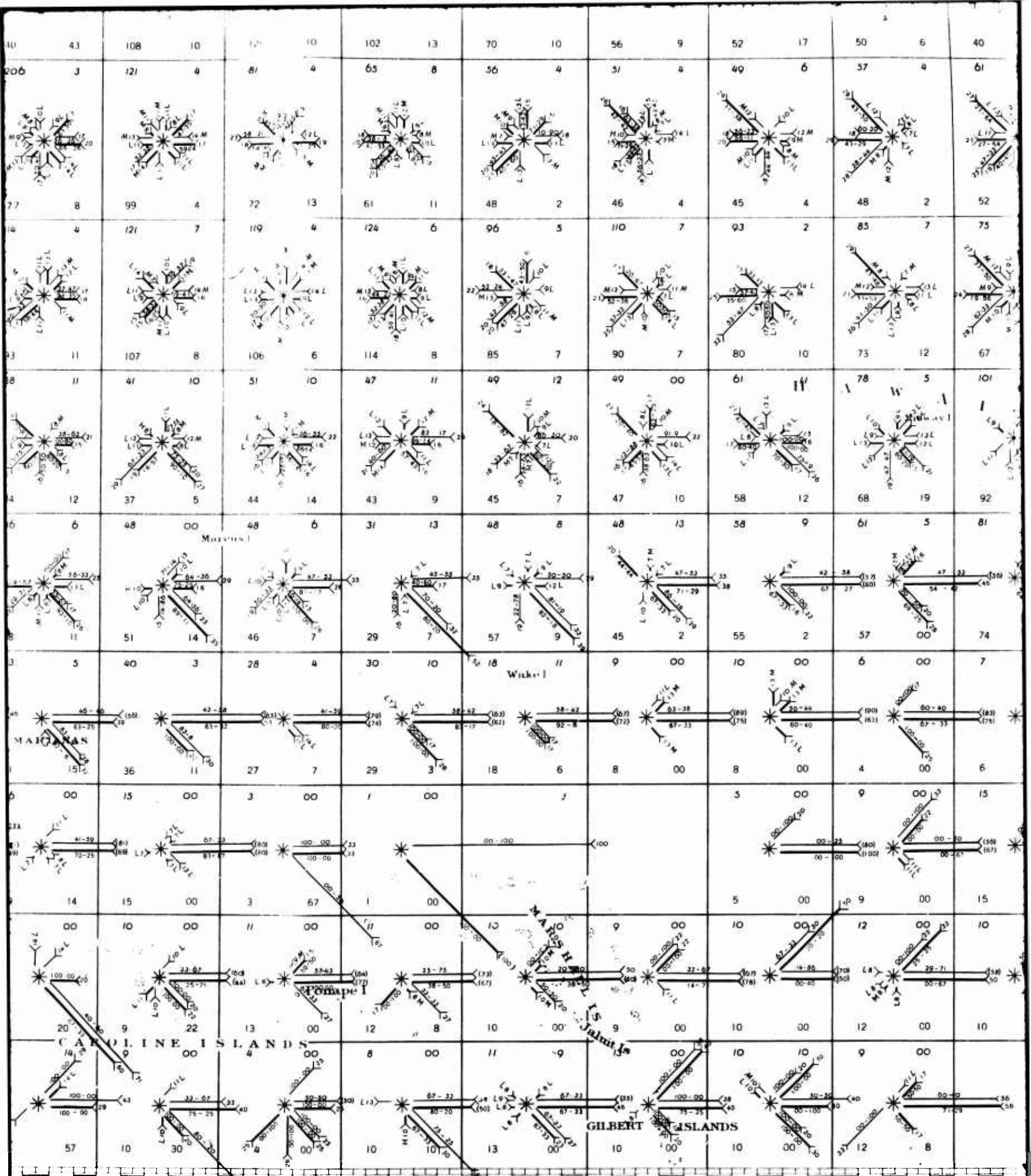


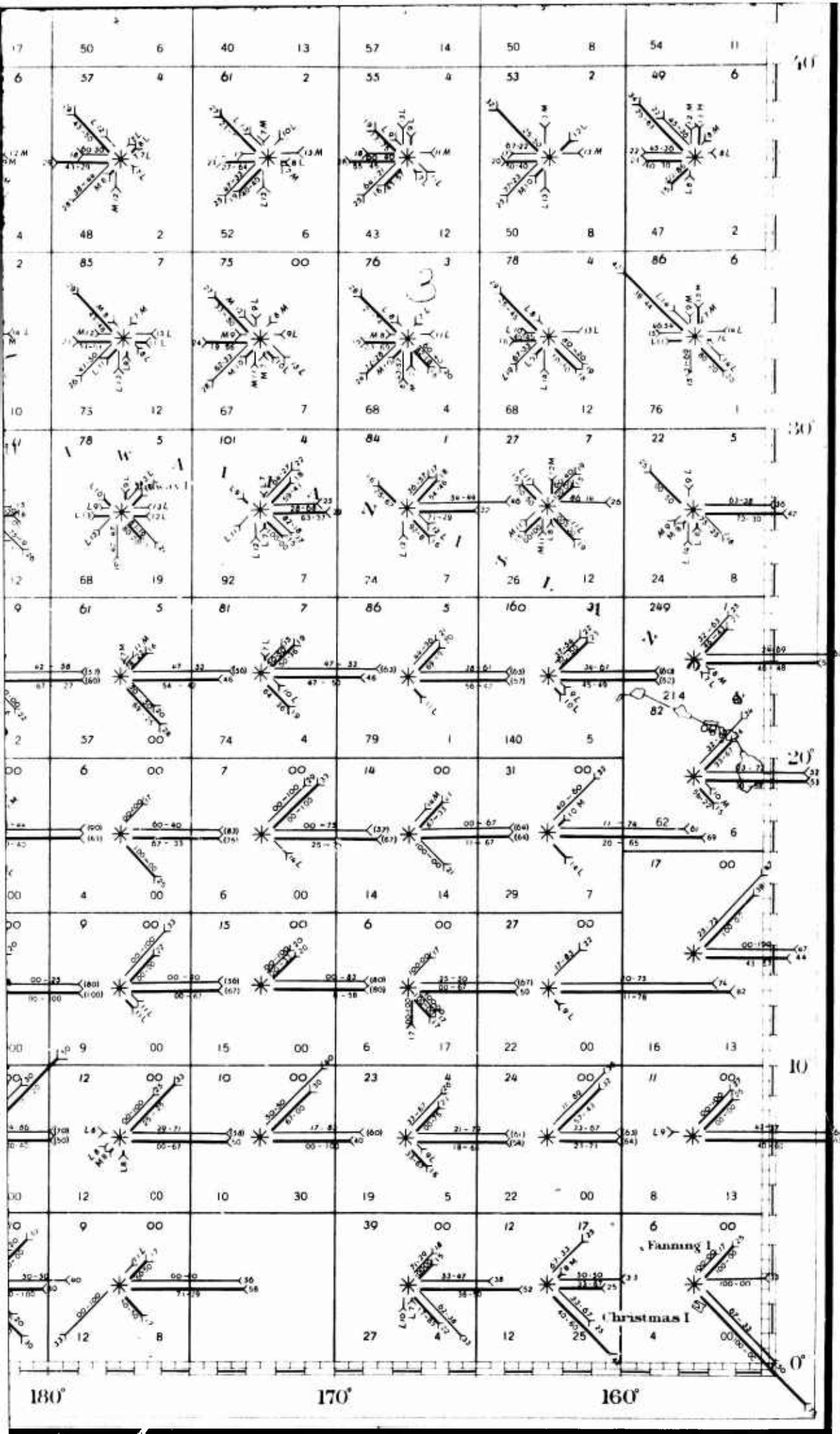
40



30







6

120

130°

140°

60



NORTHWESTERN PACIFIC OCEAN SEA AND SWELL CHART

JULY

PREVAILING SEAS, SWELLS AND CALMS

The information shown on this chart has been compiled from observations made during the month by the cooperating observers of the Oceanographic Office to and including the year 1947, the majority of the observations having been taken during the years 1932 to 1940 inclusive. The Oceanographic Office has shown all information in its files, however slight, and in some areas where the number of observations is small the graphical presentation will convey a false impression unless examined thoroughly. In evaluating the reliability of the information for any given area consider the number of observations, the geographical position, the percentages of direction and the adjacent roses. THE COMPUTATIONS FOR SEA AND SWELL WERE MADE SEPARATELY AND ALTHOUGH THE CONDITIONS FOR BOTH ARE SHOWN ON THE SAME CHART FOR THE CONVENIENCE OF THE USER, IT SHOULD BE UNDERSTOOD THAT THE DIRECTION OF SEA AND SWELL AS WELL AS THE CONDITIONS UNDER THOSE DIRECTIONS WILL NOT NECESSARILY BE IDENTICAL AT ANY GIVEN TIME OR PLACE.

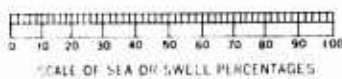
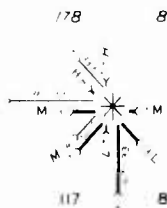
METHOD OF PRESENTATION

The purpose of this chart is to show both graphically and with figures, by means of an eight point double rose, printed in black, the character of the seas and swells that have prevailed within the areas outlined on the brown base. THE SEA CONDITIONS ARE REPRESENTED BY THE LIGHT LINE ARROWS AND SLANTING TYPE, WHILE THE SWELL CONDITIONS ARE REPRESENTED BY THE HEAVY LINE ARROWS AND VERTICAL TYPE. No arrow is shown when 10 percent of direction is less than 7. In instances where the number of observations in any direction is 15 or over but the percent of direction is less than 7, the conditions within that direction may be shown in the usual manner without the arrow. The arrows point in the directions toward which the seas or swells move. The length of the arrow measured from the center mark, when placed on the attached scale and the numeral at the tail of the arrow, gives the number of times in each 100 observations that the seas or swells have been moving from or near the given point. In instances where the full length of the arrow cannot be shown, the shaft is shortened as much as necessary and the true percent at the tail of the arrow is placed in parenthesis.

When the percent of direction is 15 or over, the conditions within the direction are shown along the shaft of the arrow in percentage of low and medium seas or swells, the first figure from the center is always the percent of low. The percent of high seas or swells within the direction is the remainder of the percentage. When the percent of direction is less than 15 but more than 6, the conditions within the direction are shown by the letter L, M, or H (meaning predominately low, medium or high) beside the percentage figures for direction. The conditions of seas and swells (low, medium and high) within each direction, are defined as follows: low seas or swells, those of amounts 1 and 2; medium seas or swells, those of amounts 3 and 4; high seas or swells, those of amounts 5 and above.

The number of observations for sea is shown in the upper left hand corner of the area and the percent of calms for those observations in the upper right hand corner. The number of observations for swell is shown in the lower left hand corner of the area and the percent of calms for those observations in the lower right hand corner.

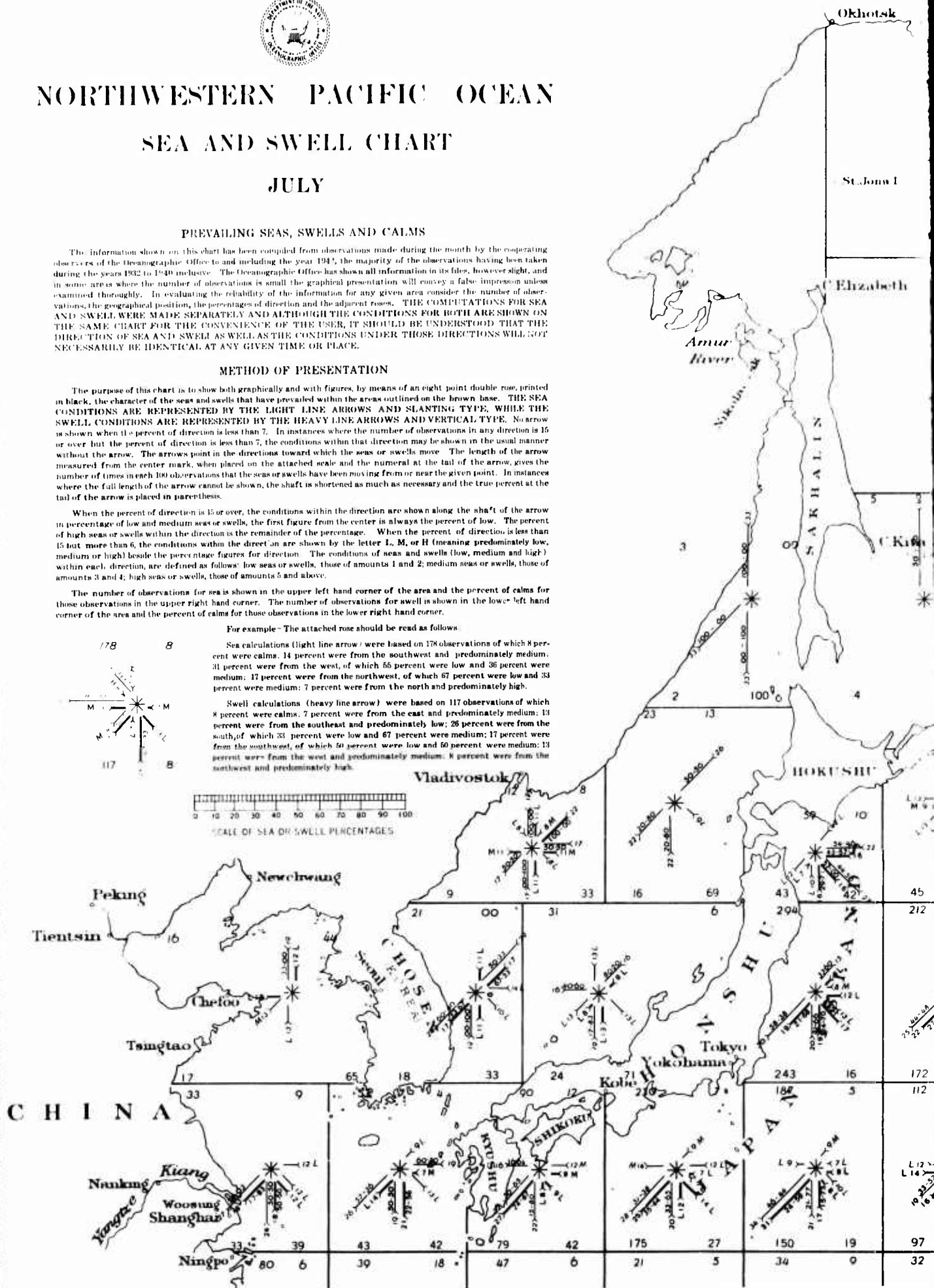
For example - The attached rose should be read as follows:

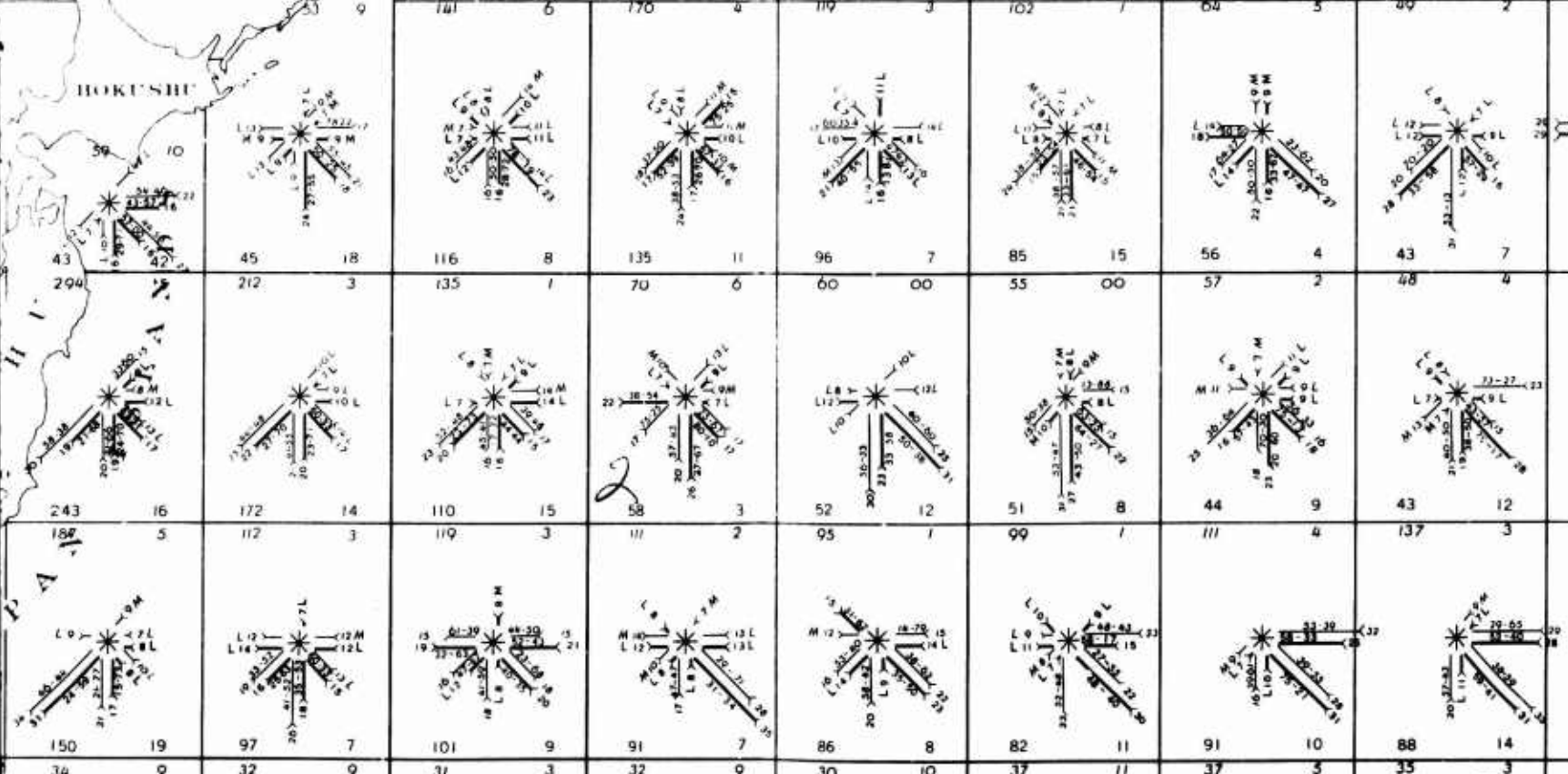
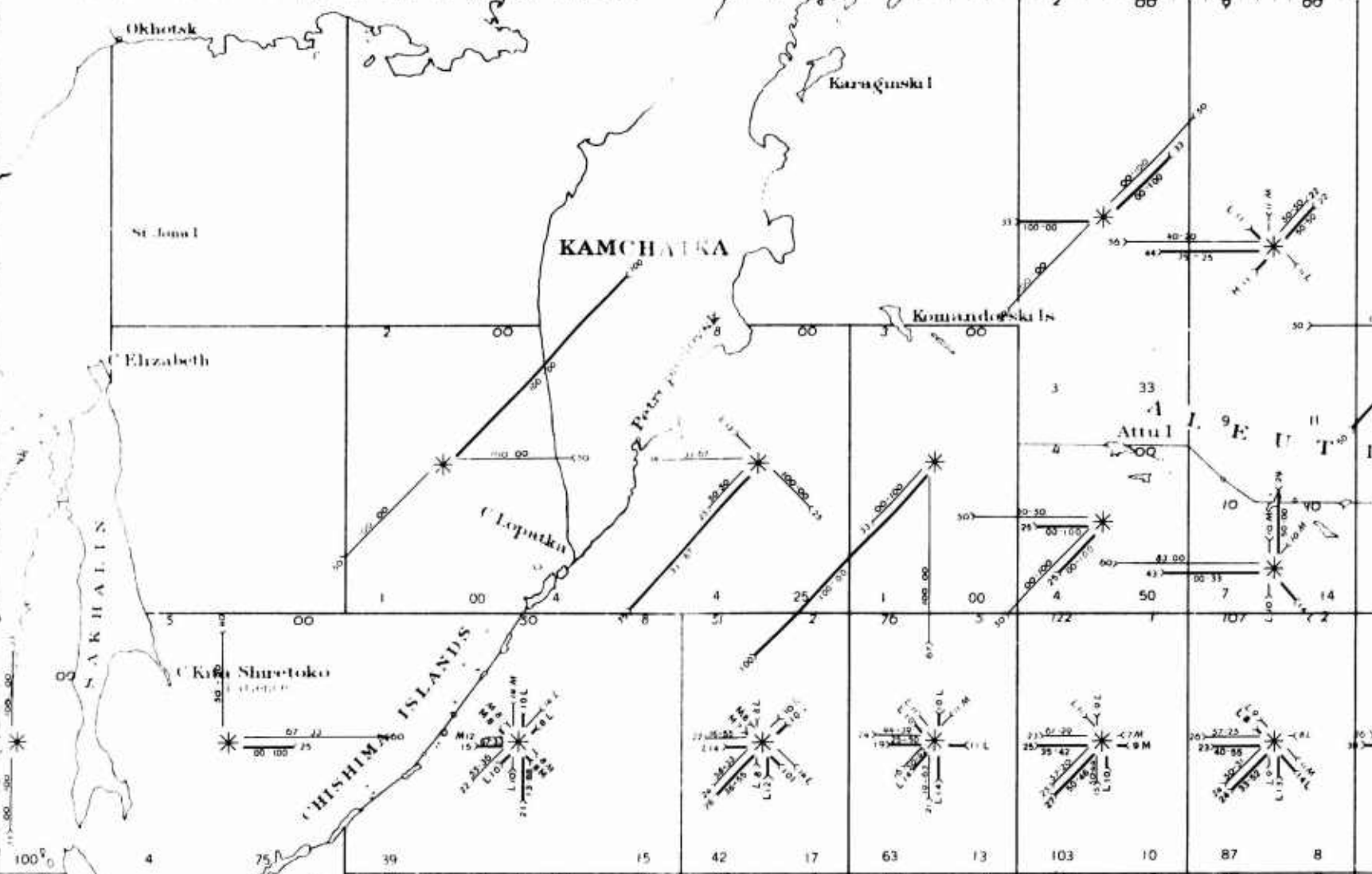


50

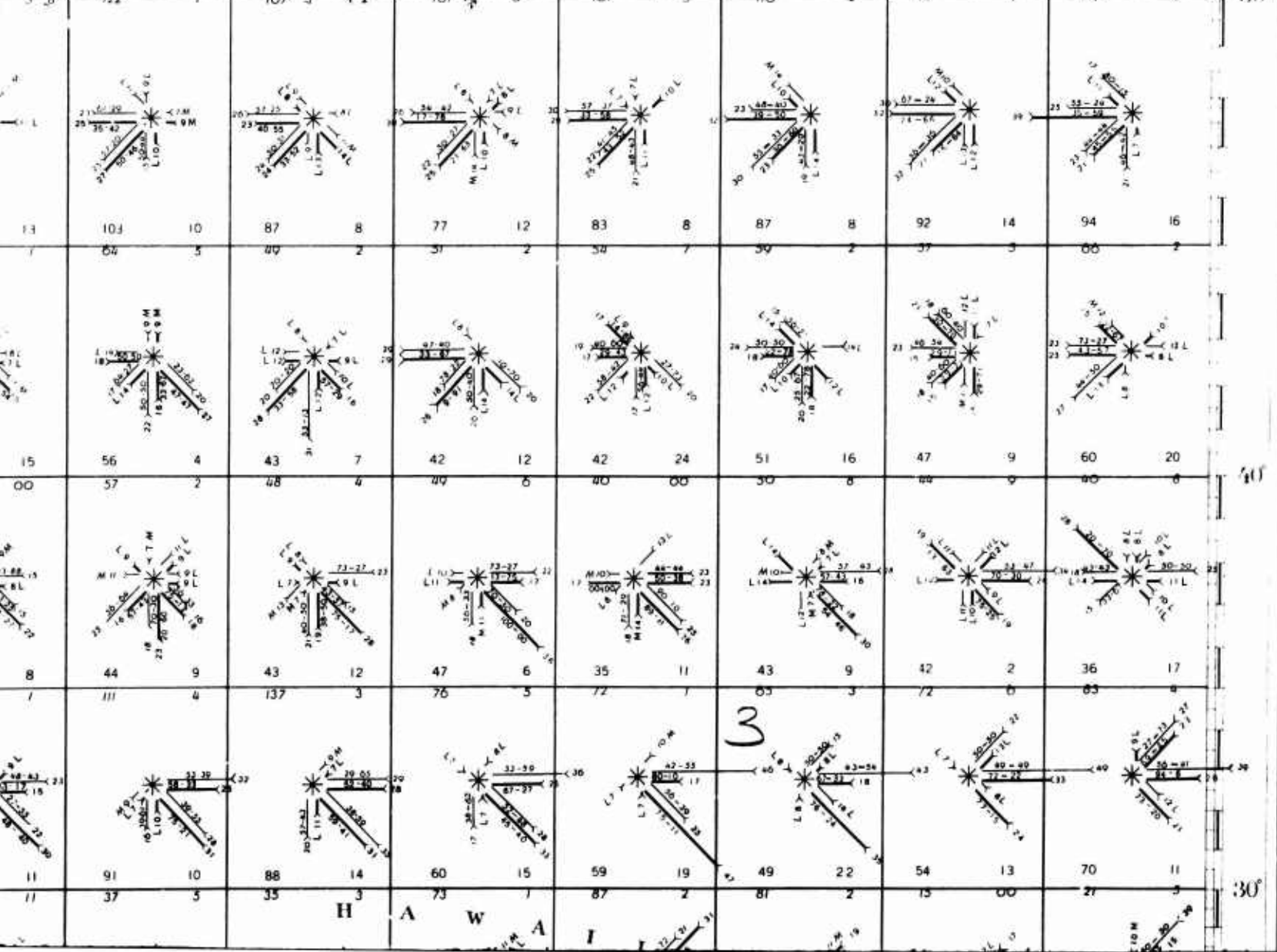
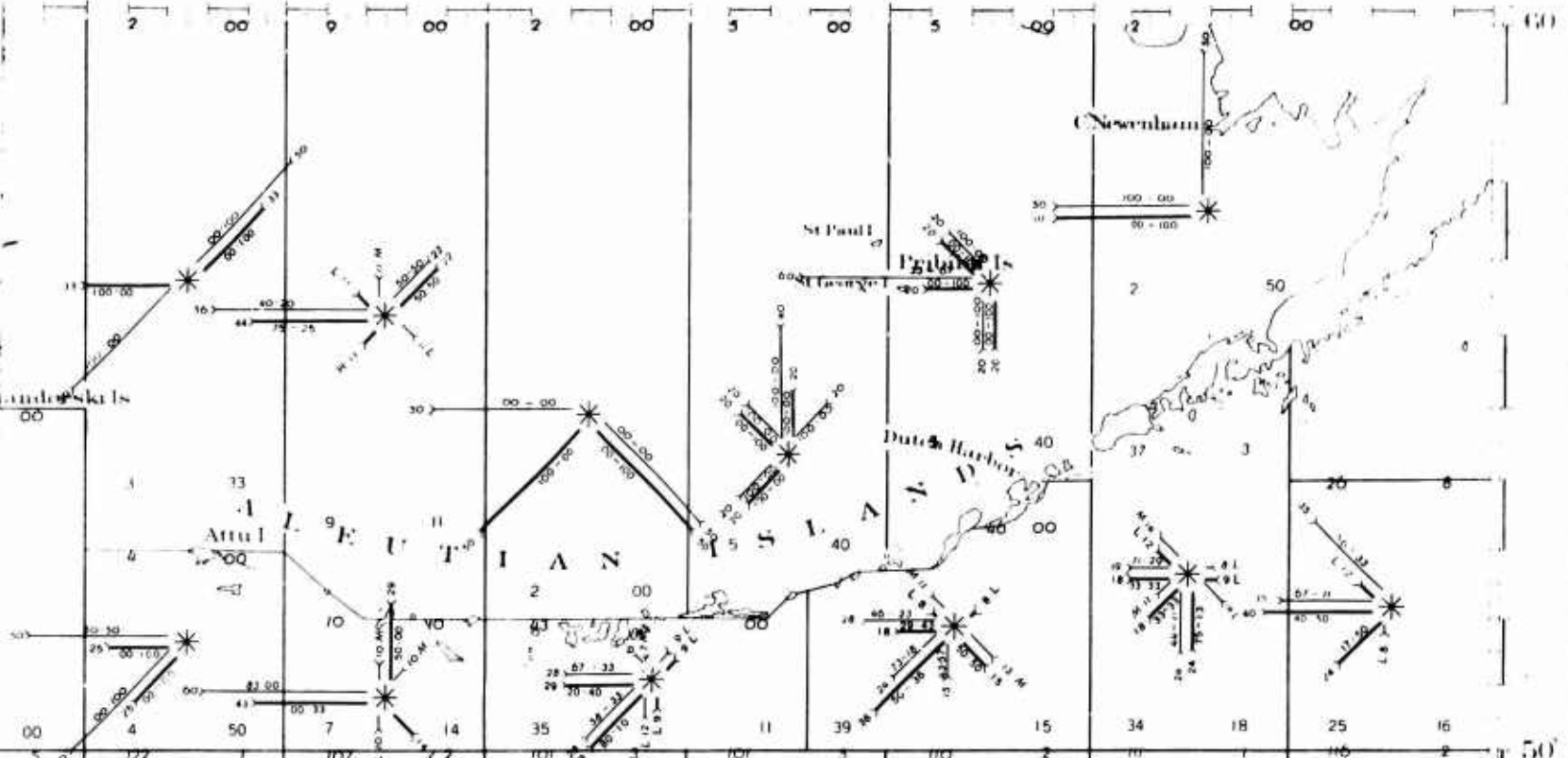
40

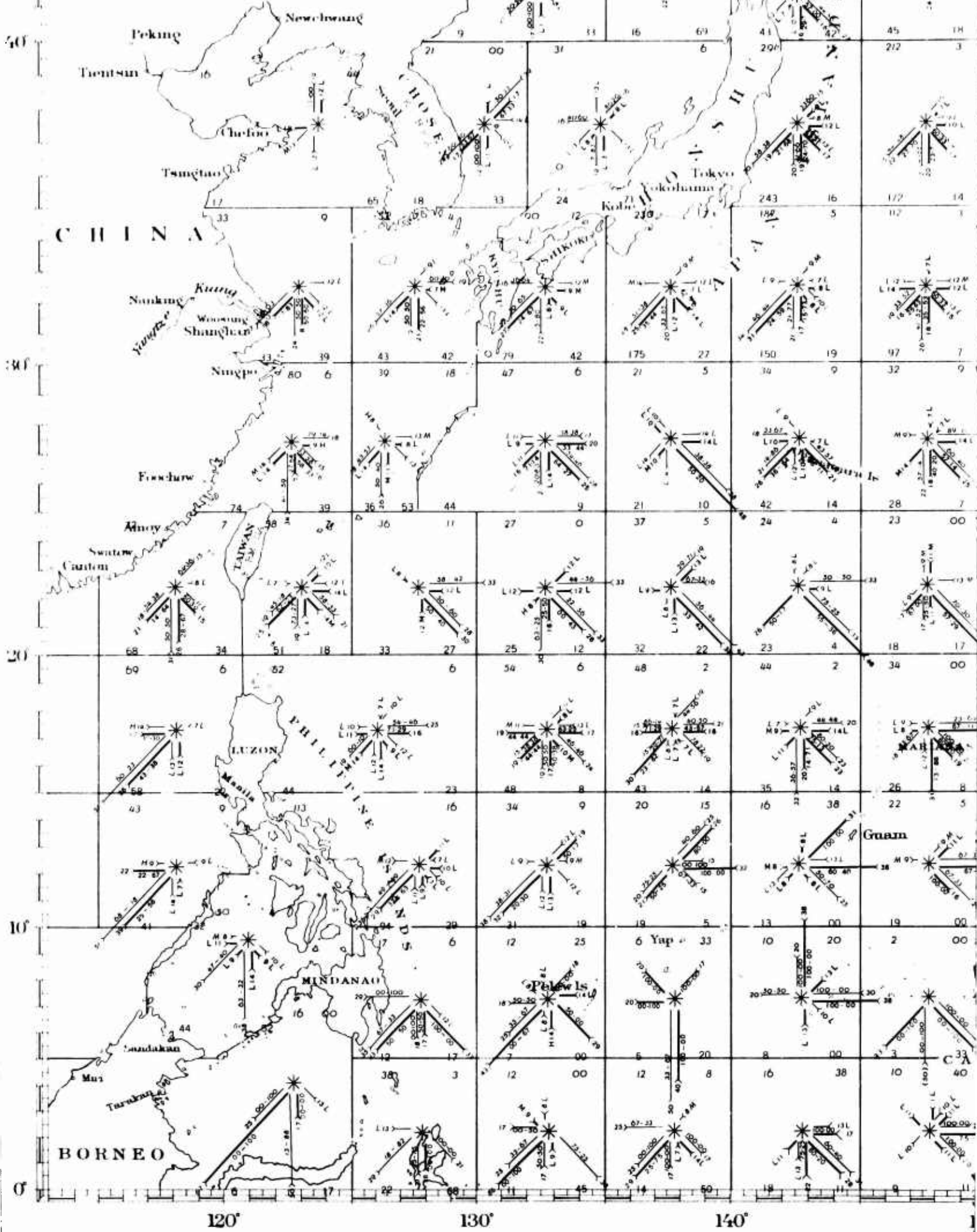
30

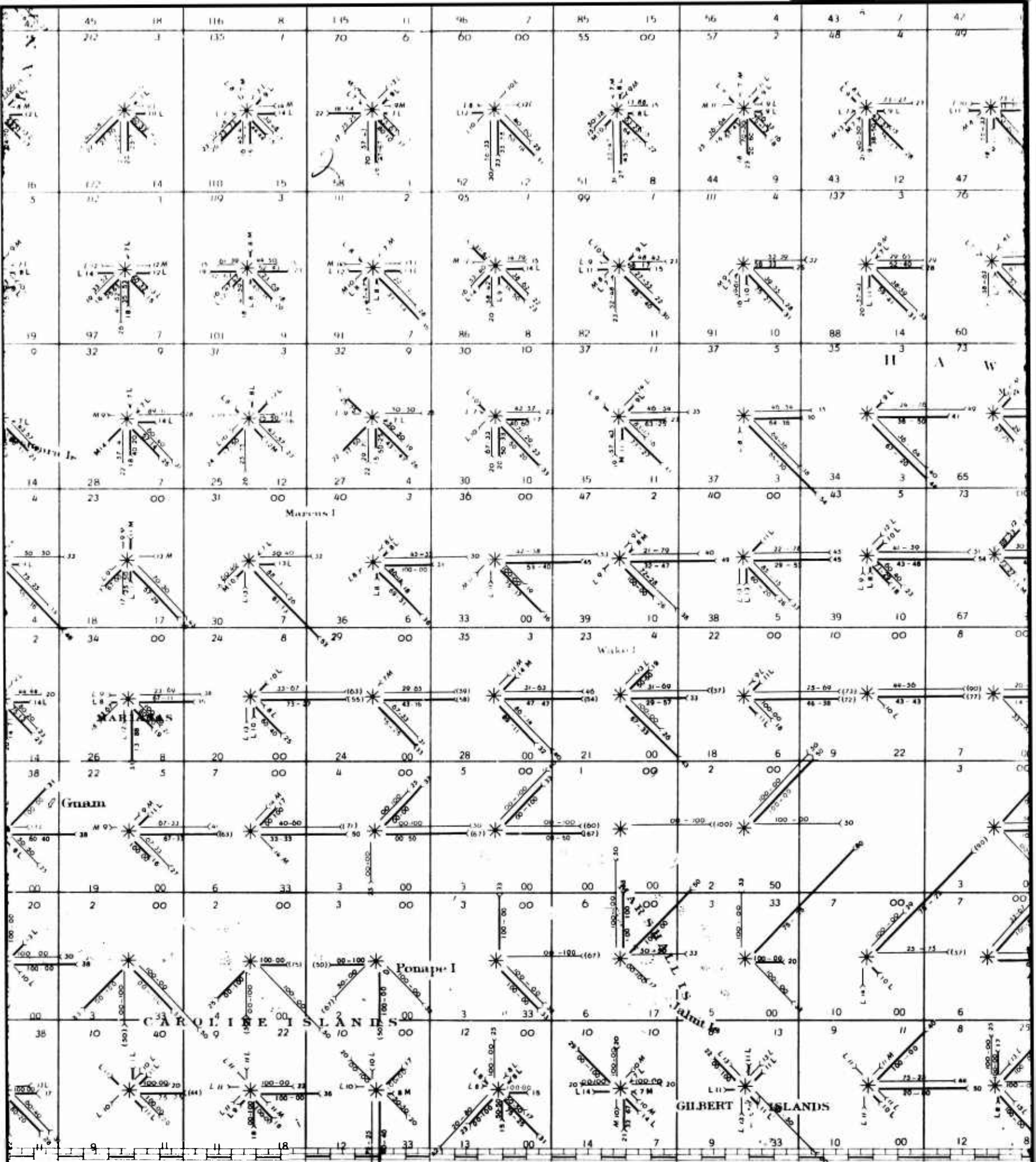




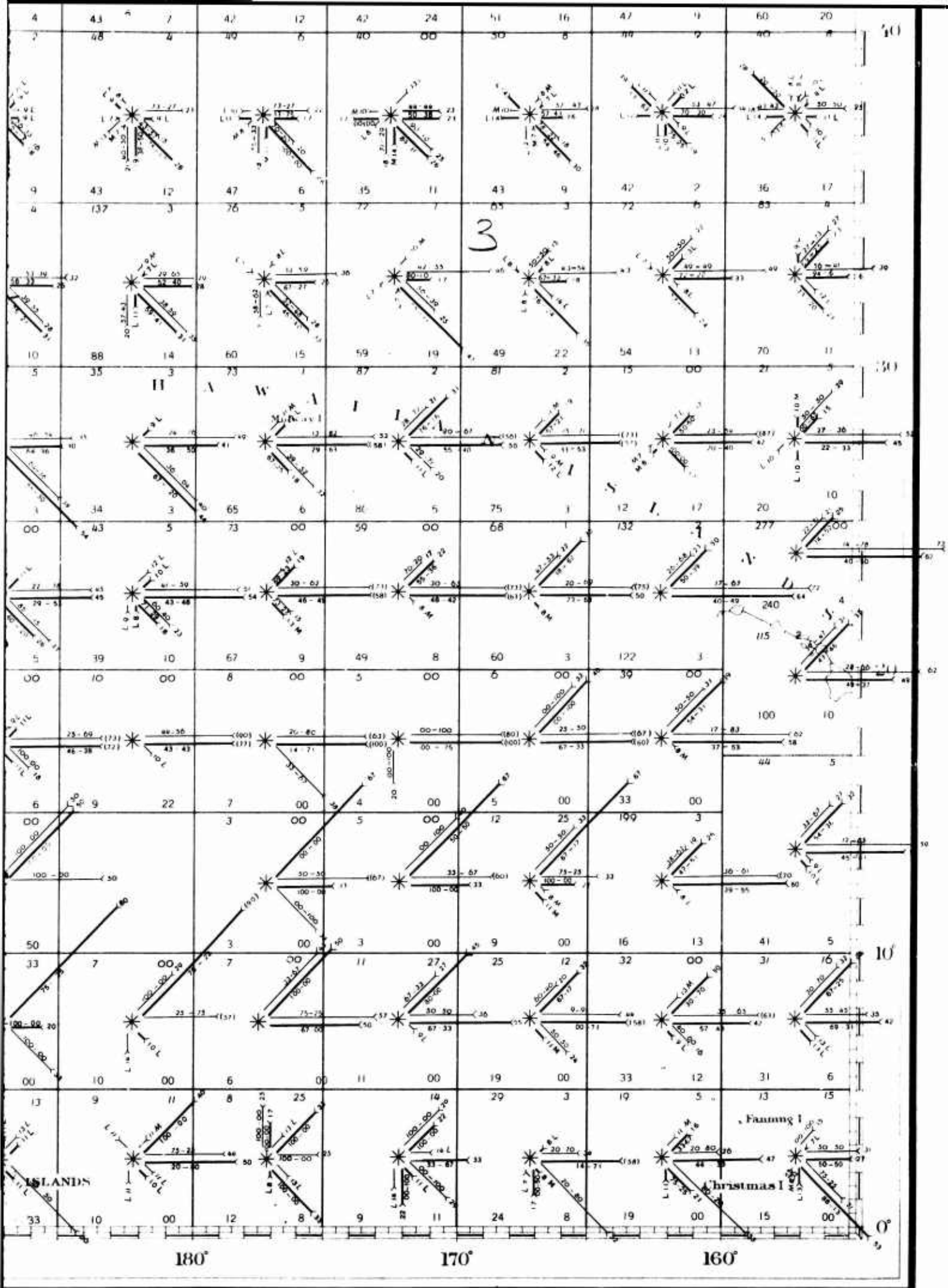
170 180 170 160







150° 160° 170° 180°



6



NORTHWESTERN PACIFIC OCEAN SEA AND SWELL CHART

AUGUST

PREVAILING SEAS, SWELLS AND CALMS

The information shown on this chart has been compiled from observations made during the month by the cooperating observers of the Oceanographic Office to and including the year 1941, the majority of the observations having been taken during the years 1932 to 1940 inclusive. The Oceanographic Office has shown all information in its files, however slight, and in some areas where the number of observations is small the graphical presentation will convey a false impression unless examined thoroughly. In evaluating the reliability of the information for any given area consider the number of observations, the geographical position, the percentages of direction and the adjacent roses. THE COMPUTATIONS FOR SEA AND SWELL WERE MADE SEPARATELY AND ALTHOUGH THE CONDITIONS FOR BOTH ARE SHOWN ON THE SAME CHART FOR THE CONVENIENCE OF THE USER, IT SHOULD BE UNDERSTOOD THAT THE DIRECTION OF SEA AND SWELL AS WELL AS THE CONDITIONS UNDER THOSE DIRECTIONS WILL NOT NECESSARILY BE IDENTICAL AT ANY GIVEN TIME OR PLACE.

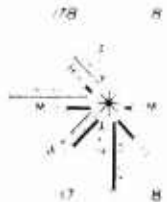
METHOD OF PRESENTATION

The purpose of this chart is to show both graphically and with figures, by means of an eight-point double rose, printed in black, the character of the seas and swells that have prevailed within the areas outlined in the brown base. THE SEA CONDITIONS ARE REPRESENTED BY THE LIGHT LINE ARROWS AND SLANTING TYPE, WHILE THE SWELL CONDITIONS ARE REPRESENTED BY THE HEAVY LINE ARROWS AND VERTICAL TYPE. No arrow is shown when the percent of direction is less than 7. In instances where the number of observations in any direction is 15 or over but the percent of direction is less than 7, the conditions within that direction may be shown in the usual manner without the arrow. The arrows point in the directions toward which the seas or swells move. The length of the arrow measured from the center mark, when placed on the attached scale and the numeral at the tail of the arrow, gives the number of times in each 100 observations that the seas or swells have been moving from or near the given point. In instances where the full length of the arrow cannot be shown, the shaft is shortened as much as necessary and the true percent at the tail of the arrow is placed in parentheses.

When the percent of direction is 15 or over, the conditions within the direction are shown along the shaft of the arrow in percentage of low and medium seas or swells, the first figure from the center is always the percent of low. The percent of high seas or swells within the direction is the remainder of the percentage. When the percent of direction is less than 15 but more than 6, the conditions within the direction are shown by the letter L, M, or H (meaning predominately low, medium or high) beside the percentage figures for direction. The conditions of seas and swells (low, medium and high) within each direction, are defined as follows: low seas or swells, those of amounts 1 and 2, medium seas or swells, those of amounts 3 and 4, high seas or swells, those of amounts 5 and above.

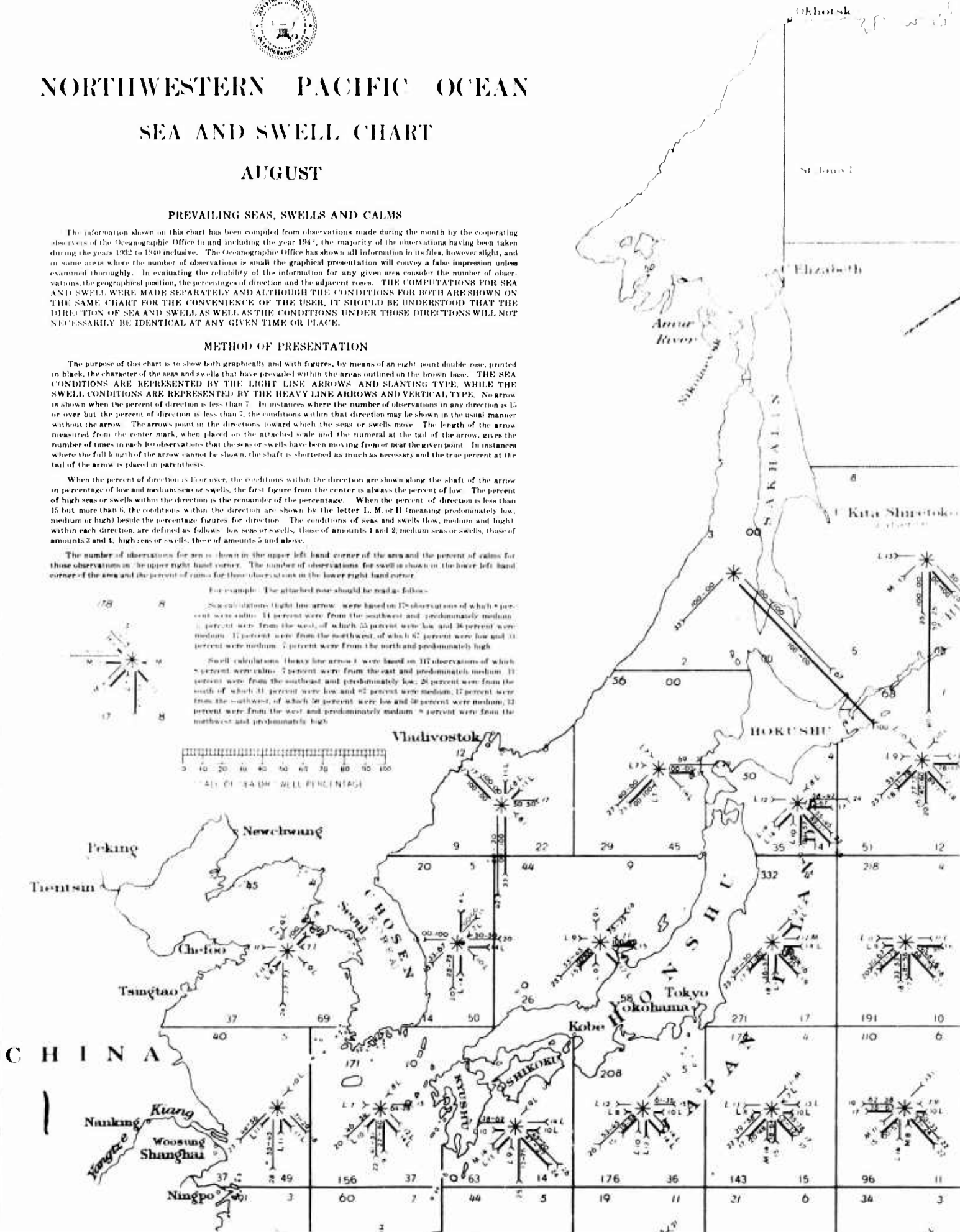
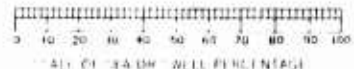
The number of observations for sea is shown in the upper left hand corner of the area and the percent of calms for those observations in the upper right hand corner. The number of observations for swell is shown in the lower left hand corner of the area and the percent of calms for those observations in the lower right hand corner.

For example: The attached rose should be read as follows:



Sea calculations (light line arrow) were based on 175 observations of which 8 percent were calms, 44 percent were from the southwest and predominately medium, 11 percent were from the west, of which 25 percent were low and 36 percent were medium, 15 percent were from the northwest, of which 67 percent were low and 33 percent were medium, 7 percent were from the north and predominately high.

Swell calculations (heavy line arrow) were based on 117 observations of which 5 percent were calms, 7 percent were from the east and predominately medium, 11 percent were from the southeast and predominately low, 24 percent were from the south, of which 31 percent were low and 67 percent were medium, 17 percent were from the southwest, of which 56 percent were low and 26 percent were medium, 11 percent were from the west and predominately medium, 9 percent were from the northwest and predominately high.

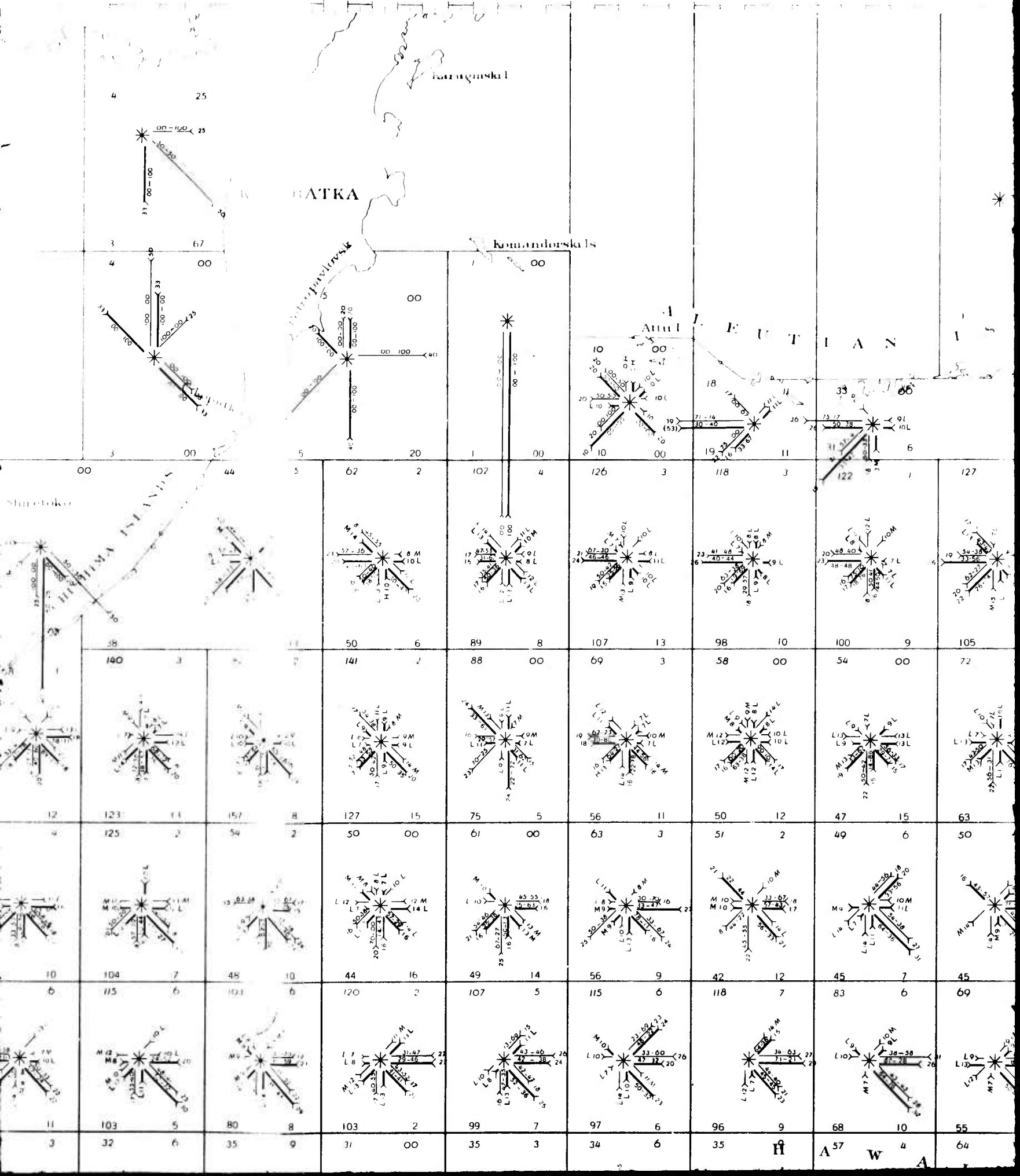


150

160

170

180



KARAGINSKI I.

KATKA

Komandorska Is.

Attu I. EUTAN I.

SHIMOTOKU

SHIMOTOKU ISLANDS

140

141

142

143

144

145

146

147

148

149

150

151

152

153

154

155

156

157

158

159

160

123

124

125

126

127

128

129

130

131

132

133

134

135

136

137

138

139

140

141

142

143

104

105

106

107

108

109

110

111

112

113

114

115

116

117

118

119

120

121

122

123

124

103

104

105

106

107

108

109

110

111

112

113

114

115

116

117

118

119

120

121

122

123

32

33

34

35

36

37

38

39

40

41

42

43

44

45

46

47

48

49

50

51

52

57

58

59

60

61

62

63

64

65

66

67

68

69

70

71

72

73

74

75

76

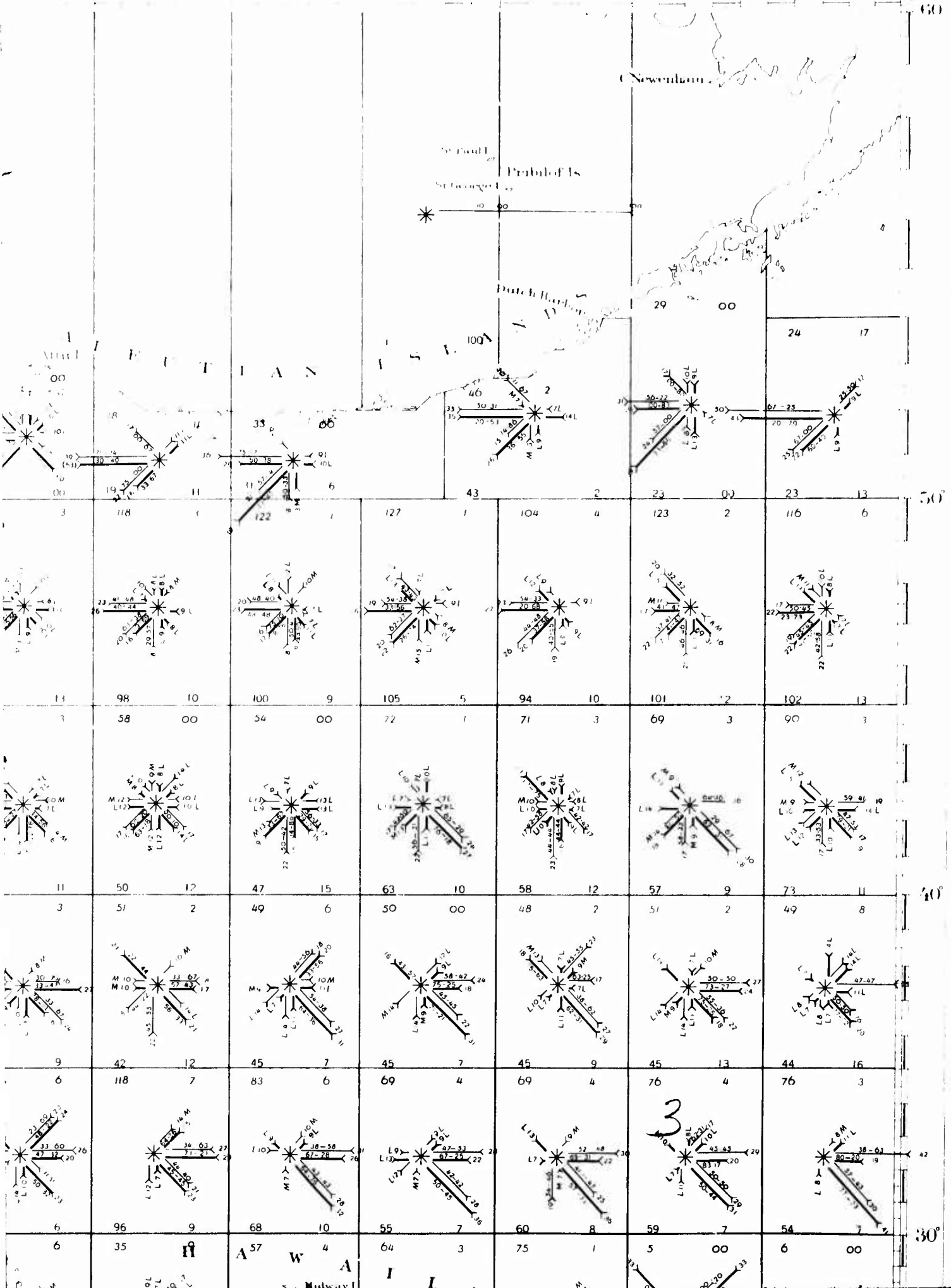
77

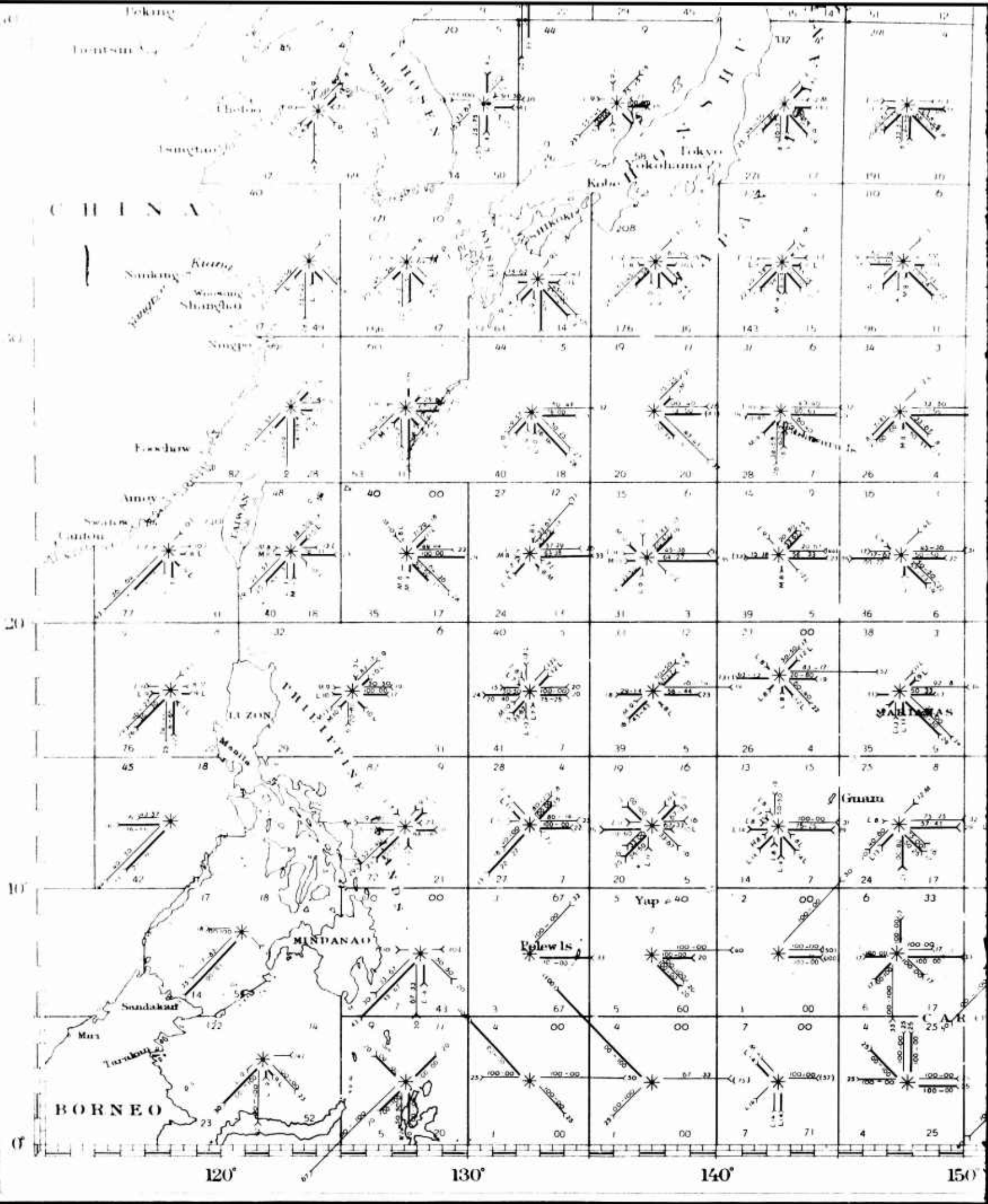
Newnham

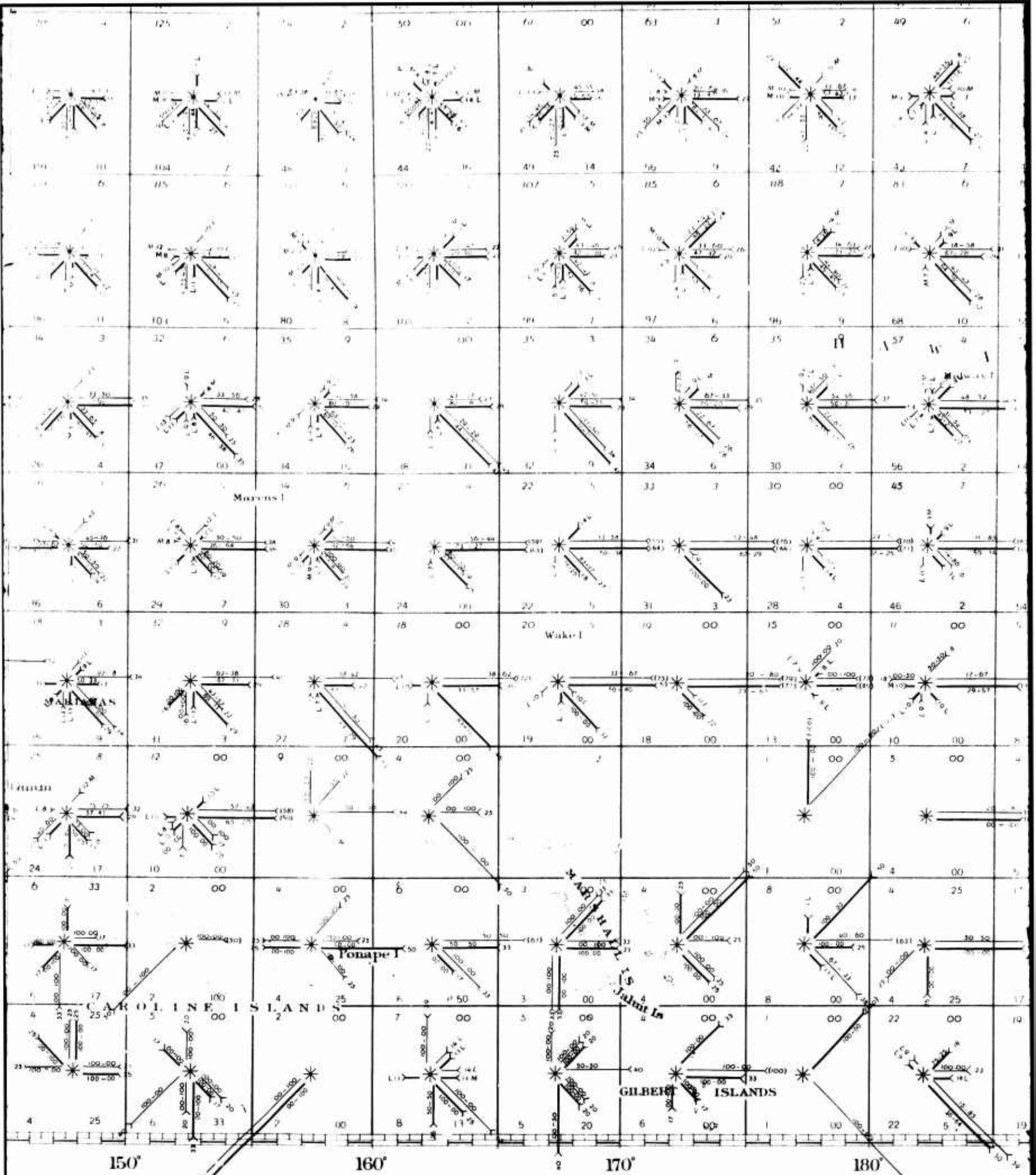
St Paul I.
St George I.
Prudof Is.

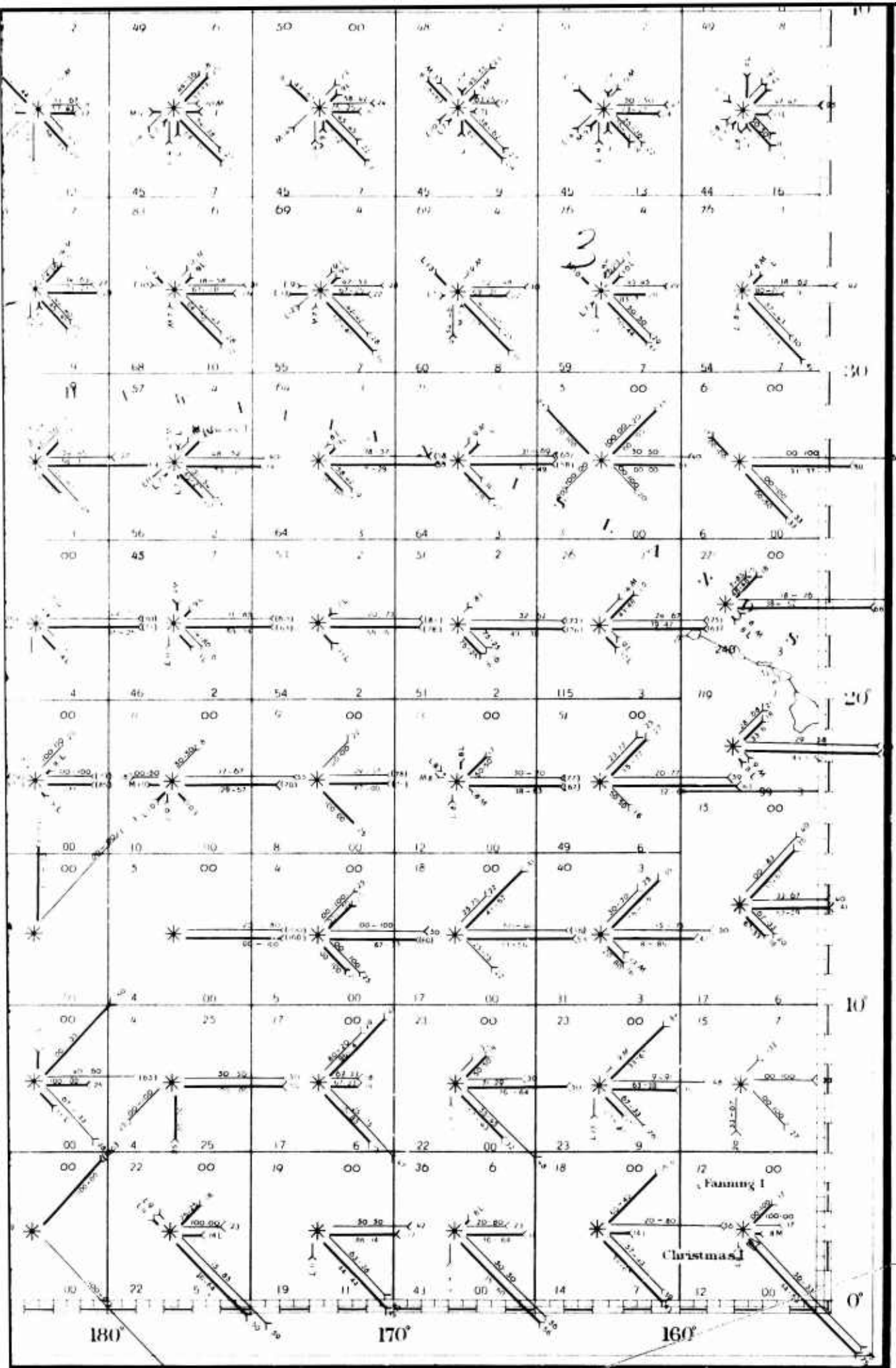
Dutch Harbor

ALUTAIAN ISLANDS









6



NORTHWESTERN PACIFIC OCEAN SEA AND SWELL CHART

SEPTEMBER

PREVAILING SEAS, SWELLS AND CALMS

The information shown on this chart has been compiled from observations made during the month by the cooperating observers of the Oceanographic Office to and including the year 1947, the majority of the observations having been taken during the years 1932 to 1940 inclusive. The Oceanographic Office has shown all information in its files, however slight, and in some areas where the number of observations is small the graphical presentation will convey a false impression unless examined thoroughly. In evaluating the reliability of the information for any given area consider the number of observations, the geographical position, the percentages of direction and the adjacent roses. THE COMPUTATIONS FOR SEA AND SWELL WERE MADE SEPARATELY AND ALTHOUGH THE CONDITIONS FOR BOTH ARE SHOWN ON THE SAME CHART FOR THE CONVENIENCE OF THE USER, IT SHOULD BE UNDERSTOOD THAT THE DIRECTION OF SEA AND SWELLS AS WELL AS THE CONDITIONS UNDER THOSE DIRECTIONS WILL NOT NECESSARILY BE IDENTICAL AT ANY GIVEN TIME OR PLACE.

METHOD OF PRESENTATION

The purpose of this chart is to show both graphically and with figures, by means of an eight point double rose, printed in black, the character of the seas and swells that have prevailed within the areas outlined on the brown base. THE SEA CONDITIONS ARE REPRESENTED BY THE LIGHT LINE ARROWS AND SLANTING TYPE, WHILE THE SWELL CONDITIONS ARE REPRESENTED BY THE HEAVY LINE ARROWS AND VERTICAL TYPE. No arrow is shown when the percent of direction is less than 7. In instances where the number of observations in any direction is 15 or over but the percent of direction is less than 7, the conditions within that direction may be shown in the usual manner without the arrow. The arrows point in the directions toward which the seas or swells move. The length of the arrow measured from the center mark, when placed on the attached scale, and the numeral at the tail of the arrow, gives the number of times in each 100 observations that the seas or swells have been moving from or near the given point. In instances where the full length of the arrow cannot be shown, the shaft is shortened as much as necessary and the true percent at the tail of the arrow is placed in parenthesis.

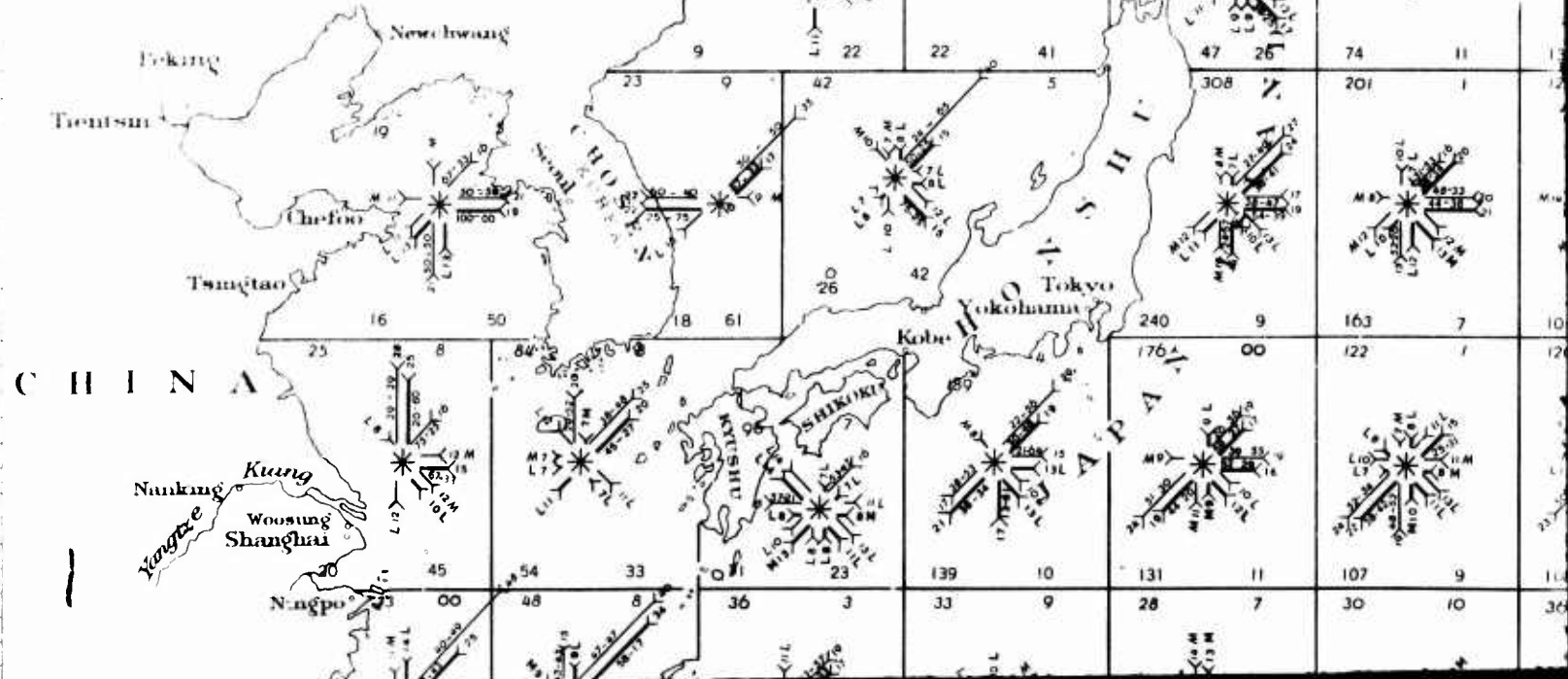
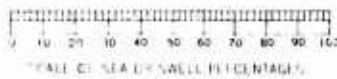
When the percent of direction is 15 or over, the conditions within the direction are shown along the shaft of the arrow in percent of low and medium seas or swells, the first figure from the center is always the percent of low. The percent of high seas or swells within the direction is the remainder of the percentage. When the percent of direction is less than 15 but more than 6, the conditions within the direction are shown by the letter L, M, or H (meaning predominately low, medium or high) beside the percentage figures for direction. The conditions of seas and swells (low, medium and high) within each direction, are defined as follows: low seas or swells, those of amounts 1 and 2; medium seas or swells, those of amounts 3 and 4; high seas or swells, those of amounts 5 and above.

The number of observations for seas is shown in the upper left hand corner of the area and the percent of calms for the observations for swell is shown in the lower left hand corner of the area and the percent of calms for those observations is in the lower right hand corner.

For example: The attached rose should be read as follows:

Sea calculations (light line arrow) were based on 126 observations of which 8 percent were calms, 14 percent were from the southwest and predominately medium; 11 percent were from the west, of which 13 percent were low and 36 percent were medium; 15 percent were from the northwest, of which 67 percent were low and 33 percent were medium; 7 percent were from the north and predominately high.

Swell calculations (heavy line arrow) were based on 117 observations of which 8 percent were calms; 7 percent were from the east and predominately medium; 11 percent were from the southeast and predominately low; 26 percent were from the south, of which 21 percent were low and 67 percent were medium; 17 percent were from the southwest, of which 59 percent were low and 50 percent were medium; 13 percent were from the west and predominately medium; 8 percent were from the northwest and predominately high.



150°

(1)

170°

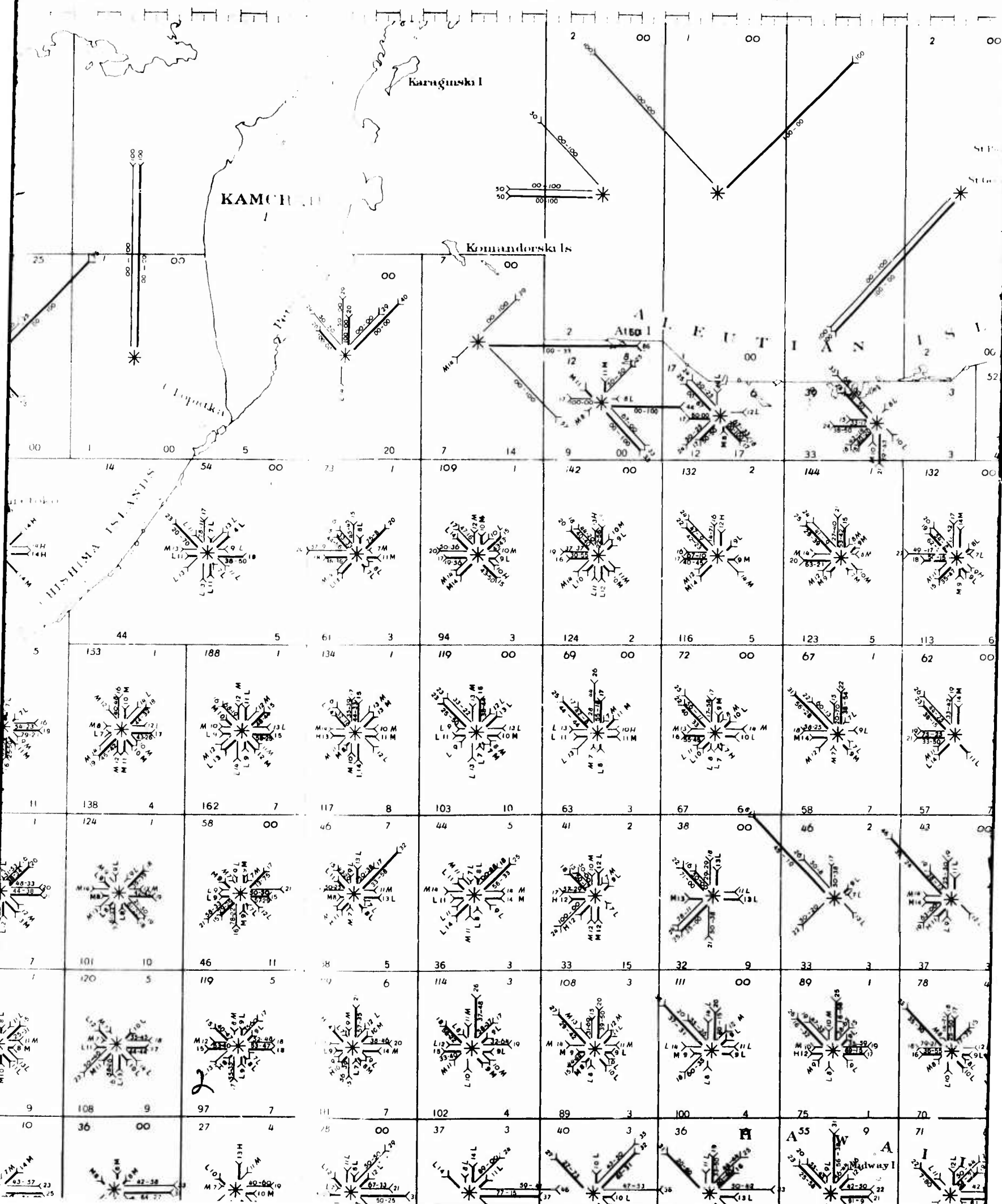
180°

Karaginiski I

KAMCHURU

Komandorska Is

ALEUTIAN ISLANDS



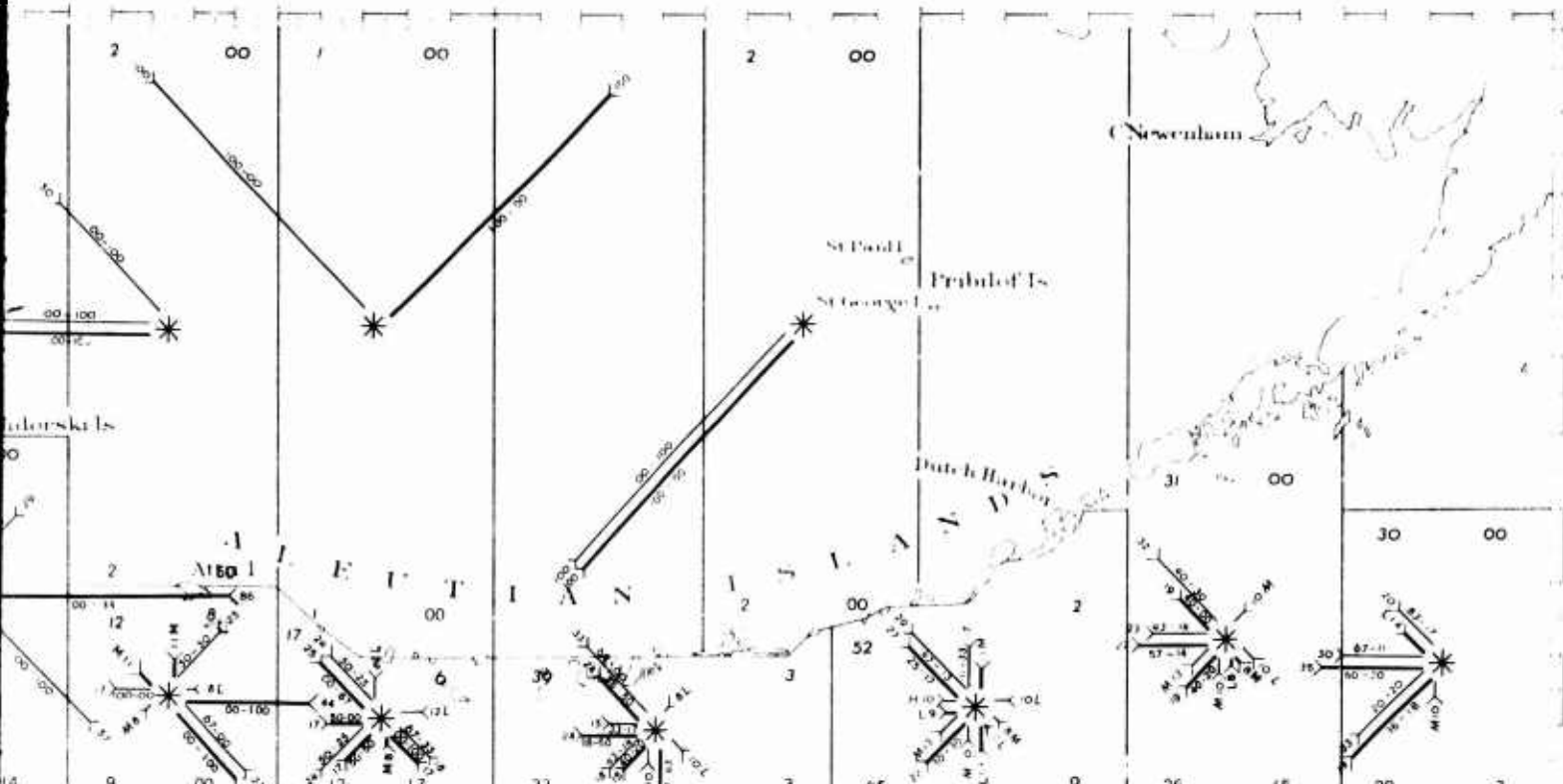
170°

180°

170°

160°

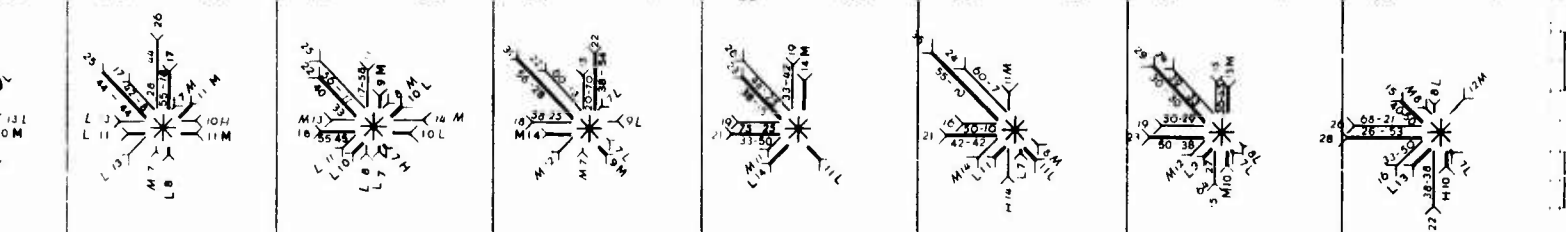
60



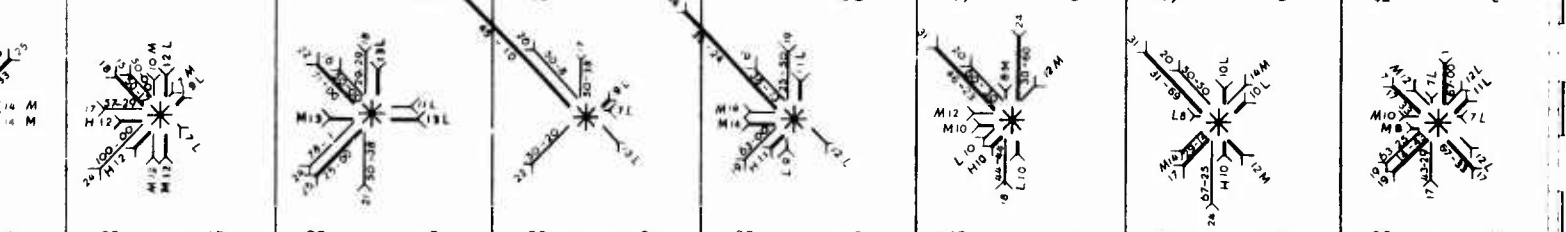
1	142	132	144	132	119	130	129
---	-----	-----	-----	-----	-----	-----	-----



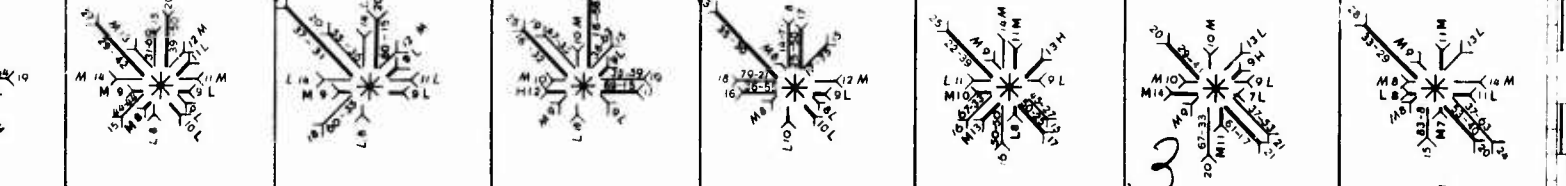
3	124	116	123	113	106	114	110
---	-----	-----	-----	-----	-----	-----	-----



10	63	67	58	57	57	69	67
----	----	----	----	----	----	----	----



3	33	32	33	37	42	42	36
---	----	----	----	----	----	----	----



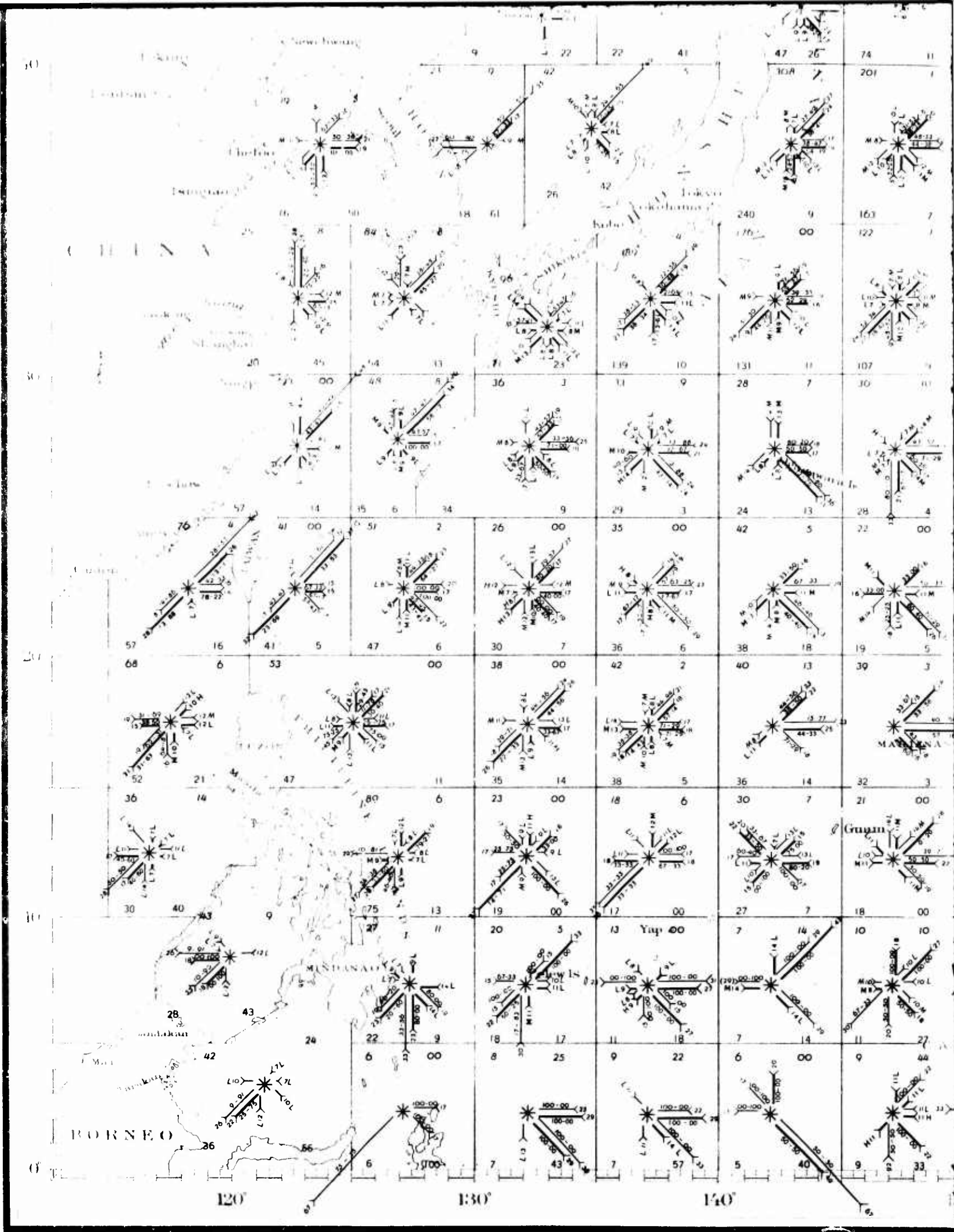
4	89	100	75	70	71	74	74
---	----	-----	----	----	----	----	----



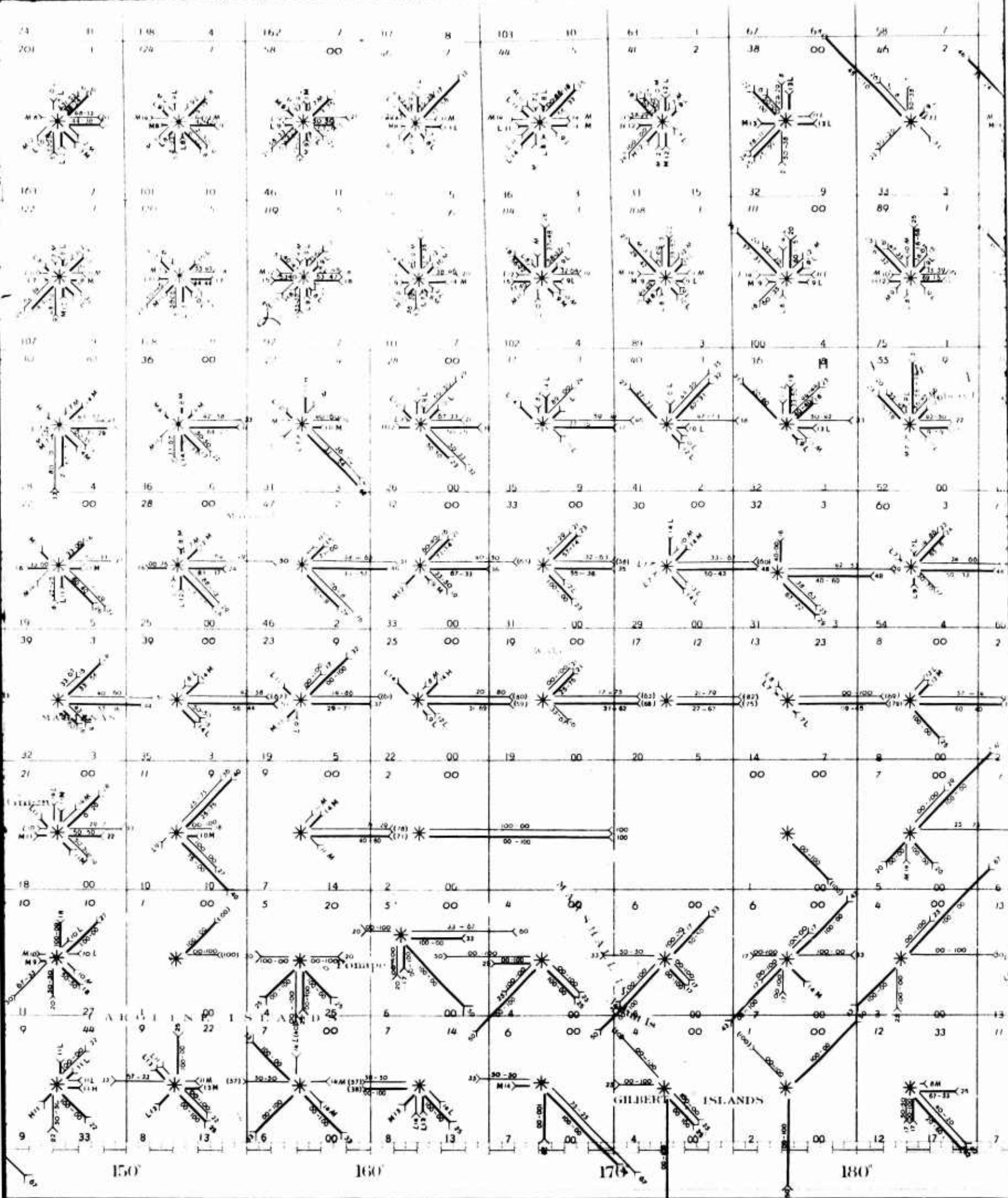
50

40

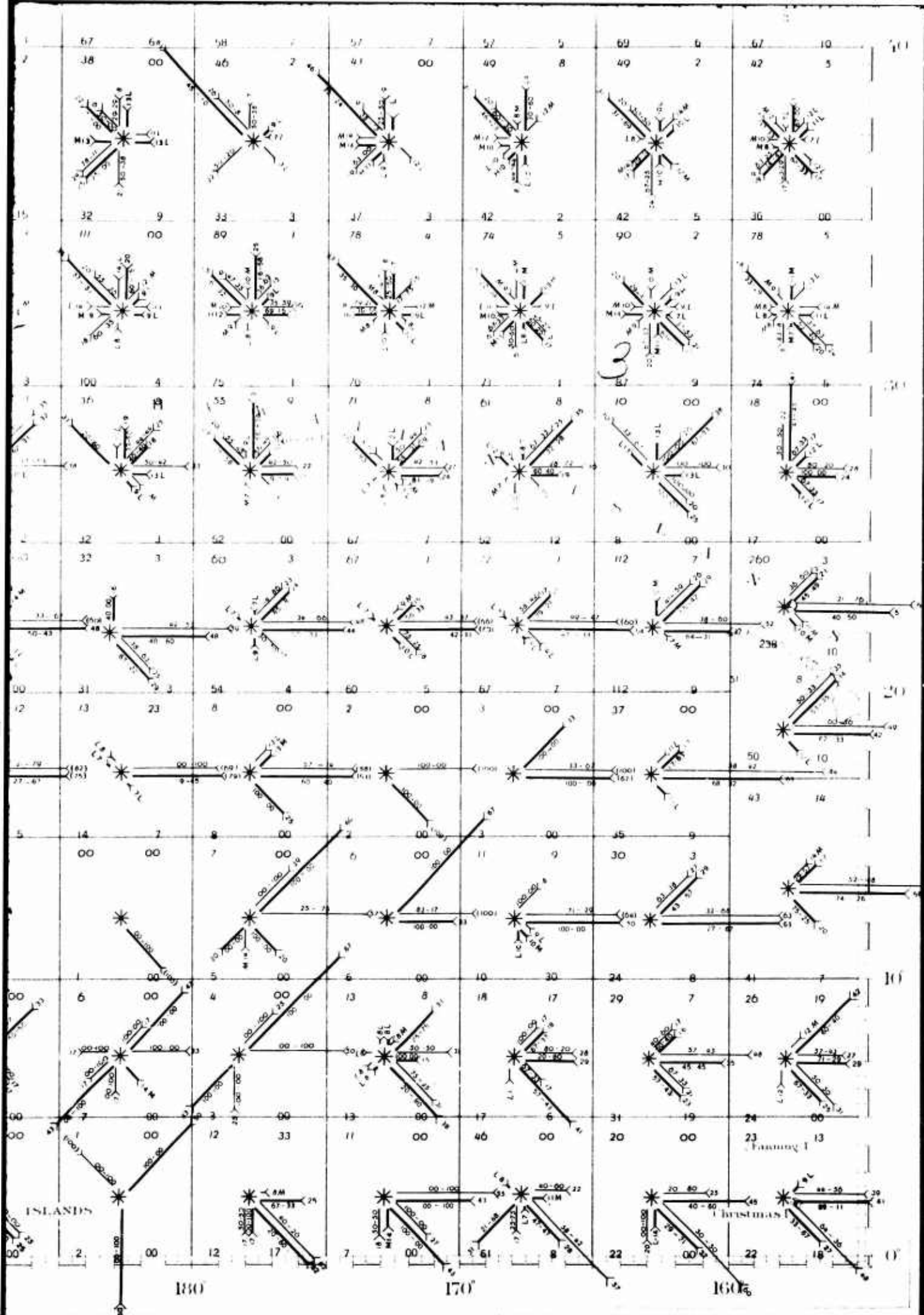
30



4



5



6

120°

130°

140°

150°

60°



NORTHWESTERN PACIFIC OCEAN SEA AND SWELL CHART OCTOBER

PREVAILING SEAS, SWELLS AND CALMS

The information shown on this chart has been compiled from observations made during the month by the cooperating observers of the Oceanographic Office to and including the year 1943, the majority of the observations having been taken during the years 1932 to 1940 inclusive. The Oceanographic Office has shown all information in its files, however slight, and in some areas where the number of observations is small the graphical presentation will convey a false impression unless examined thoroughly. In evaluating the reliability of the information for any given area consider the number of observations, the geographical position, the percentages of direction and the adjacent roses. THE COMPUTATIONS FOR SEA AND SWELL WERE MADE SEPARATELY AND ALTHOUGH THE CONDITIONS FOR BOTH ARE SHOWN ON THE SAME CHART FOR THE CONVENIENCE OF THE USER, IT SHOULD BE UNDERSTOOD THAT THE DIRECTION OF SEA AND SWELL AS WELL AS THE CONDITIONS UNDER THOSE DIRECTIONS WILL NOT NECESSARILY BE IDENTICAL AT ANY GIVEN TIME OR PLACE.

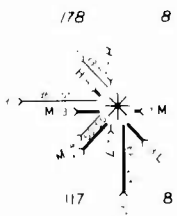
METHOD OF PRESENTATION

The purpose of this chart is to show both graphically and with figures, by means of an eight-point double-rose, printed in black, the character of the seas and swells that have prevailed within the areas outlined on the brown base. THE SEA CONDITIONS ARE REPRESENTED BY THE LIGHT LINE ARROWS AND SLANTING TYPE, WHILE THE SWELL CONDITIONS ARE REPRESENTED BY THE HEAVY LINE ARROWS AND VERTICAL TYPE. No arrow is shown when the percent of direction is less than 7. In instances where the number of observations in any direction is 15 or over but the percent of direction is less than 7, the conditions within that direction may be shown in the usual manner, without the arrow. The arrows point in the directions toward which the seas or swells move. The length of the arrow measured from the center mark, when placed on the attached scale and the numeral at the tail of the arrow, gives the number of times in each 100 observations that the seas or swells have been moving from or near the given point. In instances where the full length of the arrow cannot be shown, the shaft is shortened as much as necessary and the true percent at the tail of the arrow is placed in parenthesis.

When the percent of direction is 15 or over, the conditions within the direction are shown along the shaft of the arrow in percentage of low and medium seas or swells, the first figure from the center is always the percent of low. The percent of high seas or swells within the direction is the remainder of the percentage. When the percent of direction is less than 15 but more than 5, the conditions within the direction are shown by the letter L, M, or H (meaning predominately low, medium or high) beside the percentage figures for direction. The conditions of seas and swells (low, medium and high) within each direction, are defined as follows: low seas or swells, those of amounts 1 and 2; medium seas or swells, those of amounts 3 and 4; high seas or swells, those of amounts 5 and above.

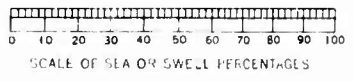
The number of observations for sea is shown in the upper left hand corner of the area and the percent of calms for those observations in the upper right hand corner. The number of observations for swell is shown in the lower left hand corner of the area and the percent of calms for those observations in the lower right hand corner.

For example - The attached rose should be read as follows:



Sea calculations (light line arrow) were based on 178 observations of which 8 percent were calms; 14 percent were from the southwest and predominately medium; 31 percent were from the west, of which 55 percent were low and 36 percent were medium; 17 percent were from the northwest, of which 67 percent were low and 33 percent were medium; 7 percent were from the north and predominately high.

Swell calculations (heavy line arrow) were based on 117 observations of which 8 percent were calms; 7 percent were from the east and predominately medium; 13 percent were from the southeast and predominately low; 26 percent were from the south of which 33 percent were low and 67 percent were medium; 17 percent were from the southwest, of which 50 percent were low and 50 percent were medium; 13 percent were from the west and predominately medium; 8 percent were from the northwest and predominately high.

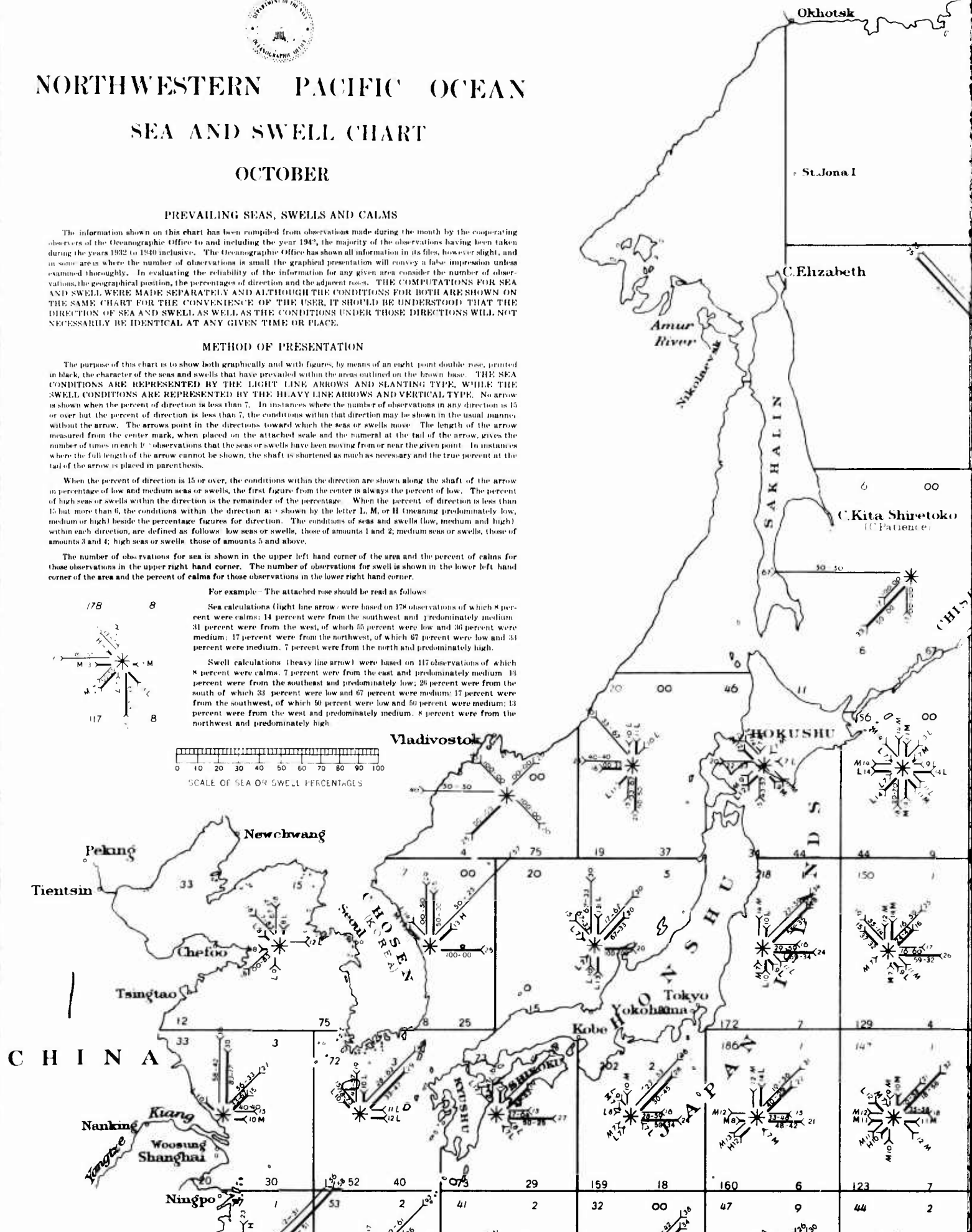


SCALE OF SEA OR SWELL PERCENTAGES

50°

40°

30°

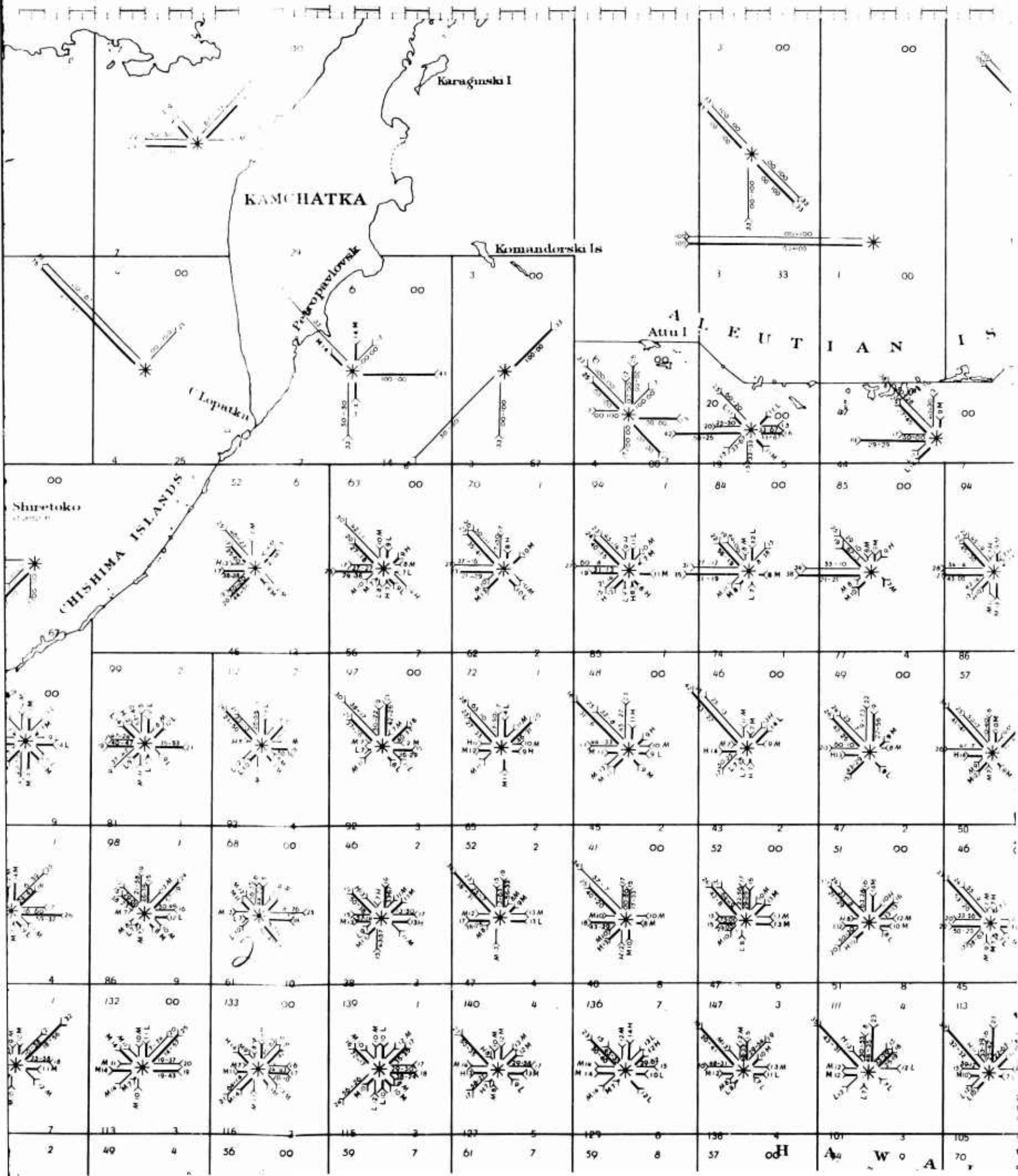


150°

160°

170°

180°



Karaĭmska I

KAMCHATKA

Komandorska Is

ALEUTIAN IS

Shiretoko

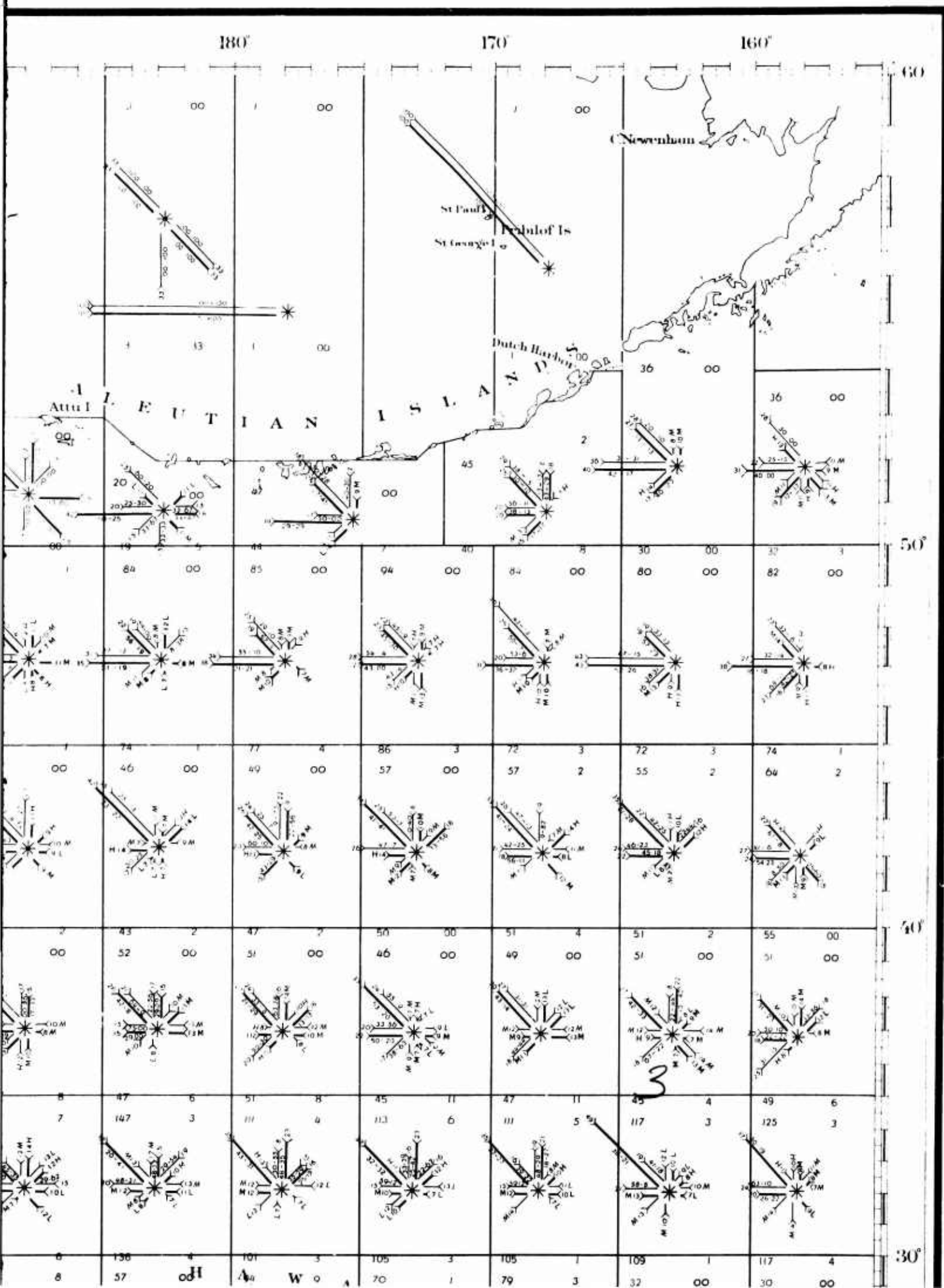
CHISHIMA ISLANDS

Clapatka

Petro-pavlovsk

Attu I

odH A W A



180°

170°

160°

60°

Newnham

St Paul
St George

Dutch Harbor

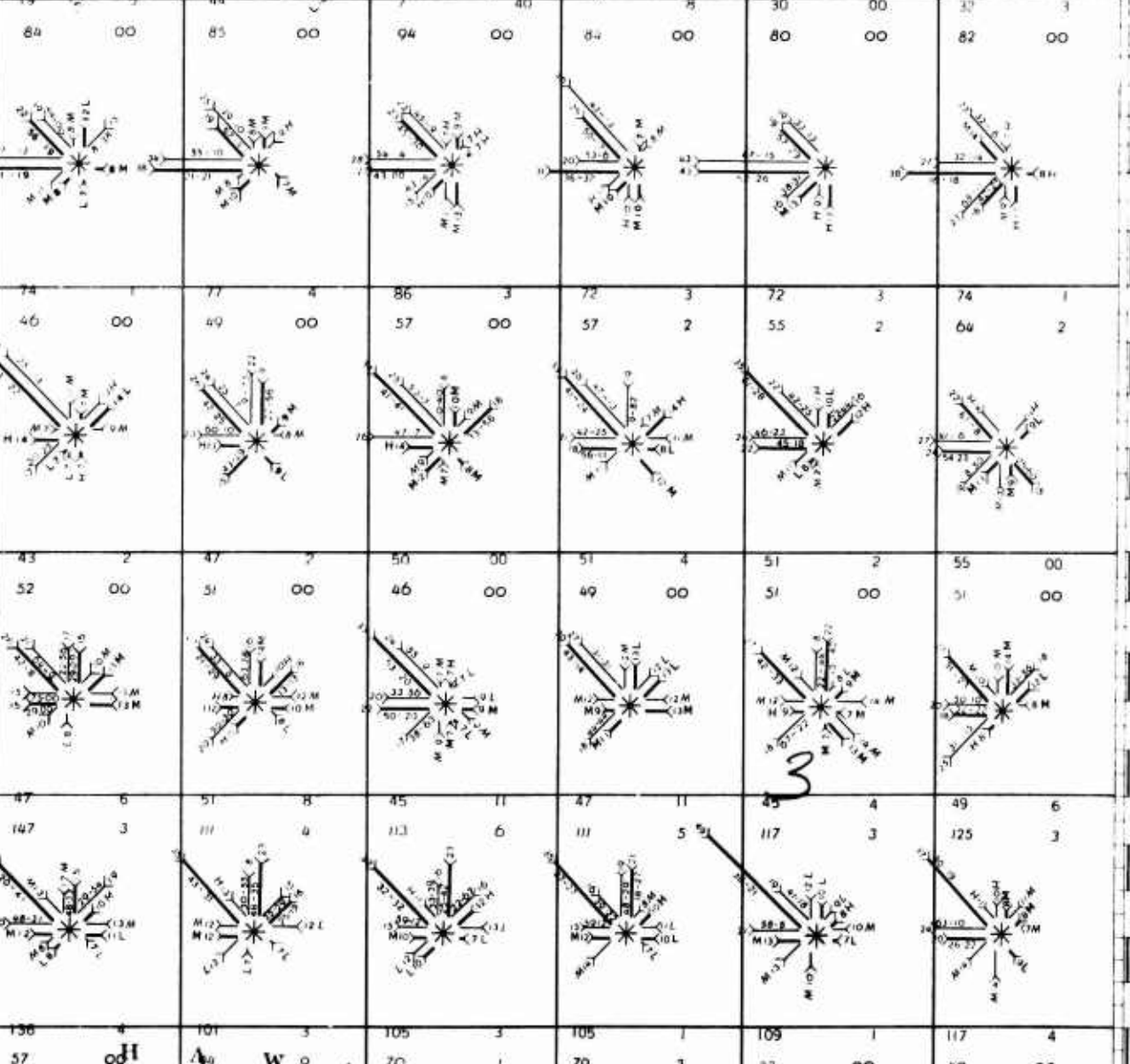
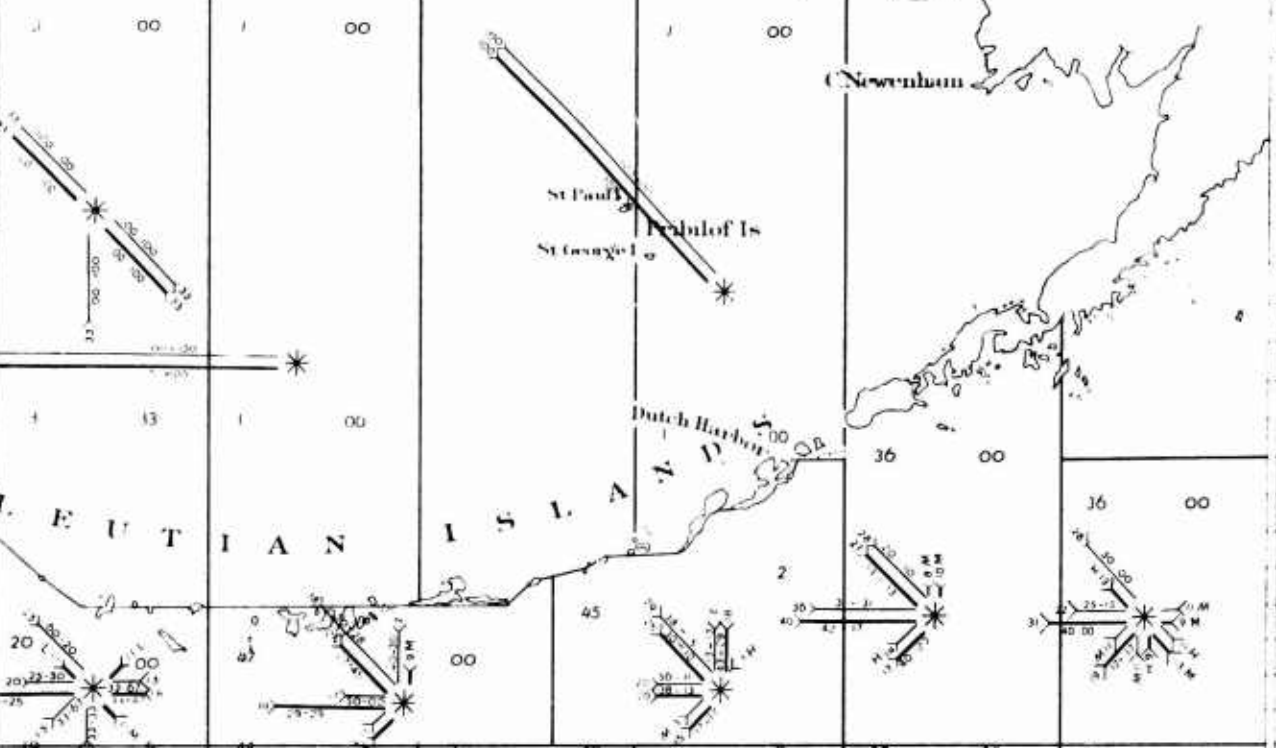
Attu I
I. E. U. T. I. A. N.

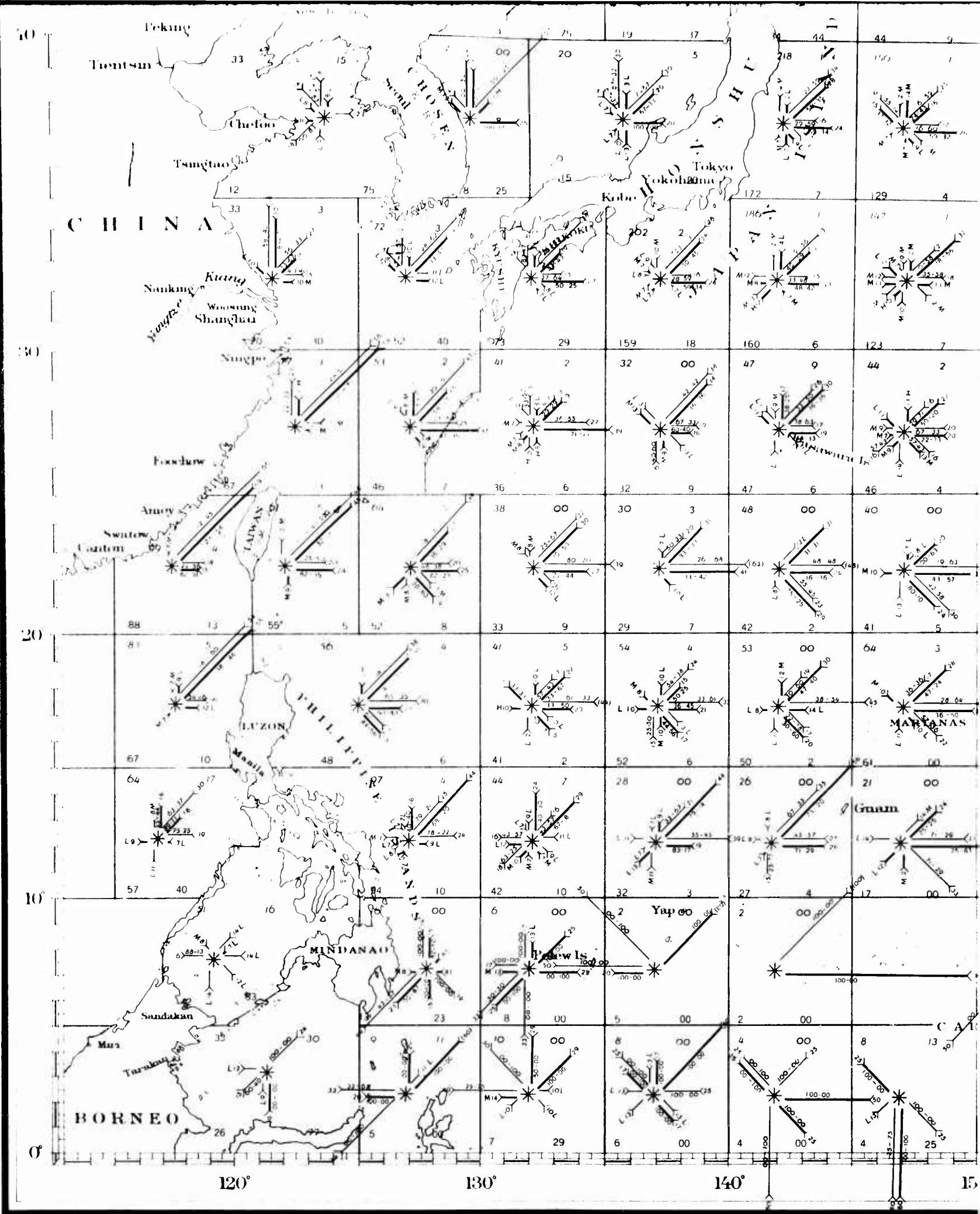
50°

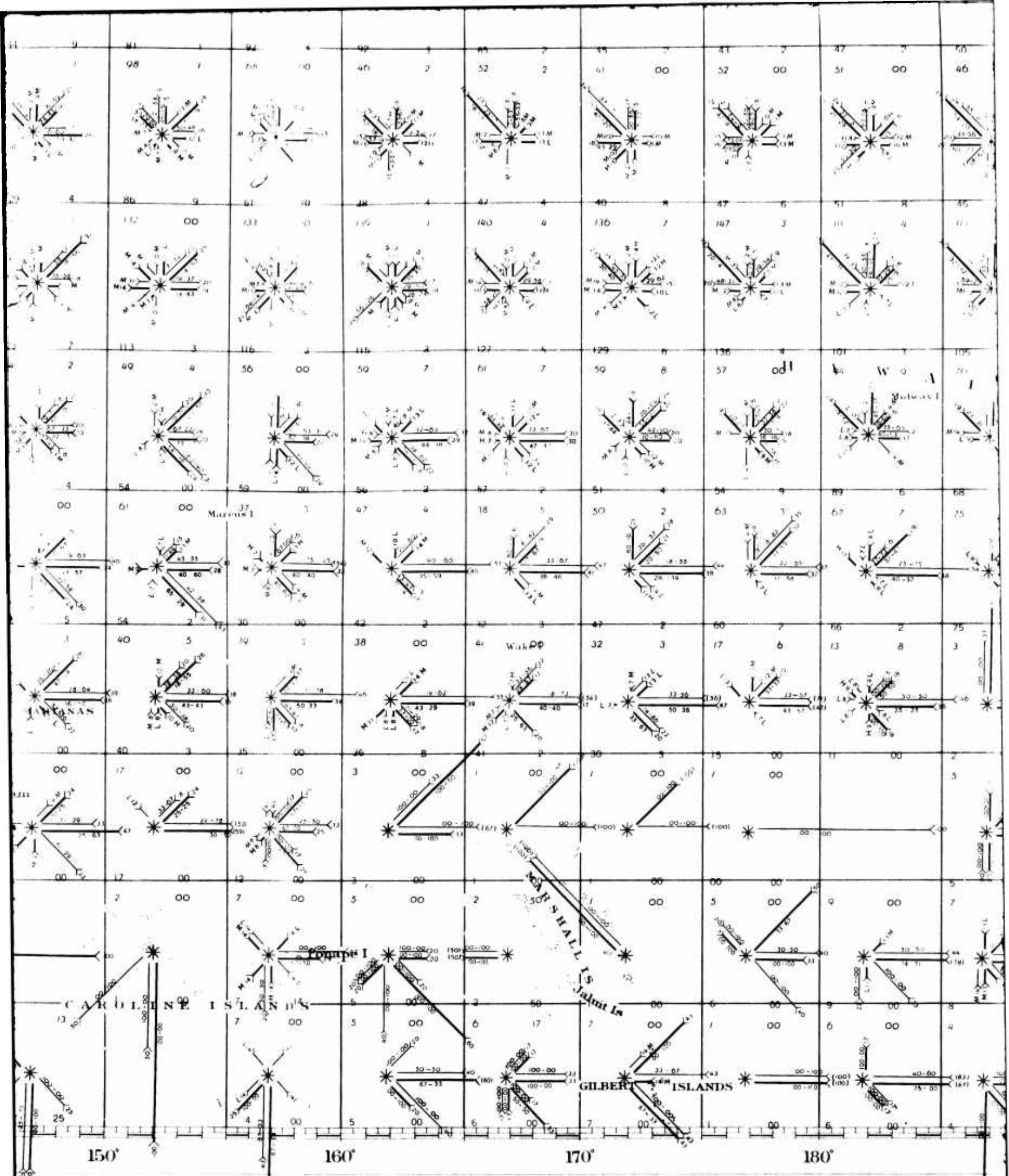
40°

30°

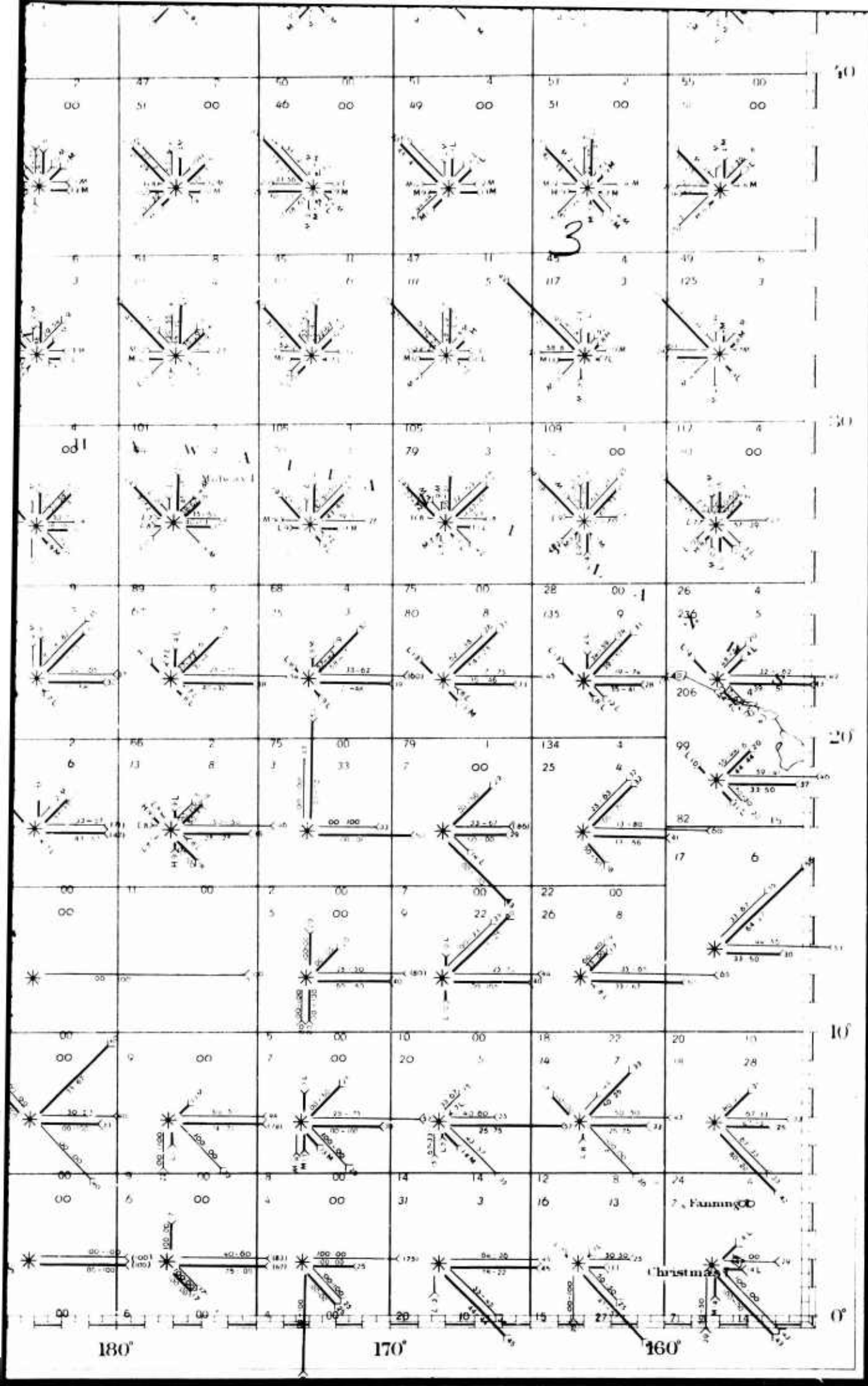
3







5



6



NORTHWESTERN PACIFIC OCEAN SEA AND SWELL CHART NOVEMBER

PREVAILING SEAS, SWELLS AND CALMS

This chart on 5th Nov. 1917, has been compiled from observations made during the month by the U.S.S. "Albatross" (Sigsbee) and including the year 1914, the majority of the observations having been taken during the years 1907 to 1914 inclusive. The coastal graphic information has been taken from a low water height and is shown in areas where the number of observations is small; the graphic presentation will convey a false impression unless examined carefully. In evaluating the reliability of the information in any given area, note the number of observations upon which the percentages are based, and the adjacent text. THE COMPUTATIONS FOR SEA AND SWELL WERE MADE SEPARATELY AND AT DIFFERENT CONDITIONS FOR BOTH ARE SHOWN ON THE SAME CHART FOR THE CONVENIENCE OF THE USER. IT SHOULD BE UNDERSTOOD THAT THE DIRECTION OF SEA AND SWELL AS WELL AS THE CONDITIONS UNDER THOSE DIRECTIONS WILL NOT NECESSARILY BE IDENTICAL AT ANY GIVEN TIME OR PLACE.

METHOD OF PRESENTATION

The purpose of this chart is to show both graphically and with figures, by means of an eight point double rose printed in black, the character of the seas and swells that have prevailed within the areas outlined on the lower base. THE SEA CONDITIONS ARE REPRESENTED BY THE LIGHT LINE ARROWS AND SLANTING TYPE, WHILE THE SWELL CONDITIONS ARE REPRESENTED BY THE HEAVY LINE ARROWS AND VERTICAL TYPE. No arrow is shown when the percent of direction is less than 7. In instances where the number of observations in any direction is 15 or over but the percent of direction is less than 5, the conditions within that direction may be shown in the usual manner without the arrow. The arrows point in the directions toward which the seas or swells move. The length of the arrow measured from the center mark, when placed on the attached scale, and the numeral at the tail of the arrow, gives the number of times in each 100 observations that the seas or swells have been moving from or toward the given point. In instances where the full length of the arrow cannot be shown, the shaft is shortened as much as necessary and the true percent at the tail of the arrow is placed in parentheses.

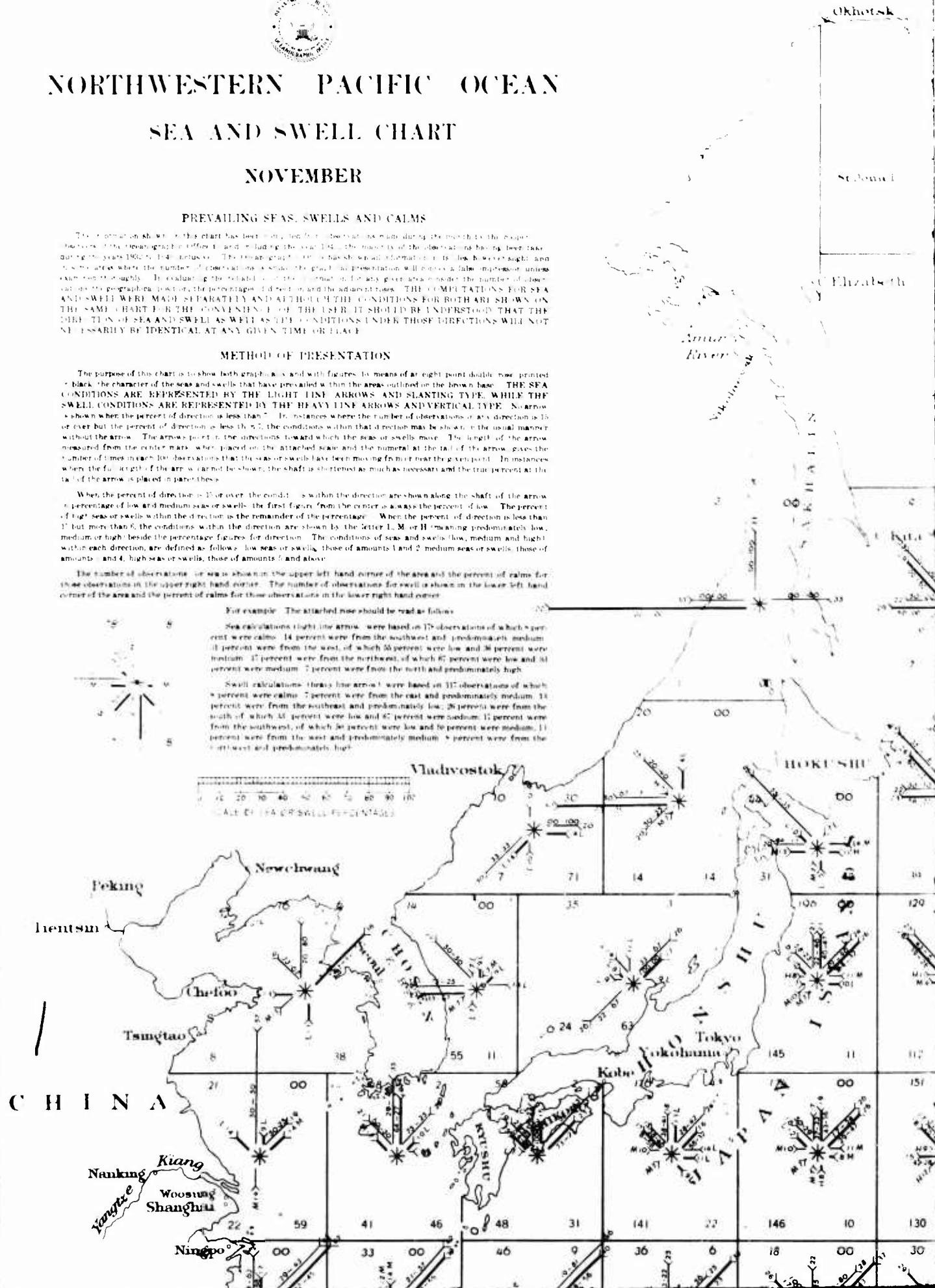
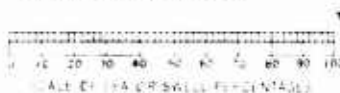
When the percent of direction is 15 or over, the conditions within the direction are shown along the shaft of the arrow as percentage of low and medium seas or swells; the first figure from the center is always the percent of low. The percent of high seas or swells within the direction is the remainder of the percentage. When the percent of direction is less than 15 but more than 5, the conditions within the direction are shown by the letter L, M or H (meaning predominately low, medium, or high) beside the percentage figures for direction. The conditions of seas and swells (low, medium and high) within each direction, are defined as follows: low seas or swells, those of amounts 1 and 2; medium seas or swells, those of amounts 3 and 4; high seas or swells, those of amounts 5 and above.

The number of observations or seas is shown in the upper left hand corner of the area and the percent of calms for these observations in the upper right hand corner. The number of observations for swell is shown in the lower left hand corner of the area and the percent of calms for those observations in the lower right hand corner.

For example: The attached rose should be read as follows:

Sea calculations (light line arrow) were based on 17 observations of which 9 percent were calms, 14 percent were from the southwest and predominately medium, 11 percent were from the west, of which 5 percent were low and 36 percent were medium, 17 percent were from the northwest, of which 67 percent were low and 31 percent were medium, 7 percent were from the north and predominately high.

Swell calculations (heavy line arrow) were based on 117 observations of which 9 percent were calms, 7 percent were from the east and predominately medium, 13 percent were from the southeast and predominately low, 26 percent were from the south, of which 51 percent were low and 47 percent were medium, 15 percent were from the southwest, of which 39 percent were low and 16 percent were medium, 11 percent were from the west and predominately medium, 9 percent were from the northwest and predominately high.



150° 160° 170° 180°

Karağuska I

KAMCHATKA

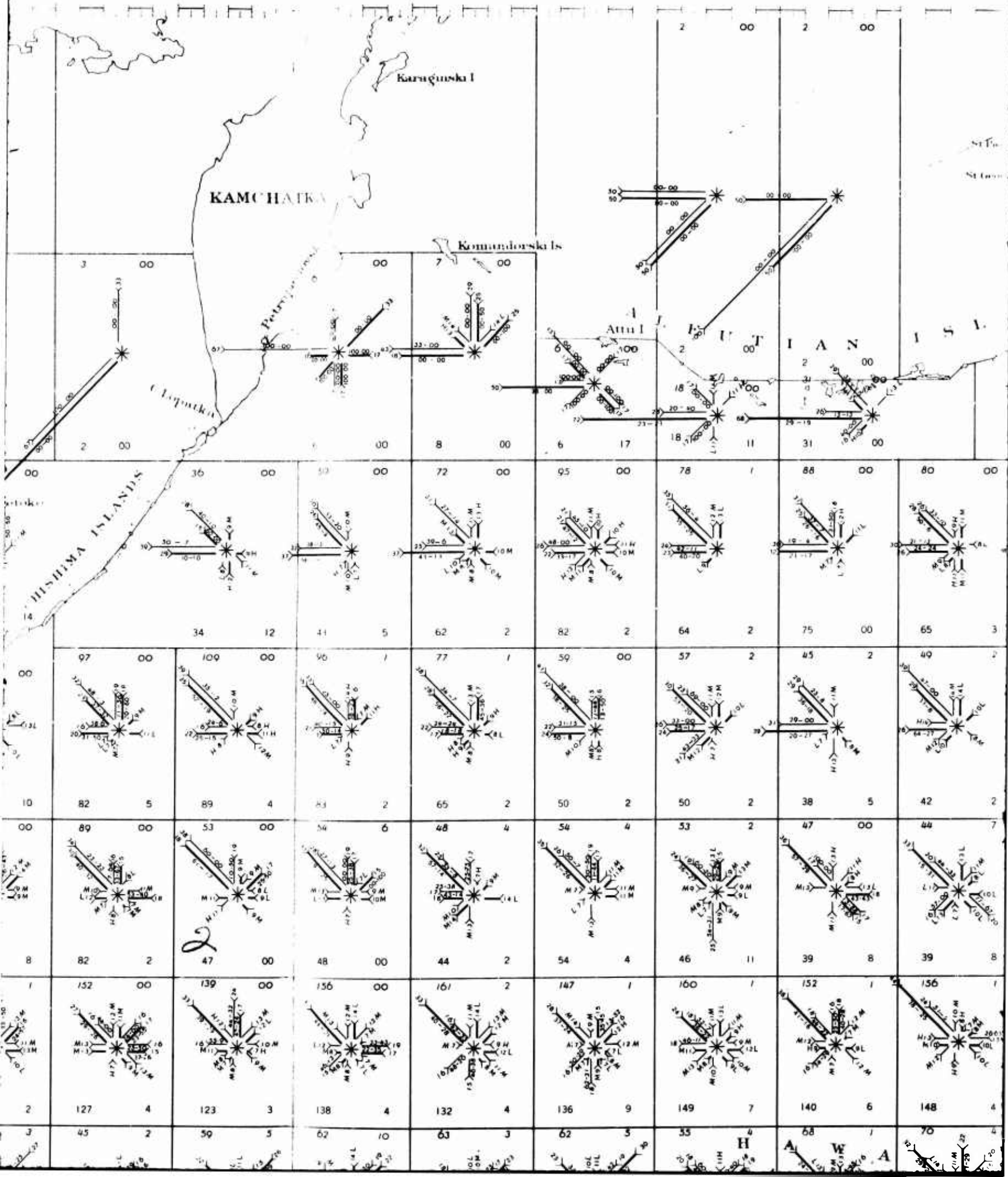
Komandorska Is

Attu I

ISLANDS

C Lopatka

HISHIMA ISLANDS



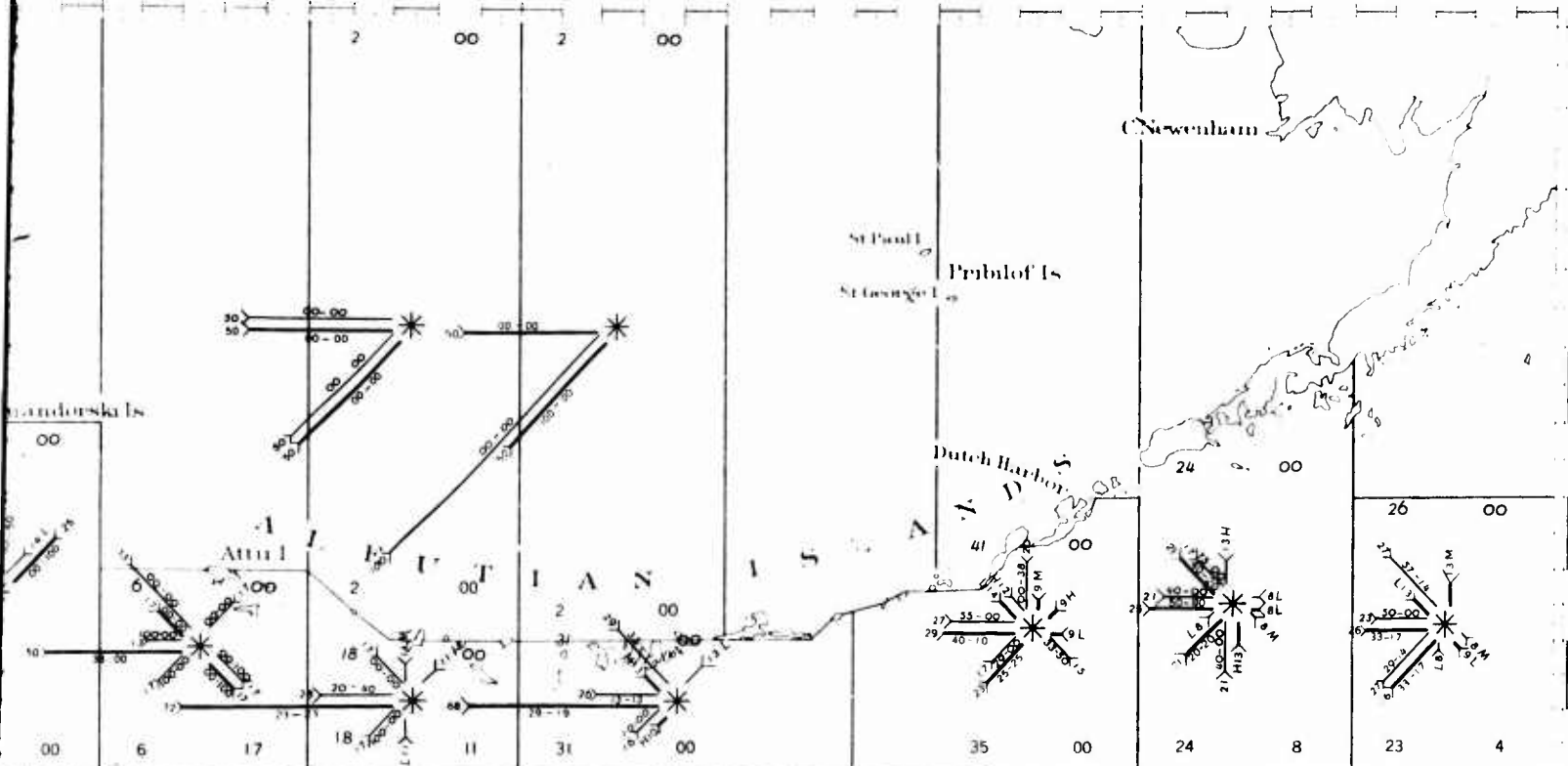
170°

180°

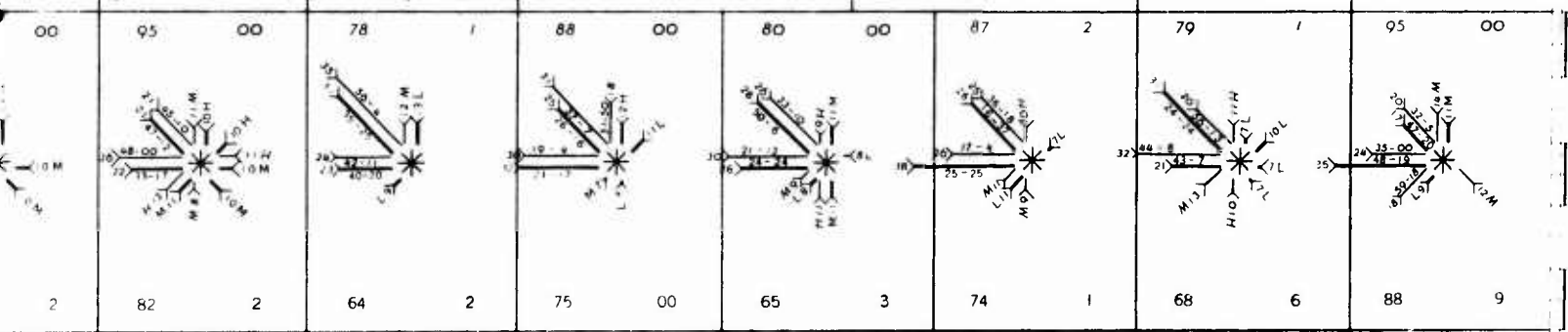
170°

160°

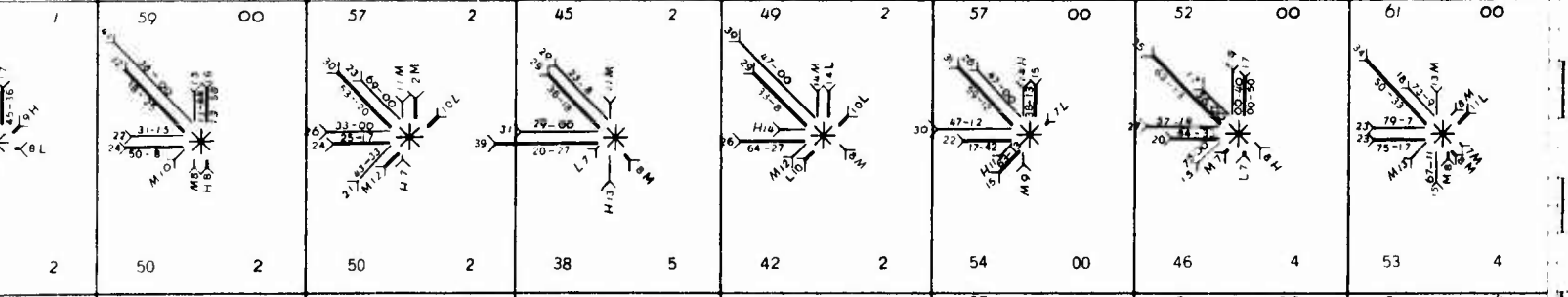
60



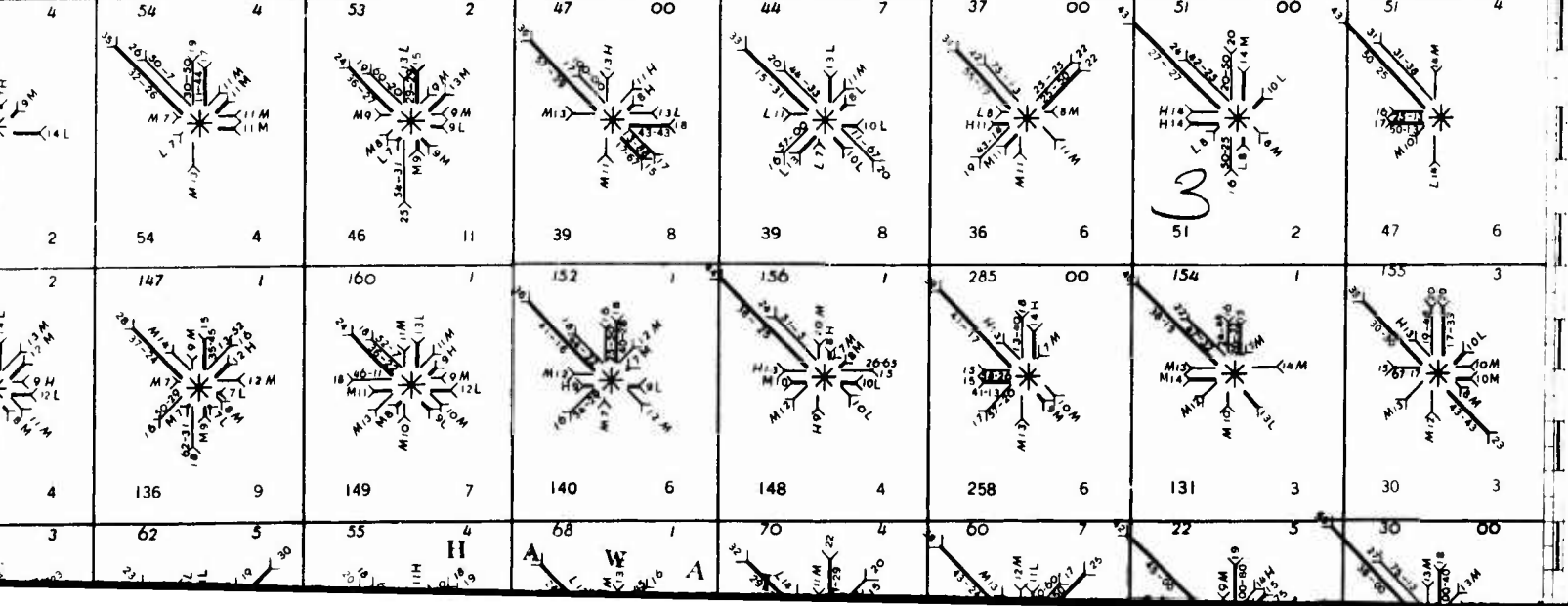
50

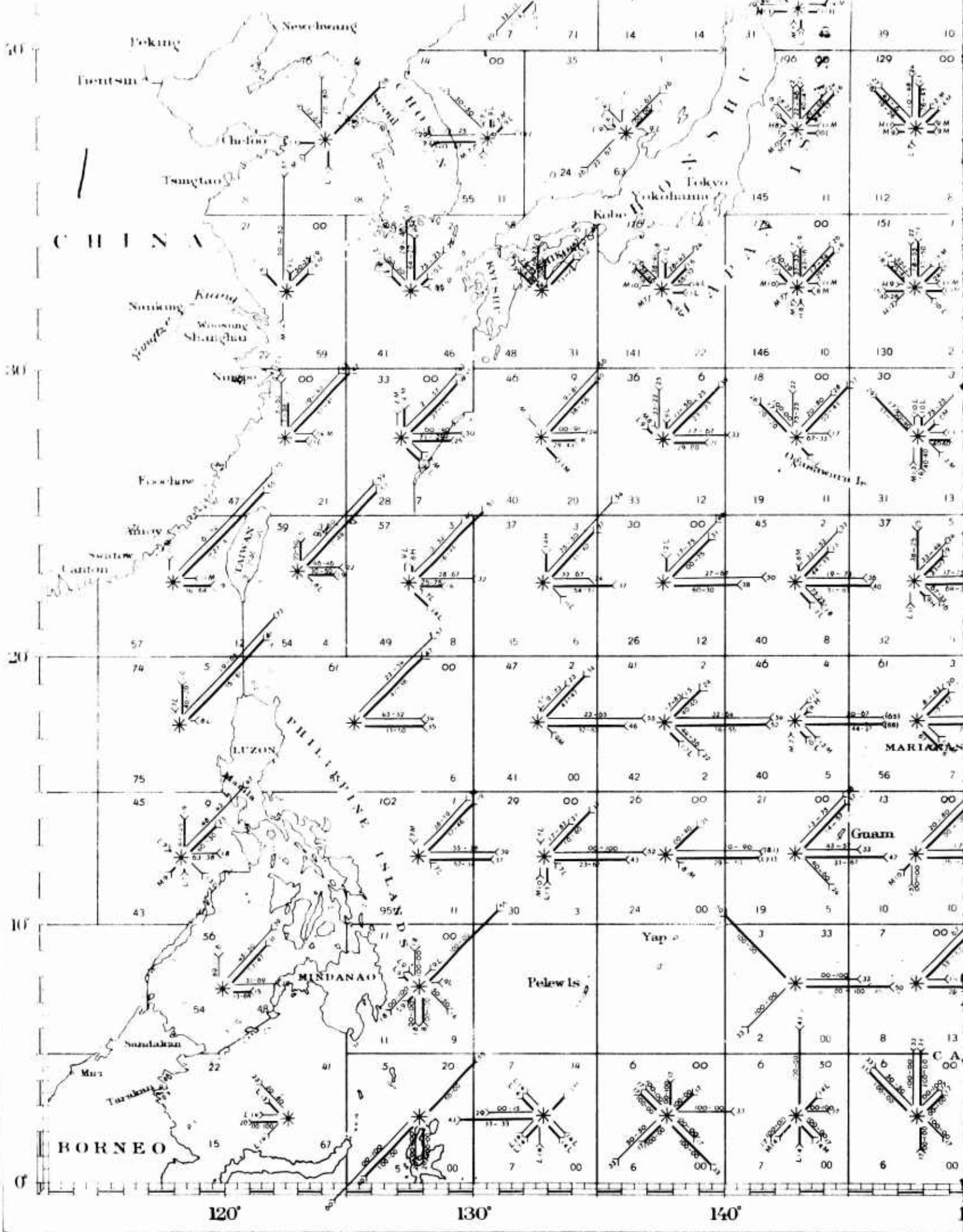


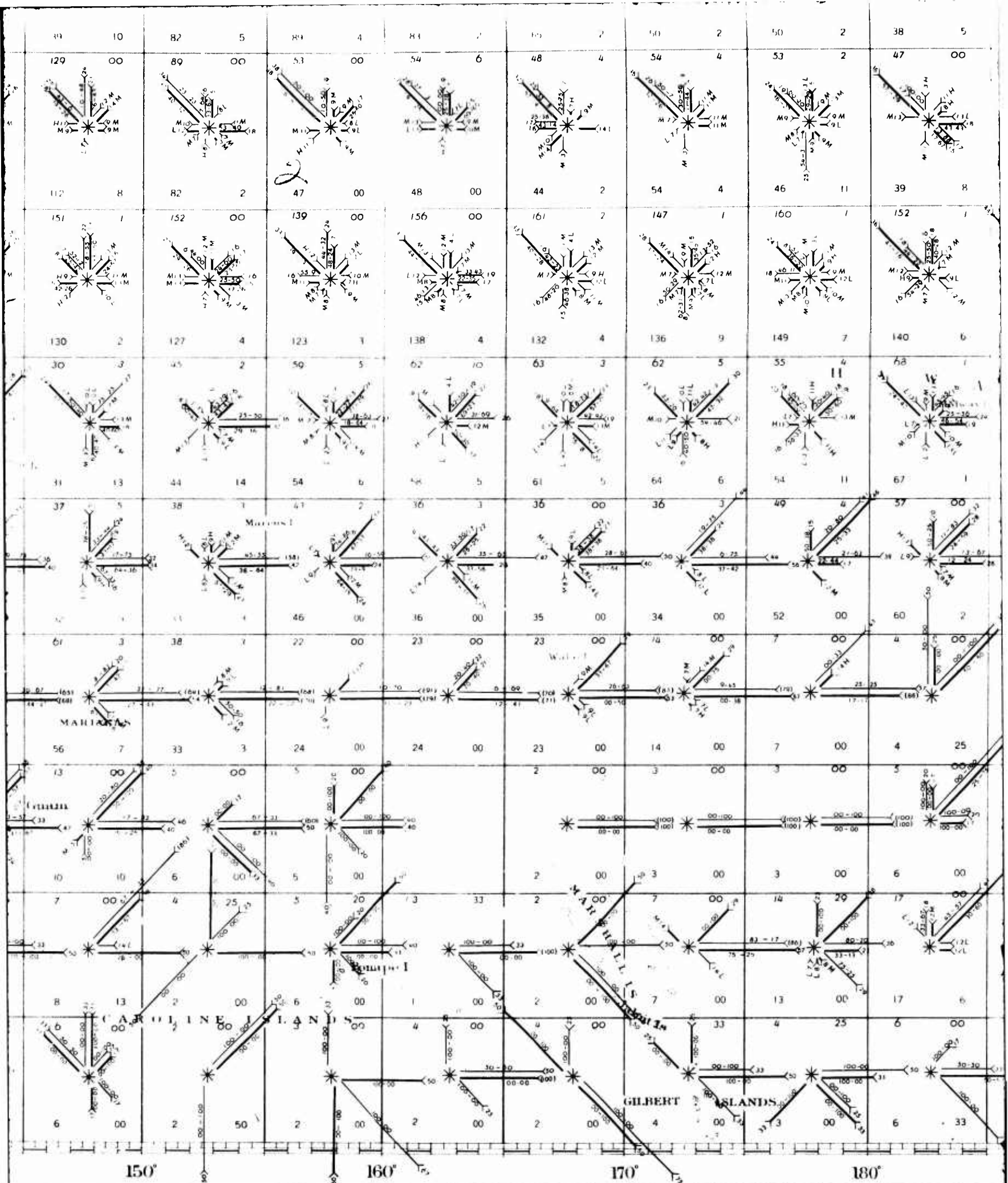
40



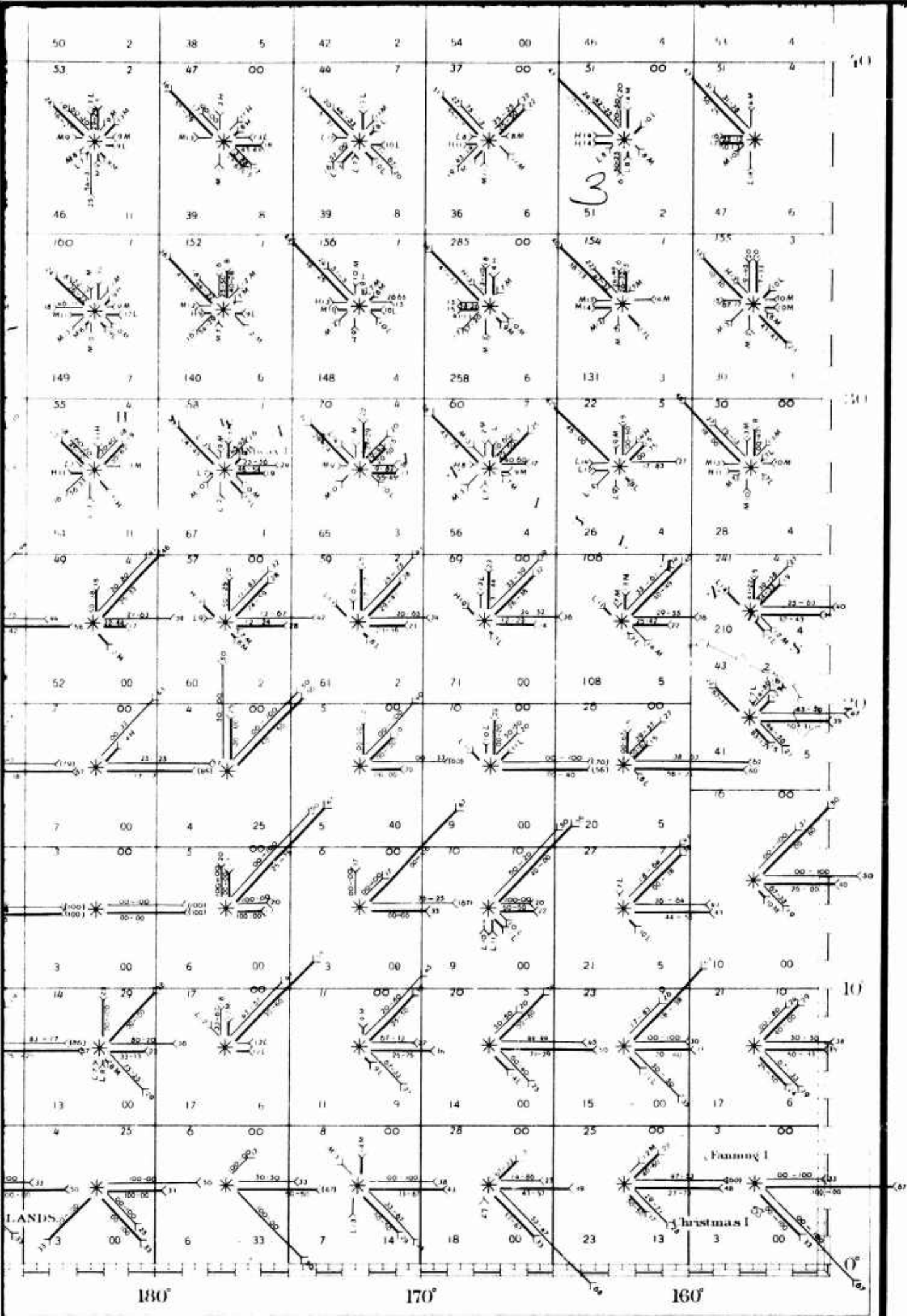
30







5



6

120°

130°

140°

60°



NORTHWESTERN PACIFIC OCEAN SEA AND SWELL CHART

DECEMBER

PREVAILING SEAS, SWELLS AND CALMS

The information shown on this chart has been compiled from observations made during the month by the cooperating observers of the Oceanographic Office to and including the year 1941, the majority of the observations having been taken during the years 1932 to 1940 inclusive. The Oceanographic Office has shown all information in its files, however slight, and in some areas where the number of observations is small the graphical presentation will convey a false impression unless examined thoroughly. In evaluating the reliability of the information for any given area consider the number of observations, the geographical position, the percentages of direction and the adjacent roses. THE COMPUTATIONS FOR SEA AND SWELL WERE MADE SEPARATELY AND ALTHOUGH THE CONDITIONS FOR BOTH ARE SHOWN ON THE SAME CHART FOR THE CONVENIENCE OF THE USER, IT SHOULD BE UNDERSTOOD THAT THE DIRECTION OF SEA AND SWELL AS WELL AS THE CONDITIONS UNDER THOSE DIRECTIONS WILL NOT NECESSARILY BE IDENTICAL AT ANY GIVEN TIME OR PLACE.

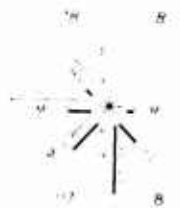
METHOD OF PRESENTATION

The purpose of this chart is to show both graphically and with figures, by means of an eight-point double rose, printed in black, the character of the seas and swells that have prevailed within the areas outlined on the brown base. THE SEA CONDITIONS ARE REPRESENTED BY THE LIGHT LINE ARROWS AND SLANTING TYPE, WHILE THE SWELL CONDITIONS ARE REPRESENTED BY THE HEAVY LINE ARROWS AND VERTICAL TYPE. No arrow is shown when the percent of direction is less than 7. In instances where the number of observations in any direction is 15 or over but the percent of direction is less than 7, the conditions within that direction may be shown in the usual manner without the arrow. The arrows point in the directions toward which the seas or swells move. The length of the arrow measured from the center mark, when placed on the attached scale and the numeral at the tail of the arrow, gives the number of times in each 100 observations that the seas or swells have been moving from or toward the given point. In instances where the full length of the arrow cannot be shown, the shaft is shortened as much as necessary and the true percent at the tail of the arrow is placed in parentheses.

When the percent of direction is 15 or over, the conditions within the direction are shown along the shaft of the arrow in percentage of low and medium seas or swells, the first figure from the center is always the percent of low. The percent of high seas or swells within the direction is the remainder of the percentage. When the percent of direction is less than 15 but more than 6, the conditions within the direction are shown by the letter L, M, or H (meaning predominately low, medium or high) beside the percentage figures for direction. The conditions of seas and swells (low, medium and high) within each direction, are defined as follows: low seas or swells, those of amounts 1 and 2; medium seas or swells, those of amounts 3 and 4; high seas or swells, those of amounts 5 and above.

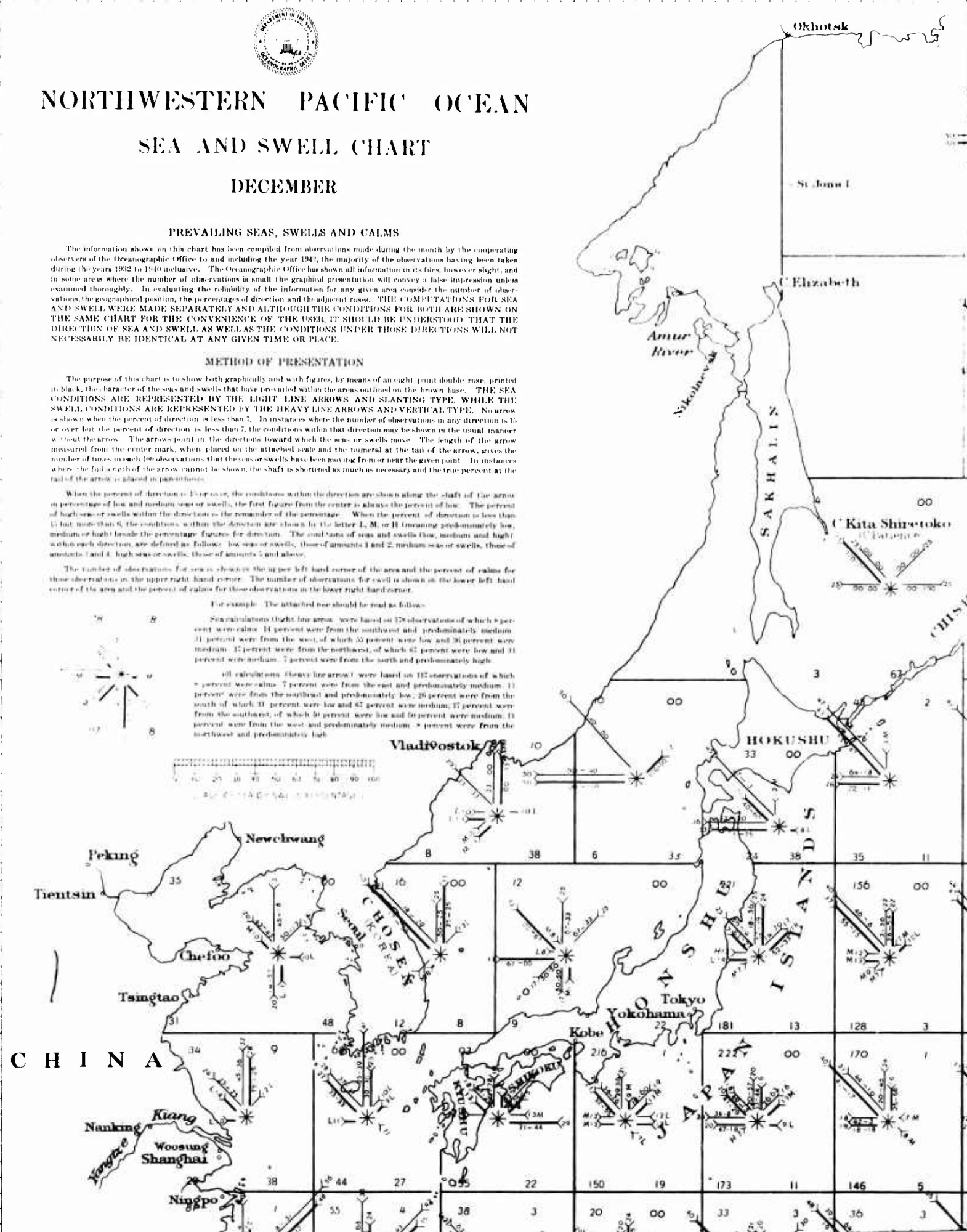
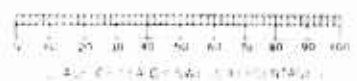
The number of observations for sea is shown in the upper left-hand corner of the area and the percent of calms for those observations in the upper right-hand corner. The number of observations for swell is shown in the lower left-hand corner of the area and the percent of calms for those observations in the lower right-hand corner.

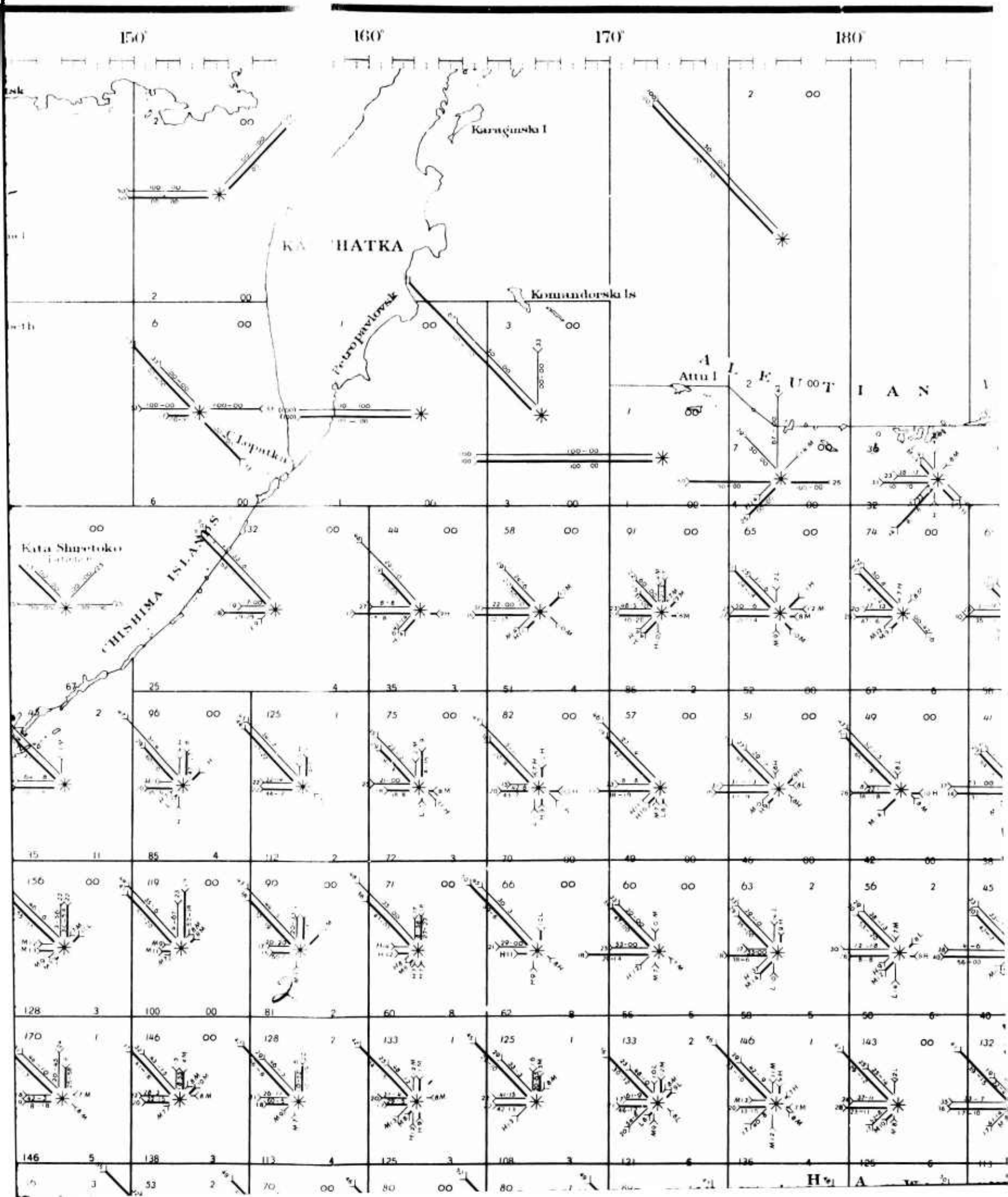
For example: The attached rose should be read as follows:



Sea calculations (light line arrow) were based on 125 observations of which 8 percent were calms. 14 percent were from the southwest and predominately medium. 31 percent were from the west, of which 55 percent were low and 36 percent were medium. 17 percent were from the northwest, of which 62 percent were low and 31 percent were medium. 7 percent were from the north and predominately high.

Swell calculations (heavy line arrow) were based on 112 observations of which 8 percent were calms. 7 percent were from the east and predominately medium. 11 percent were from the southeast and predominately low. 26 percent were from the south, of which 31 percent were low and 62 percent were medium. 17 percent were from the southwest, of which 50 percent were low and 50 percent were medium. 13 percent were from the west and predominately medium. 8 percent were from the northwest and predominately high.





180

170

160

60

Newenham

St Paul
Prudof Is
St George I

Dutch Harbor

I A N

I S L A N D S

24 00

26 00

28 00

21 00

23 00

23 00

21 00

23 00

50

65 00

61 00

57 00

56 00

53 00

54 00

41 00

48 00

54 00

38 00

44 00

49 00

45 00

43 00

36 00

40

40 00

37 00

30 00

132 00

130 00

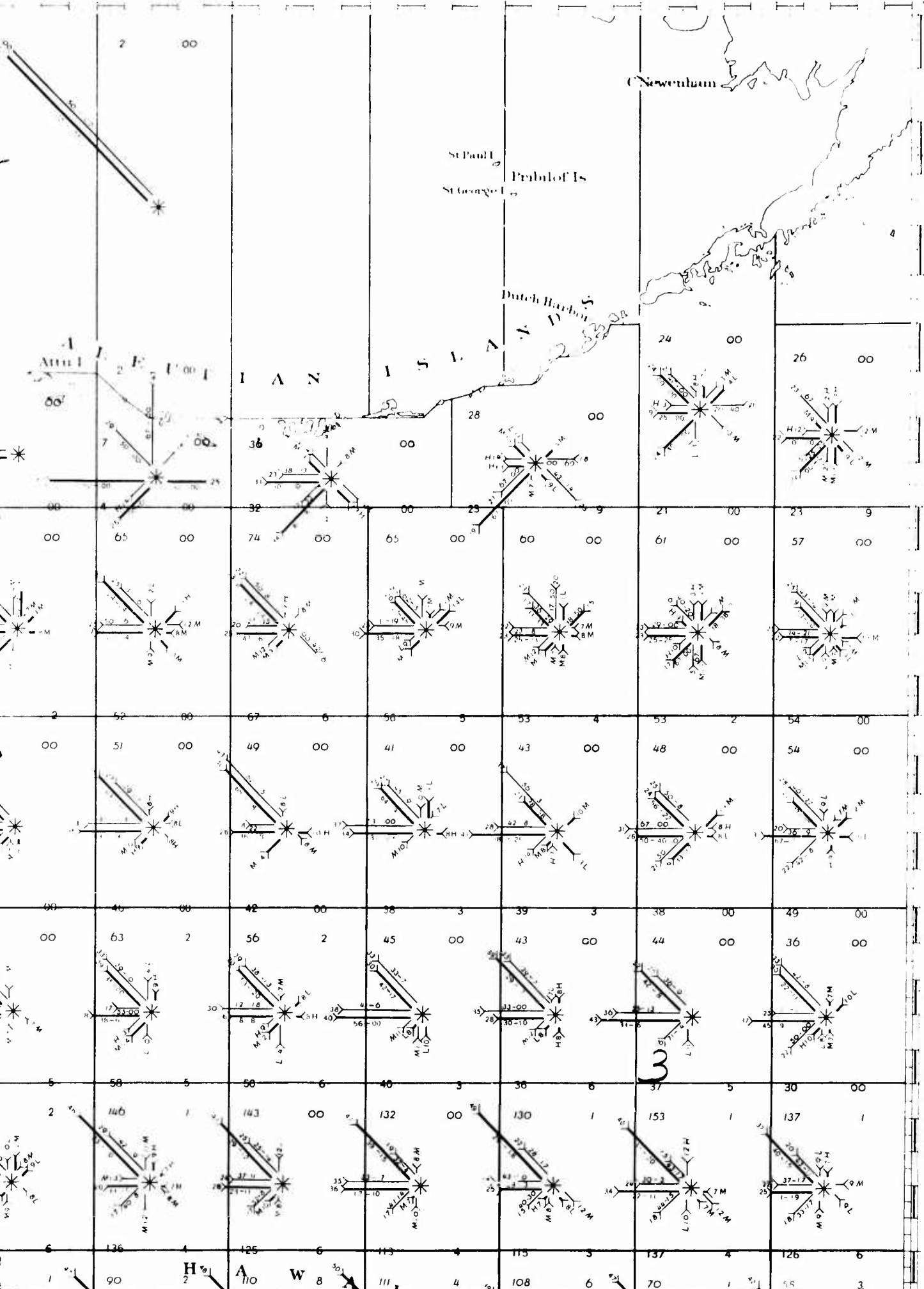
137 00

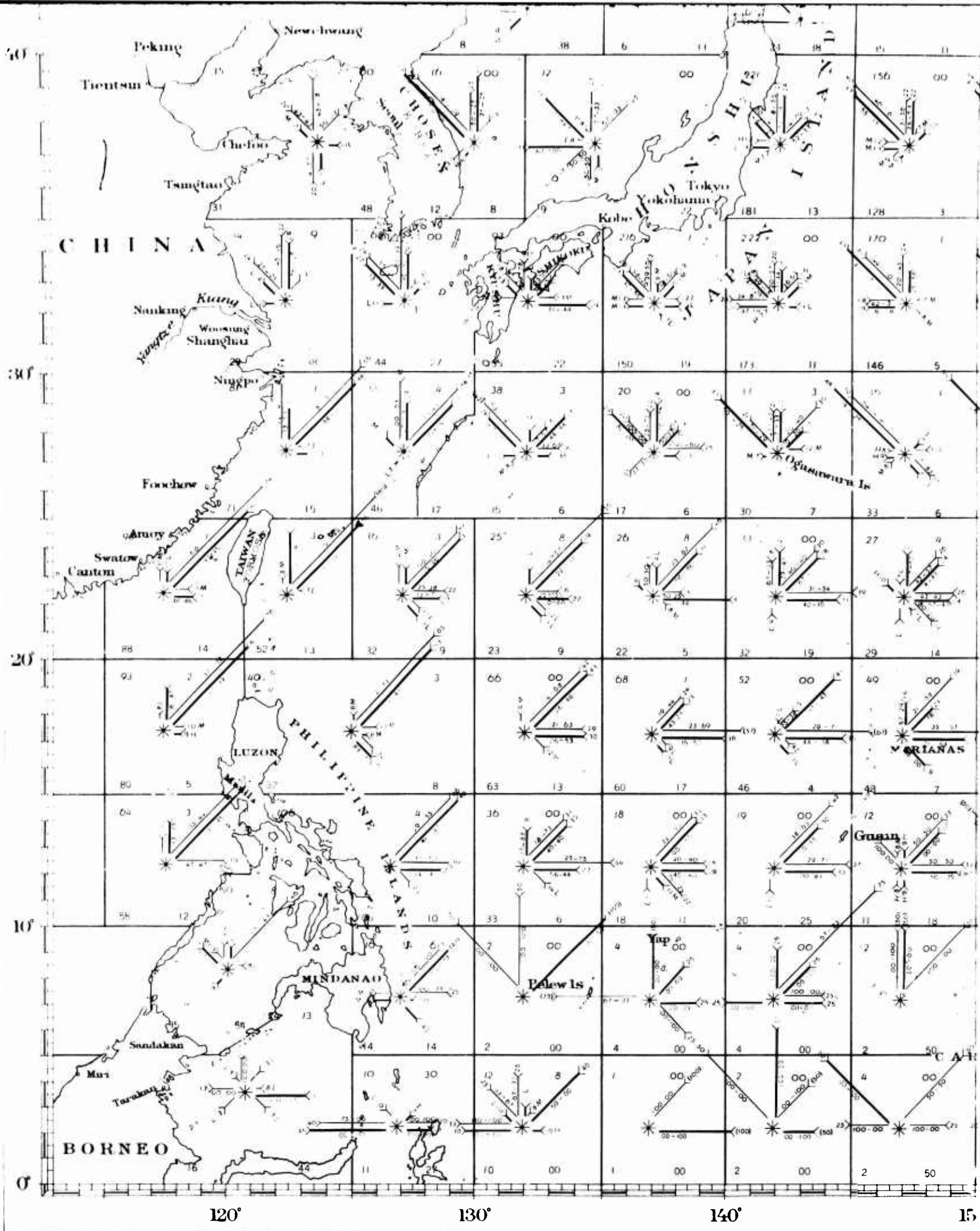
113 00

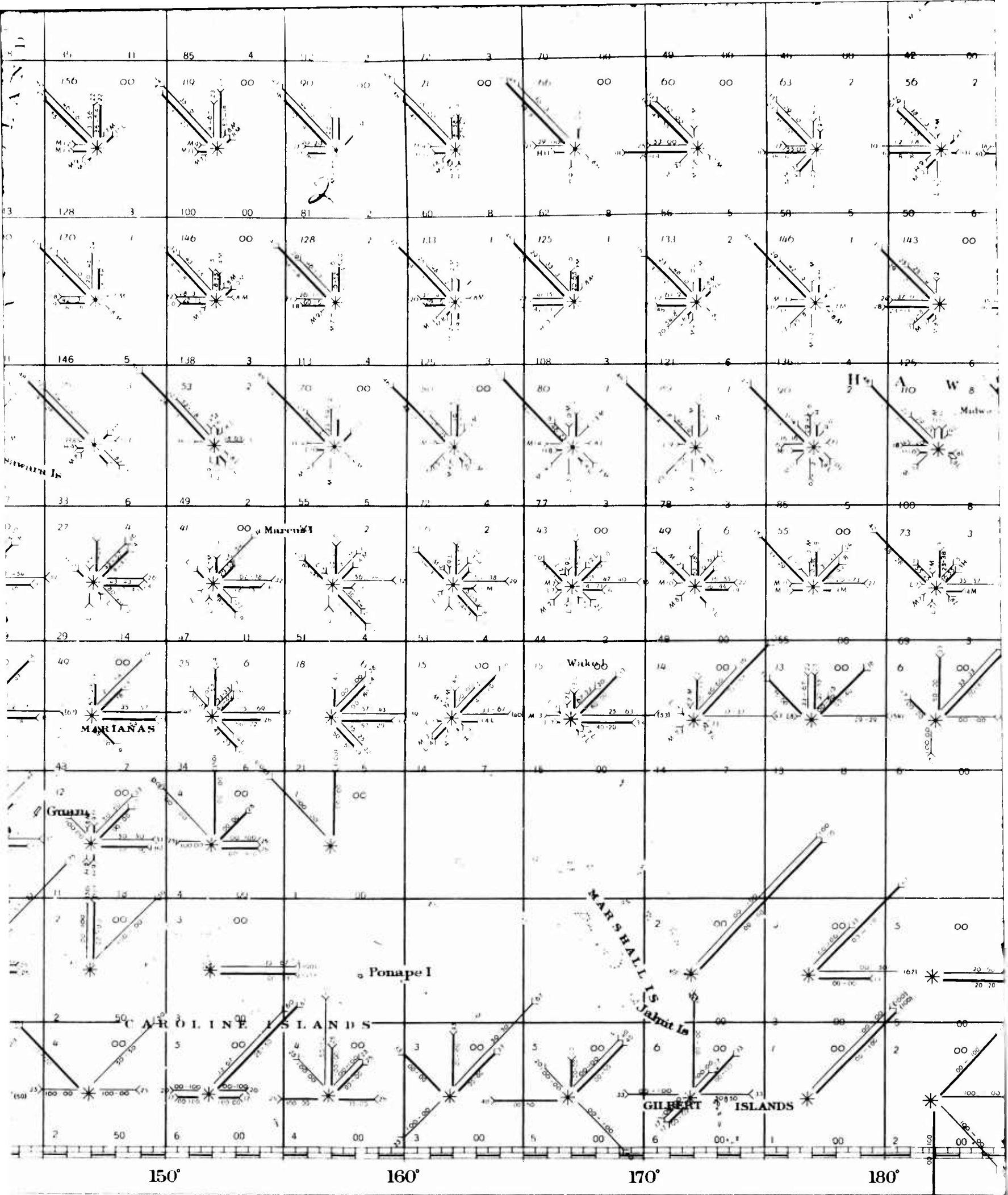
137 00

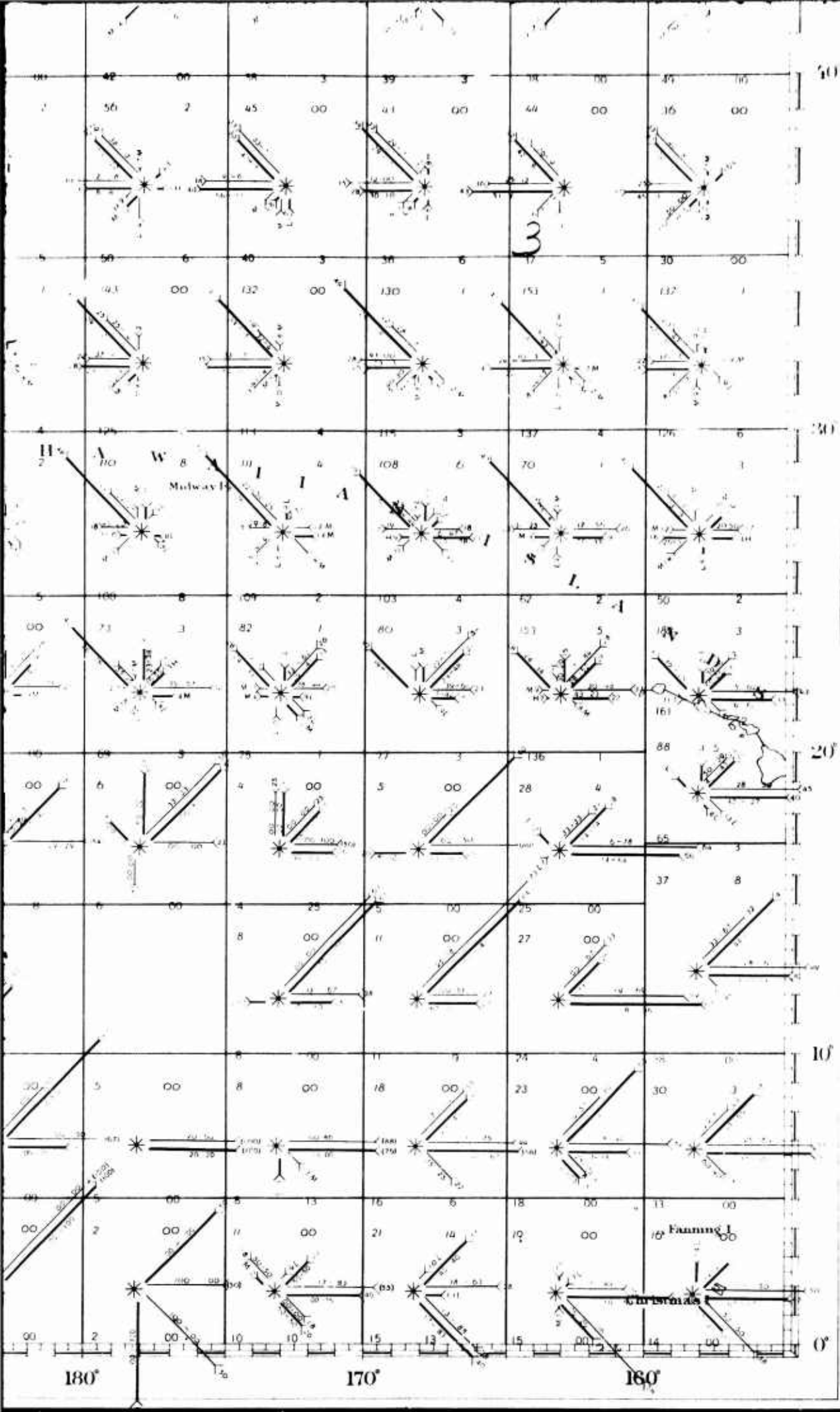
126 00

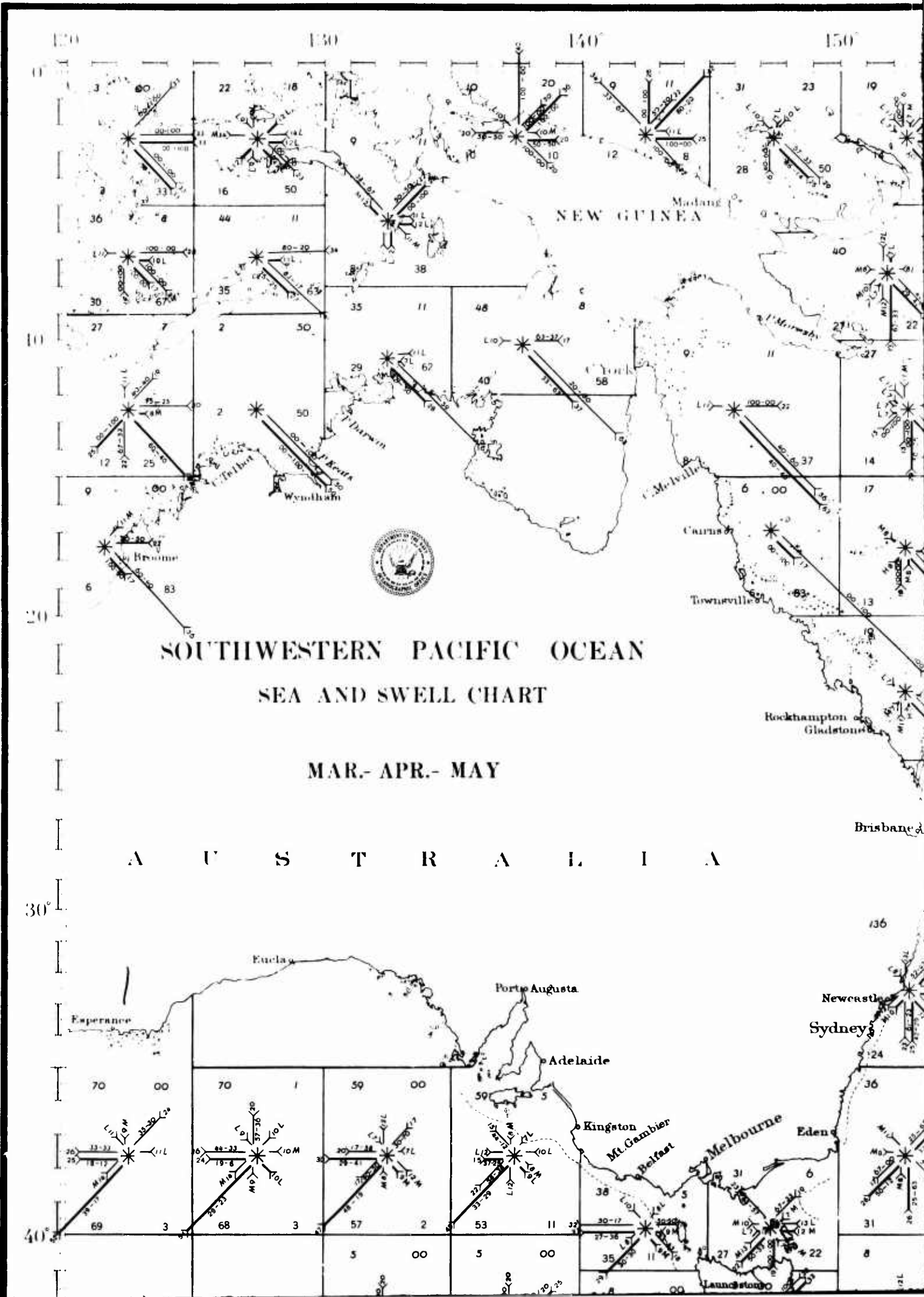
30

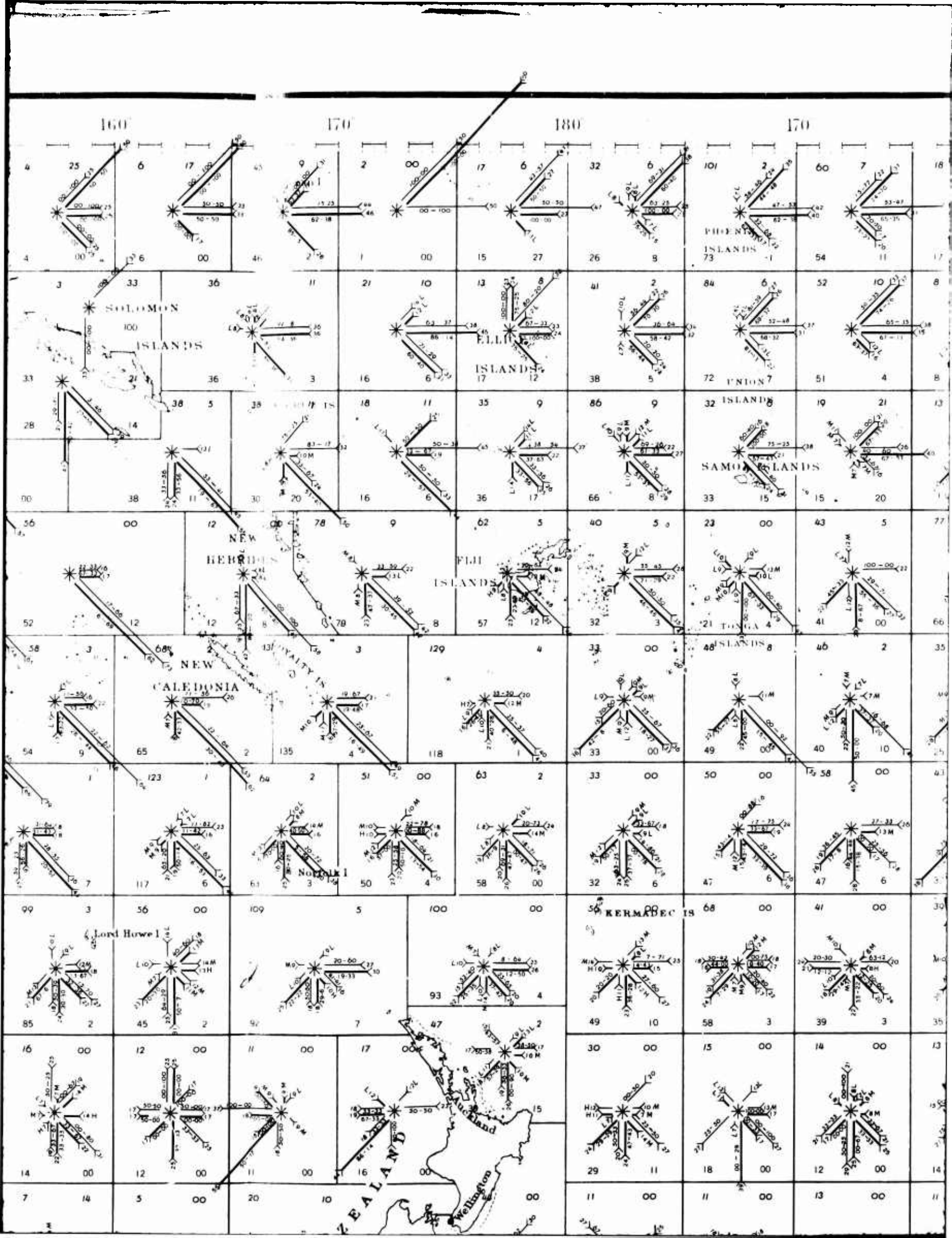


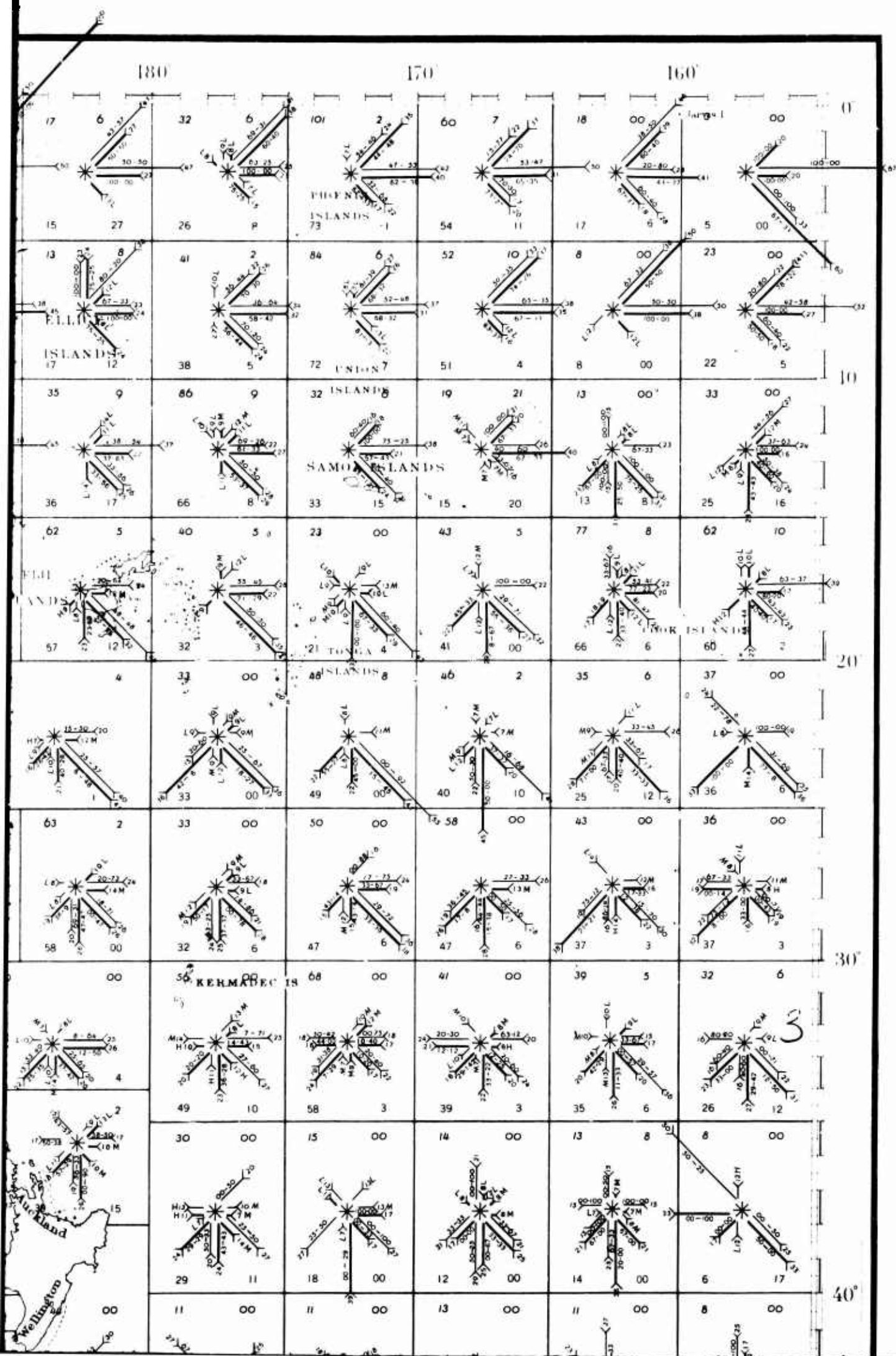


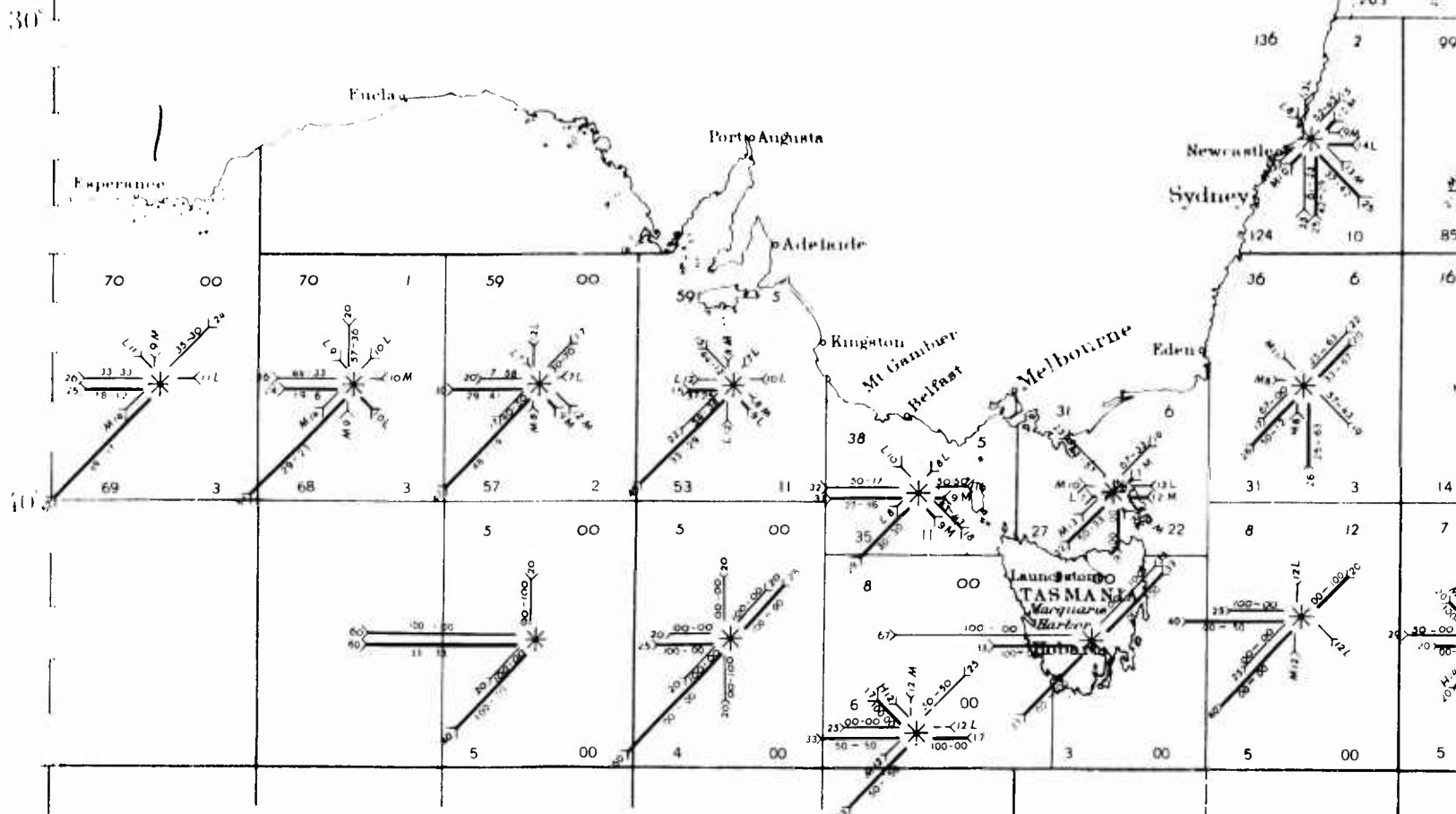












PREVAILING SEAS, SWELLS AND CALMS

The information shown on this chart has been compiled from observations made during the month by the cooperating observers of the Oceanographic Office to and including the year 1945, the majority of the observations having been taken during the years 1932 to 1940 inclusive. The Oceanographic Office has shown all information in its files, however slight, and in some areas where the number of observations is small the graphical presentation will convey a false impression unless examined thoroughly. In evaluating the reliability of the information for any given area consider the number of observations, the geographical position, the percentages of direction and the adjacent roses. THE COMPUTATIONS FOR SEA AND SWELL WERE MADE SEPARATELY AND ALTHOUGH THE CONDITIONS FOR BOTH ARE SHOWN ON THE SAME CHART FOR THE CONVENIENCE OF THE USER, IT SHOULD BE UNDERSTOOD THAT THE DIRECTION OF SEA AND SWELL AS WELL AS THE CONDITIONS UNDER THOSE DIRECTIONS WILL NOT NECESSARILY BE IDENTICAL AT ANY GIVEN TIME OR PLACE.

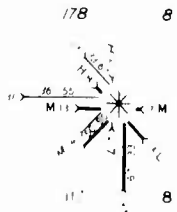
METHOD OF PRESENTATION

The purpose of this chart is to show both graphically and with figures, by means of an eight point double rose, printed in black, the character of the seas and swells that have prevailed within the areas outlined on the brown base. THE SEA CONDITIONS ARE REPRESENTED BY THE LIGHT LINE ARROWS AND SLANTING TYPE, WHILE THE SWELL CONDITIONS ARE REPRESENTED BY THE HEAVY LINE ARROWS AND VERTICAL TYPE. No arrow is shown when the percent of direction is less than 7. In instances where the number of observations in any direction is 15 or over but the percent of direction is less than 7, the conditions within that direction may be shown in the usual manner without the arrow. The arrows point in the directions toward which the seas or swells move. The length of the arrow measured from the center mark, when placed on the attached scale, and the numeral at the tail of the arrow, gives the number of times in each 100 observations that the seas or swells have been moving from or near the given point. In instances where the full length of the arrow cannot be shown, the shaft is shortened as much as necessary and the true percent at the tail of the arrow is placed in parentheses.

When the percent of direction is 15 or over, the conditions within the direction are shown along the shaft of the arrow in percentage of low and medium seas or swells, the first figure from the center is always the percent of low. The percent of high seas or swells within the direction is the remainder of the percentage. When the percent of direction is less than 15 but, more than 8, the conditions within the direction are shown by the letter L, M, or H (meaning predominately low, medium or high) beside the percentage figures for direction. The conditions of seas and swells (low, medium and high) within each direction, are defined as follows: low seas or swells, those of amounts 1 and 2; medium seas or swells, those of amounts 3 and 4; high seas or swells, those of amounts 5 and above.

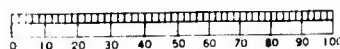
The number of observations for sea is shown in the upper left hand corner of the area and the percent of calms for those observations in the upper right hand corner. The number of observations for swell is shown in the lower left hand corner of the area and the percent of calms for those observations in the lower right hand corner.

For example: The attached rose should be read as follows:



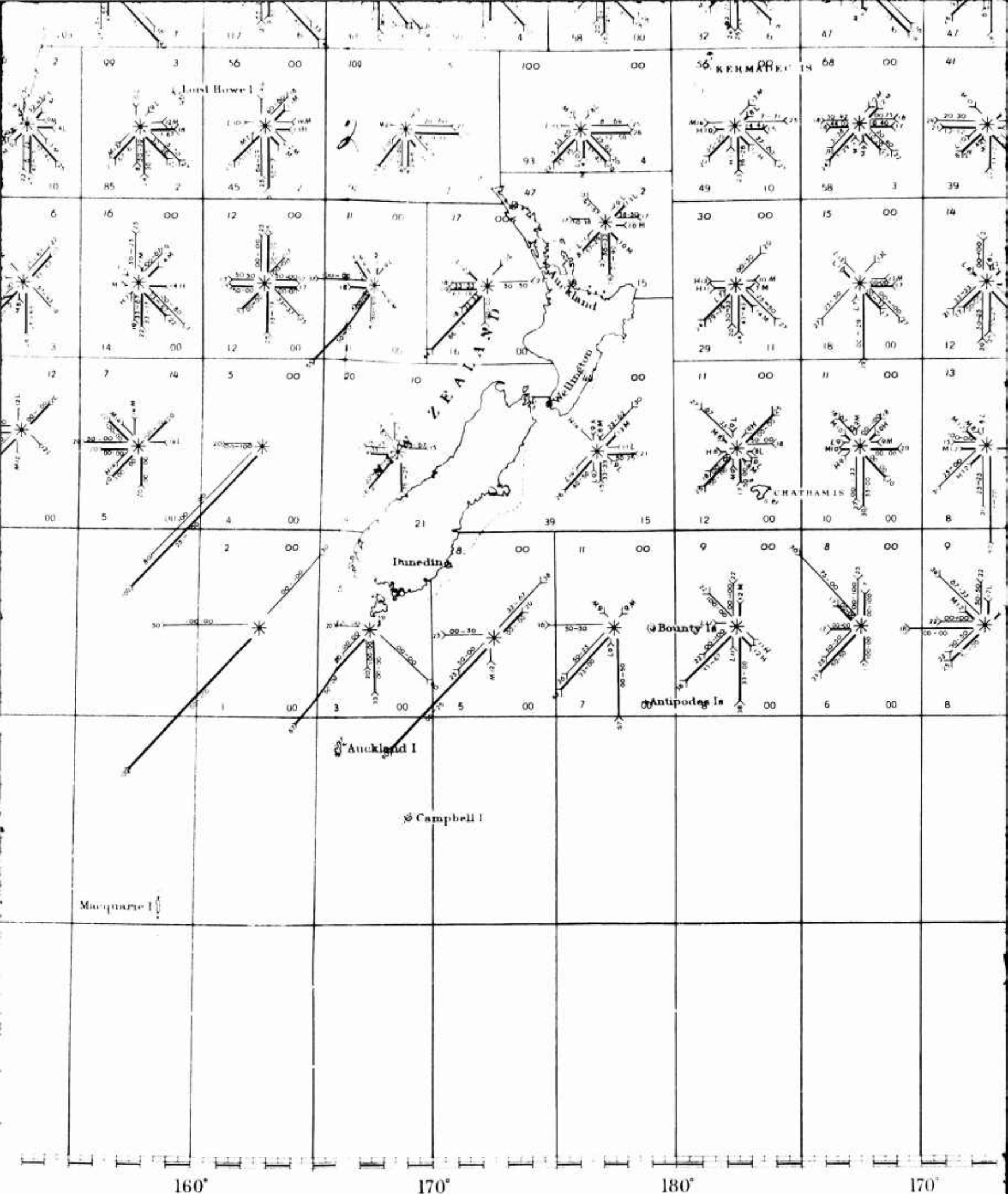
Sea calculations (light line arrow) were based on 178 observations of which 8 percent were calms, 14 percent were from the southwest and predominately medium, 31 percent were from the west, of which 56 percent were low and 36 percent were medium; 17 percent were from the northwest, of which 67 percent were low and 33 percent were medium; 7 percent were from the north and predominately high.

Swell calculations (heavy line arrow) were based on 117 observations of which 8 percent were calms; 7 percent were from the east and predominately medium; 13 percent were from the southeast and predominately low; 26 percent were from the south of which 33 percent were low and 67 percent were medium; 17 percent were from the southwest, of which 50 percent were low and 50 percent were medium; 13 percent were from the west and predominately medium, 8 percent were from the northwest and predominately high.

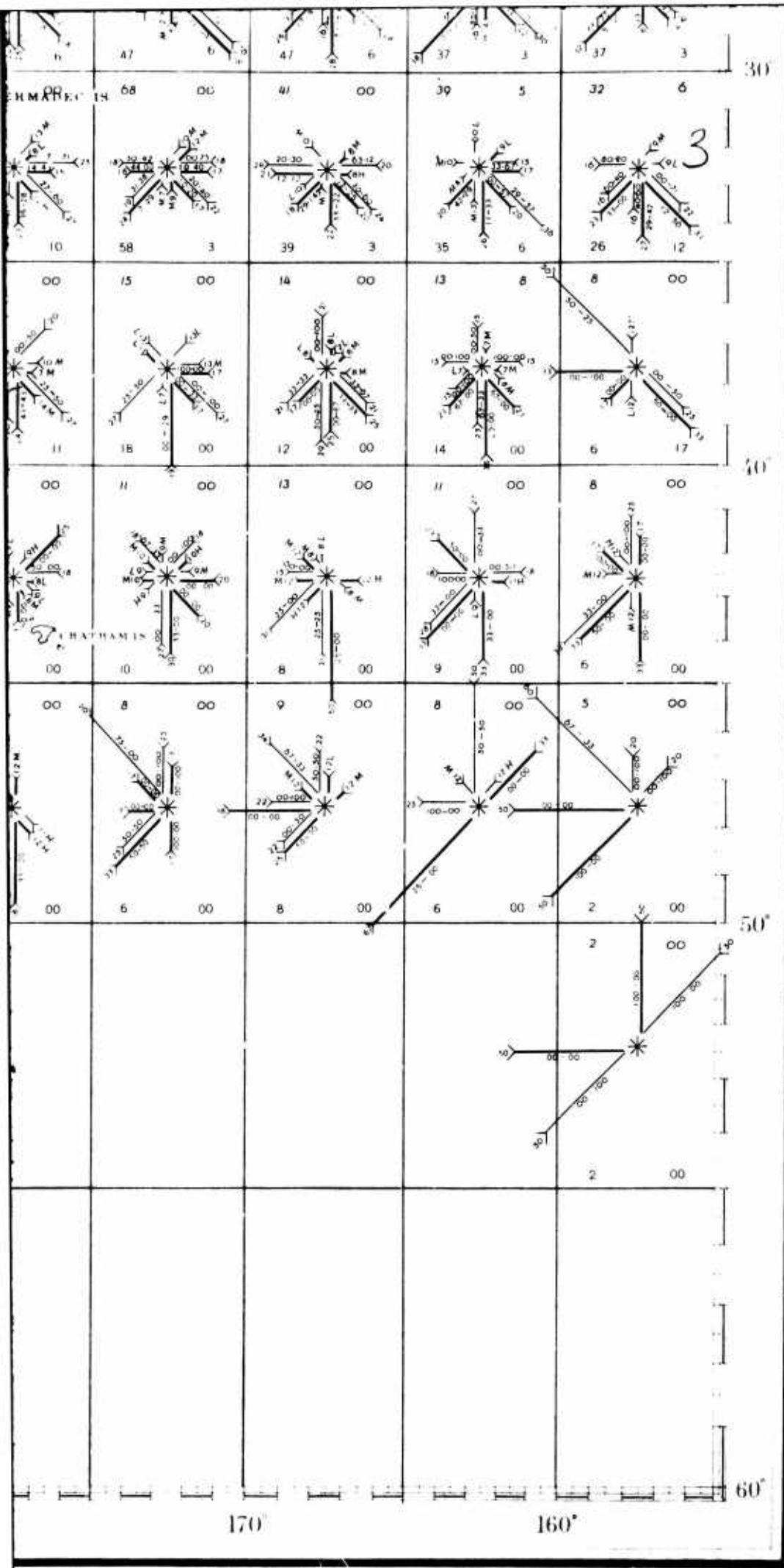


SCALE OF SEA OR SWELL PERCENTAGES

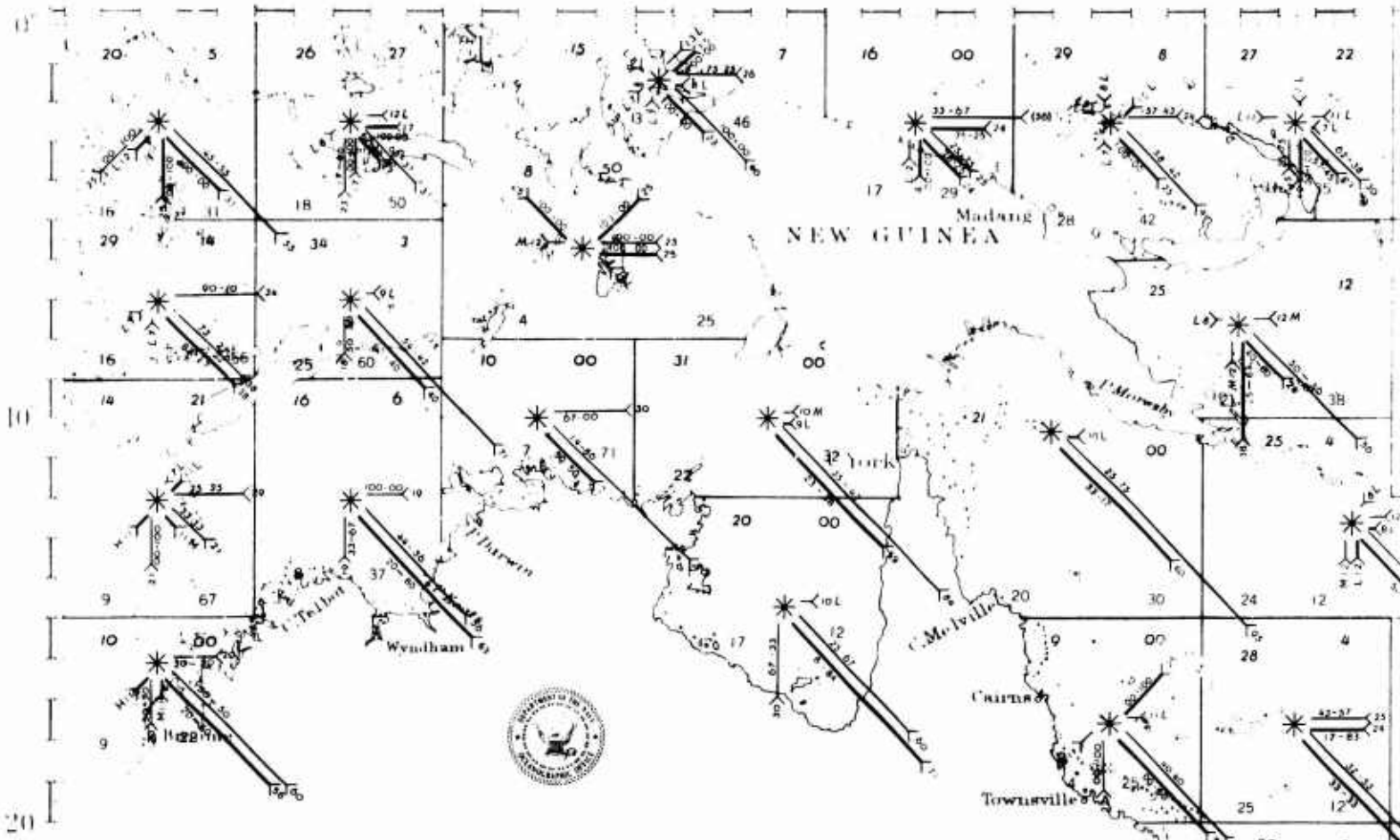
60° 120° 130° 140° 150°



5



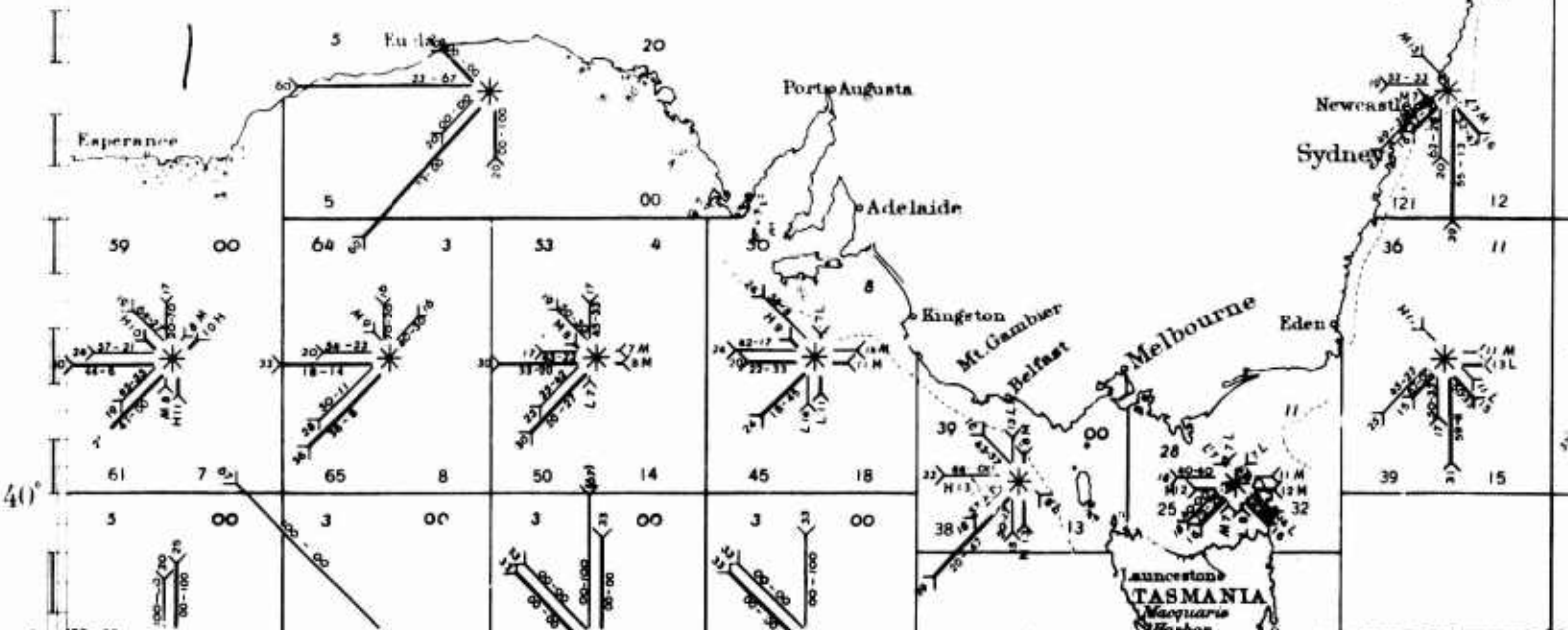
120 130 140 150



**SOUTHWESTERN PACIFIC OCEAN
SEA AND SWELL CHART**

JUNE - JULY - AUG.

A U S T R A L I A

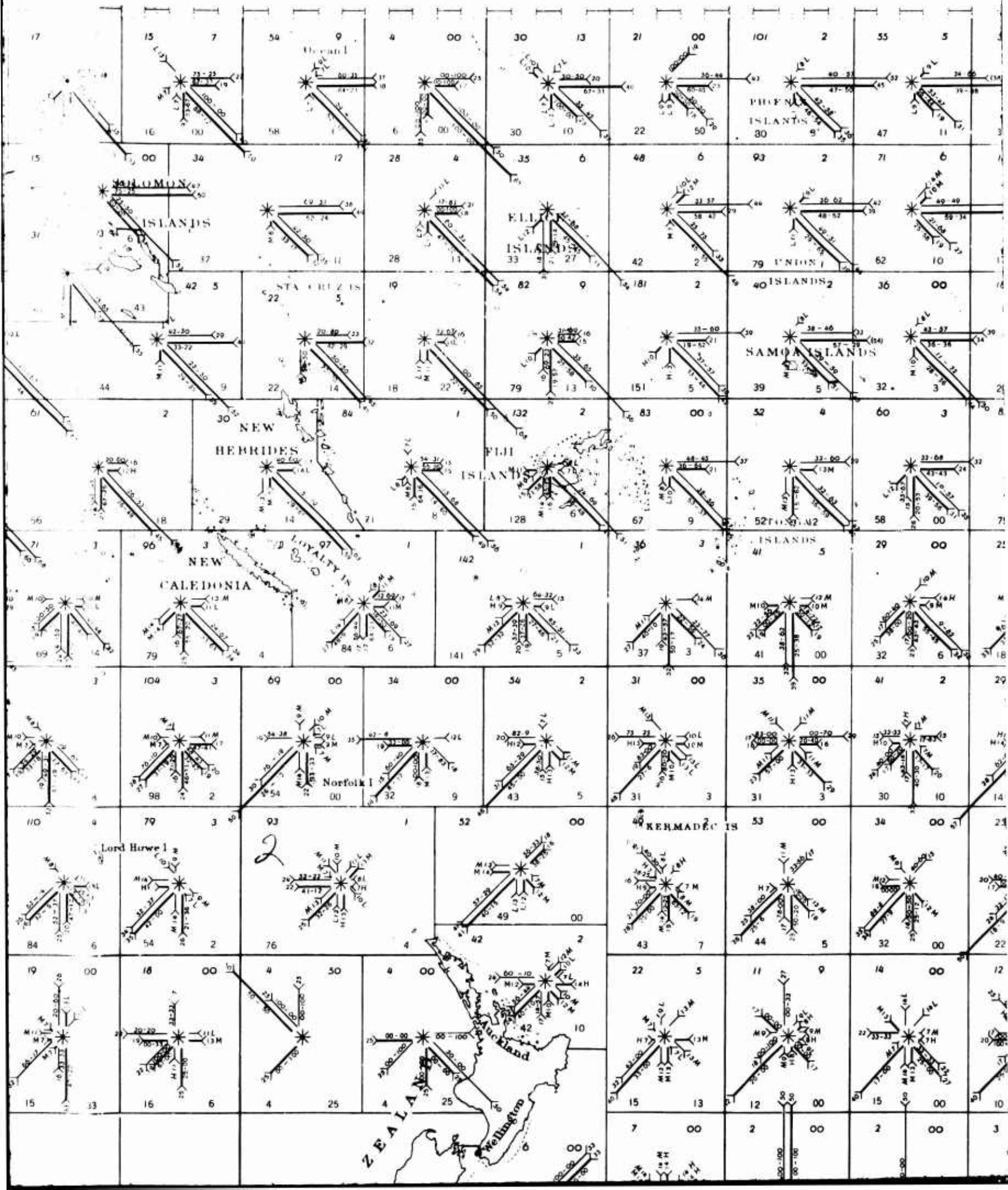


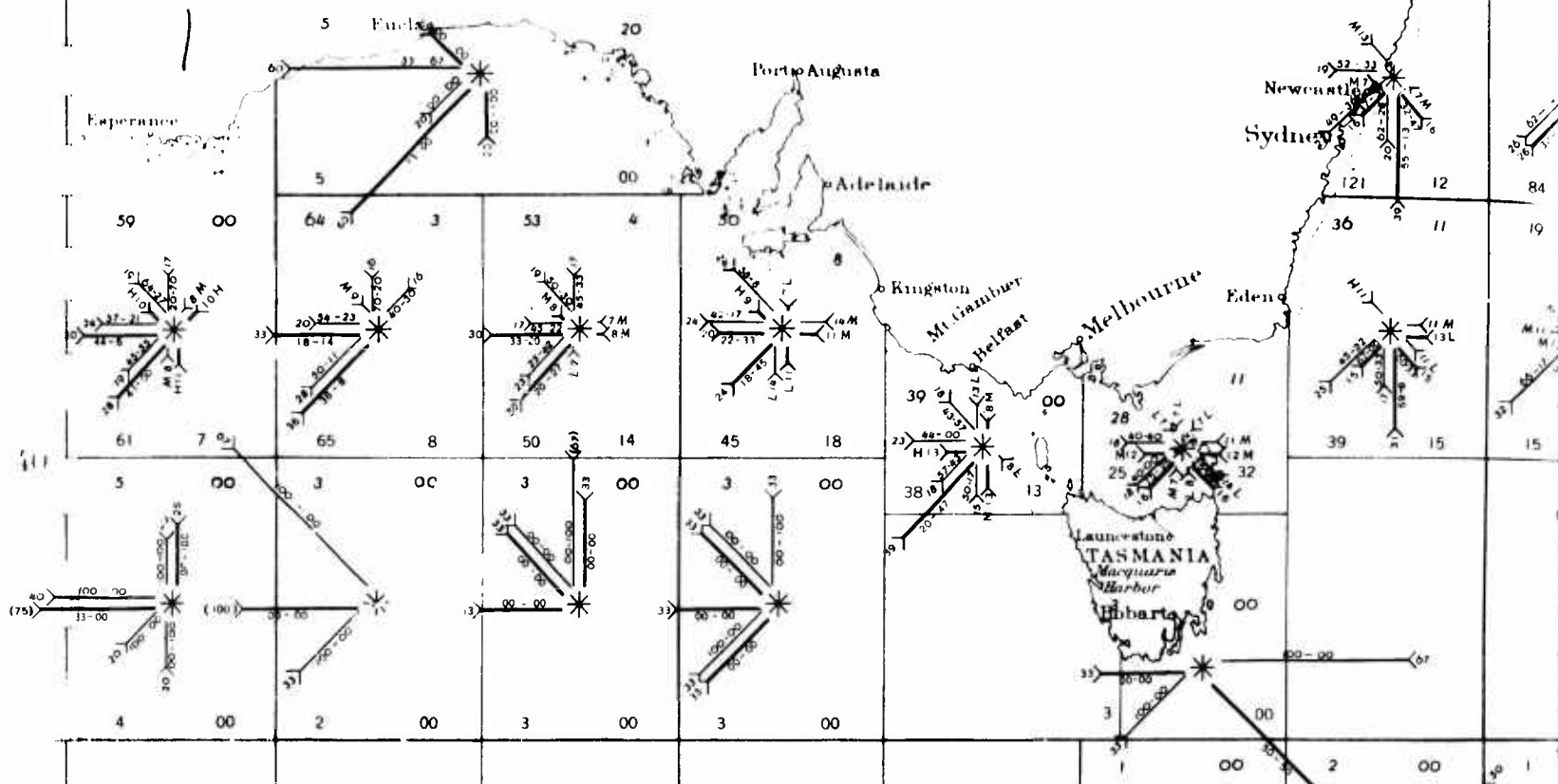
160°

170°

180°

170°





PREVAILING SEAS, SWELLS AND CALMS

The information shown on this chart has been compiled from observations made during the month by the cooperating observers of the Oceanographic Office to and including the year 1942, the majority of the observations having been taken during the years 1932 to 1940 inclusive. The Oceanographic Office has shown all information in its files, however slight, and in some areas where the number of observations is small the graphical presentation will convey a false impression unless examined thoroughly. In evaluating the reliability of the information for any given area consider the number of observations, the geographical position, the percentages of direction and the adjacent roses. THE COMPUTATIONS FOR SEA AND SWELL WERE MADE SEPARATELY AND ALTHOUGH THE CONDITIONS FOR BOTH ARE SHOWN ON THE SAME CHART FOR THE CONVENIENCE OF THE USER, IT SHOULD BE UNDERSTOOD THAT THE DIRECTION OF SEA AND SWELL AS WELL AS THE CONDITIONS UNDER THOSE DIRECTIONS WILL NOT NECESSARILY BE IDENTICAL AT ANY GIVEN TIME OR PLACE.

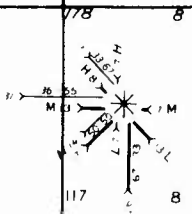
METHOD OF PRESENTATION

The purpose of this chart is to show both graphically and with figures, by means of an eight point double rose, printed in black, the character of the seas and swells that have prevailed within the areas outlined on the brown lines. THE SEA CONDITIONS ARE REPRESENTED BY THE LIGHT LINE ARROWS AND SLANTING TYPE, WHILE THE SWELL CONDITIONS ARE REPRESENTED BY THE HEAVY LINE ARROWS AND VERTICAL TYPE. No arrow is shown when the percent of direction is less than 7. In instances where the number of observations in any direction is 15 or over but the percent of direction is less than 7, the conditions within that direction may be shown in the usual manner without the arrow. The arrows point in the directions toward which the seas or swells move. The length of the arrow measured from the center mark, when placed on the attached scale and the numeral at the tail of the arrow gives the number of times in each 100 observations that the seas or swells have been moving from or near the given point. In instances where the full length of the arrow cannot be shown, the shaft is shortened as much as necessary and the true percent at the tail of the arrow is placed in parenthesis.

When the percent of direction is 15 or over, the conditions within the direction are shown along the shaft of the arrow in percentage of low and medium seas or swells, the first figure from the center is always the percent of low. The percent of high seas or swells within the direction is the remainder of the percentage. When the percent of direction is less than 15 but more than 5, the conditions within the direction are shown by the letter L, M, or H (meaning predominately low, medium or high) beside the percentage figures for direction. The conditions of seas and swells (low, medium and high) within each direction, are defined as follows: low seas or swells, those of amounts 1 and 2; medium seas or swells, those of amounts 3 and 4; high seas or swells, those of amounts 5 and above.

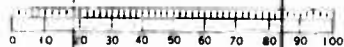
The number of observations for sea is shown in the upper left hand corner of the area and the percent of calms for those observations in the upper right hand corner. The number of observations for swell is shown in the lower left hand corner of the area and the percent of calms for those observations in the lower right hand corner.

For example - The attached rose should be read as follows

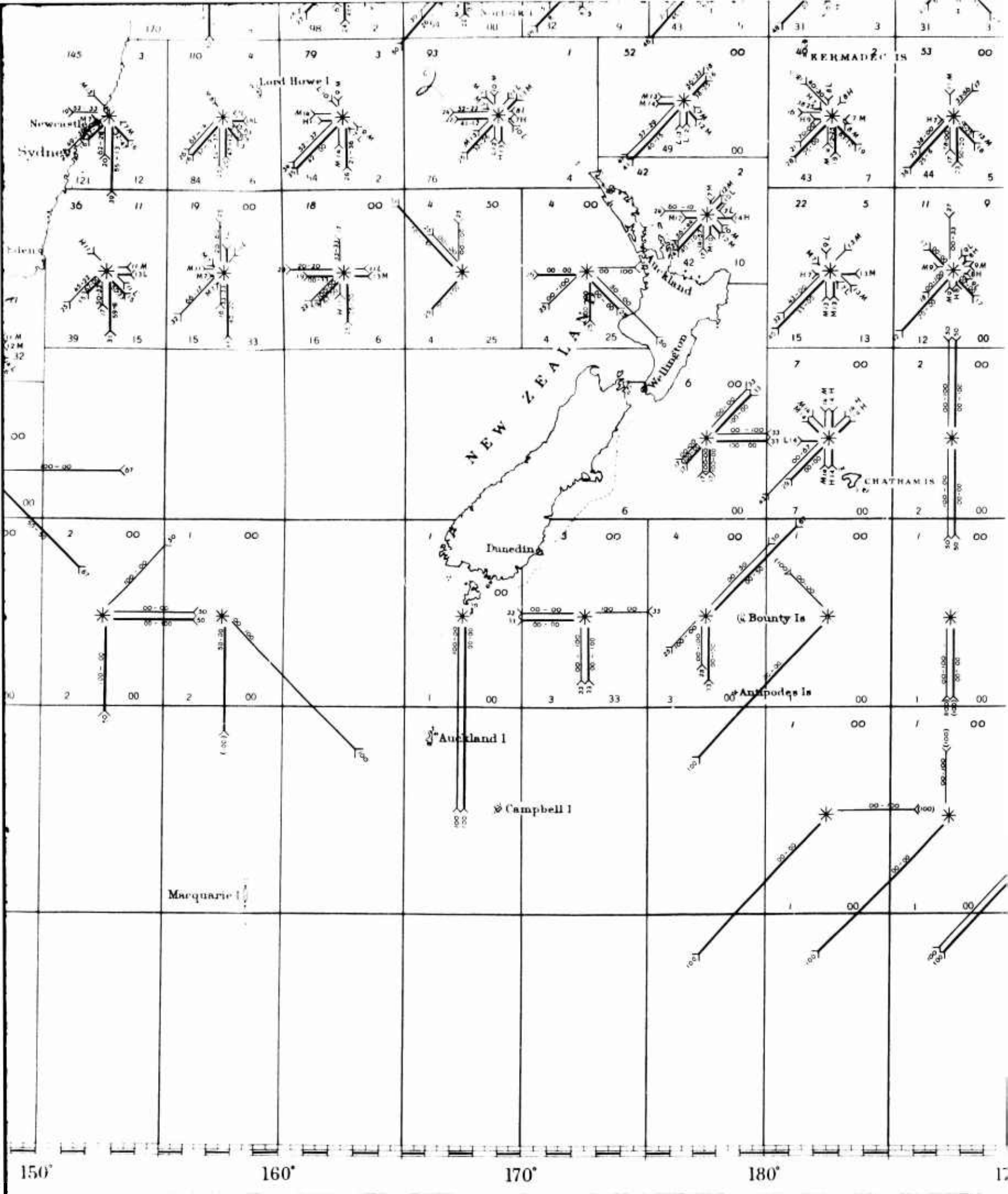


Sea calculations (light line arrow) were based on 178 observations of which 8 percent were calms; 14 percent were from the southwest and predominately medium; 31 percent were from the west, of which 56 percent were low and 36 percent were medium; 17 percent were from the northwest, of which 67 percent were low and 33 percent were medium; 7 percent were from the north and predominately high.

Swell calculations (heavy line arrow) were based on 117 observations of which 8 percent were calms; 7 percent were from the east and predominately medium; 13 percent were from the southeast and predominately low; 26 percent were from the south of which 33 percent were low and 67 percent were medium; 17 percent were from the southwest, of which 50 percent were low and 50 percent were medium; 13 percent were from the west and predominately medium; 8 percent were from the northwest and predominately high.



SCALE OF SEA OR SWELL PERCENTAGES



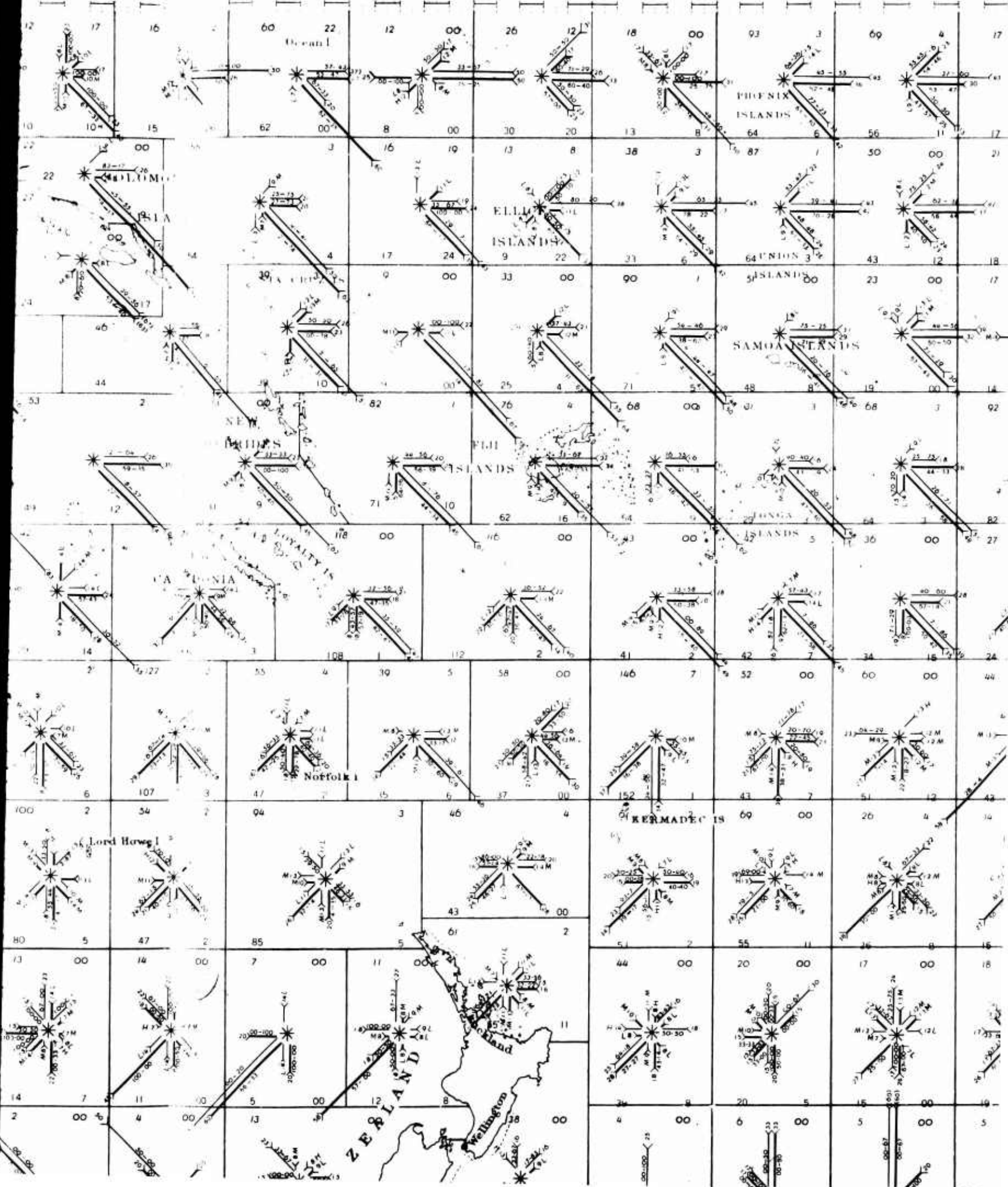
5

160°

170°

180°

170°



180

170

160

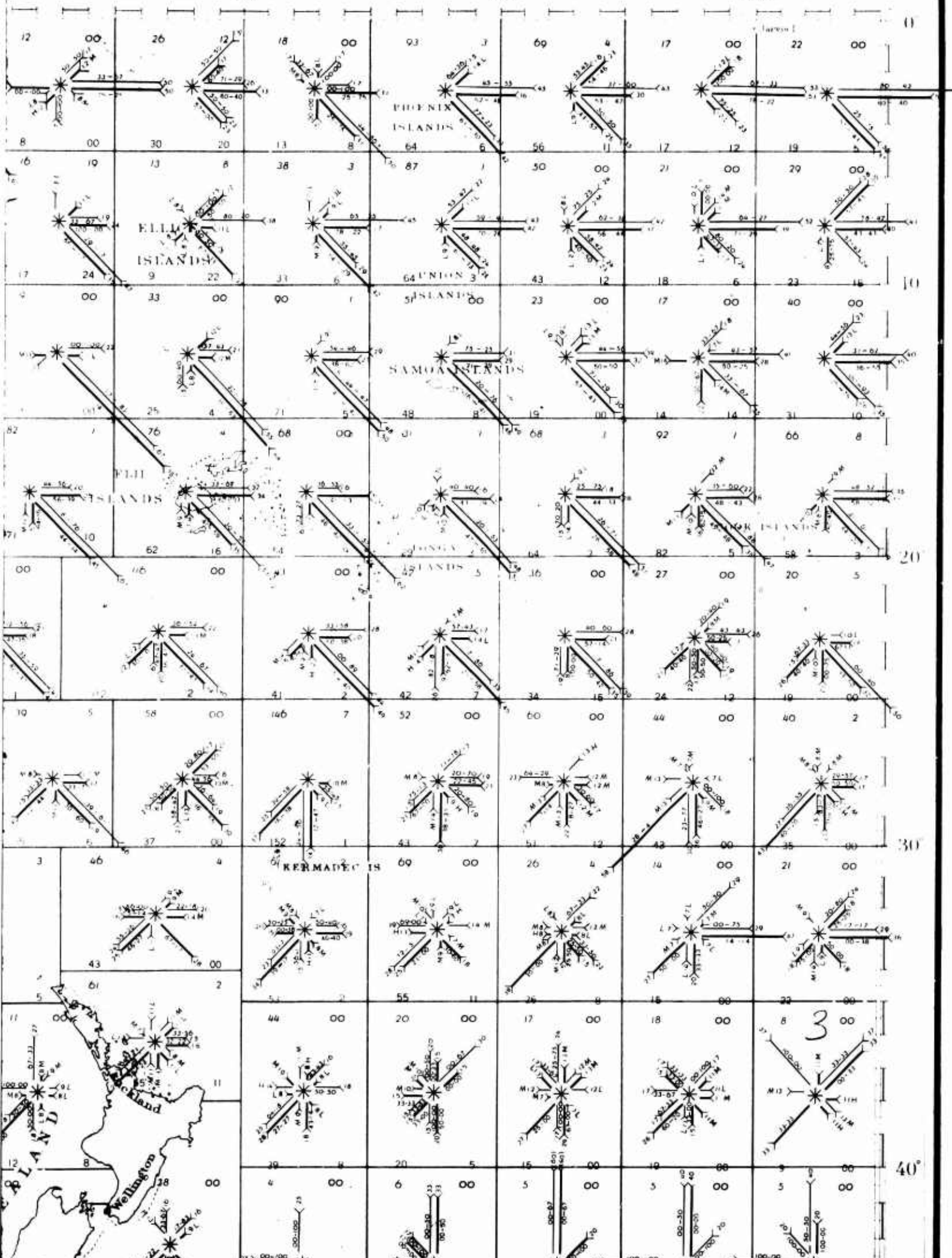
0

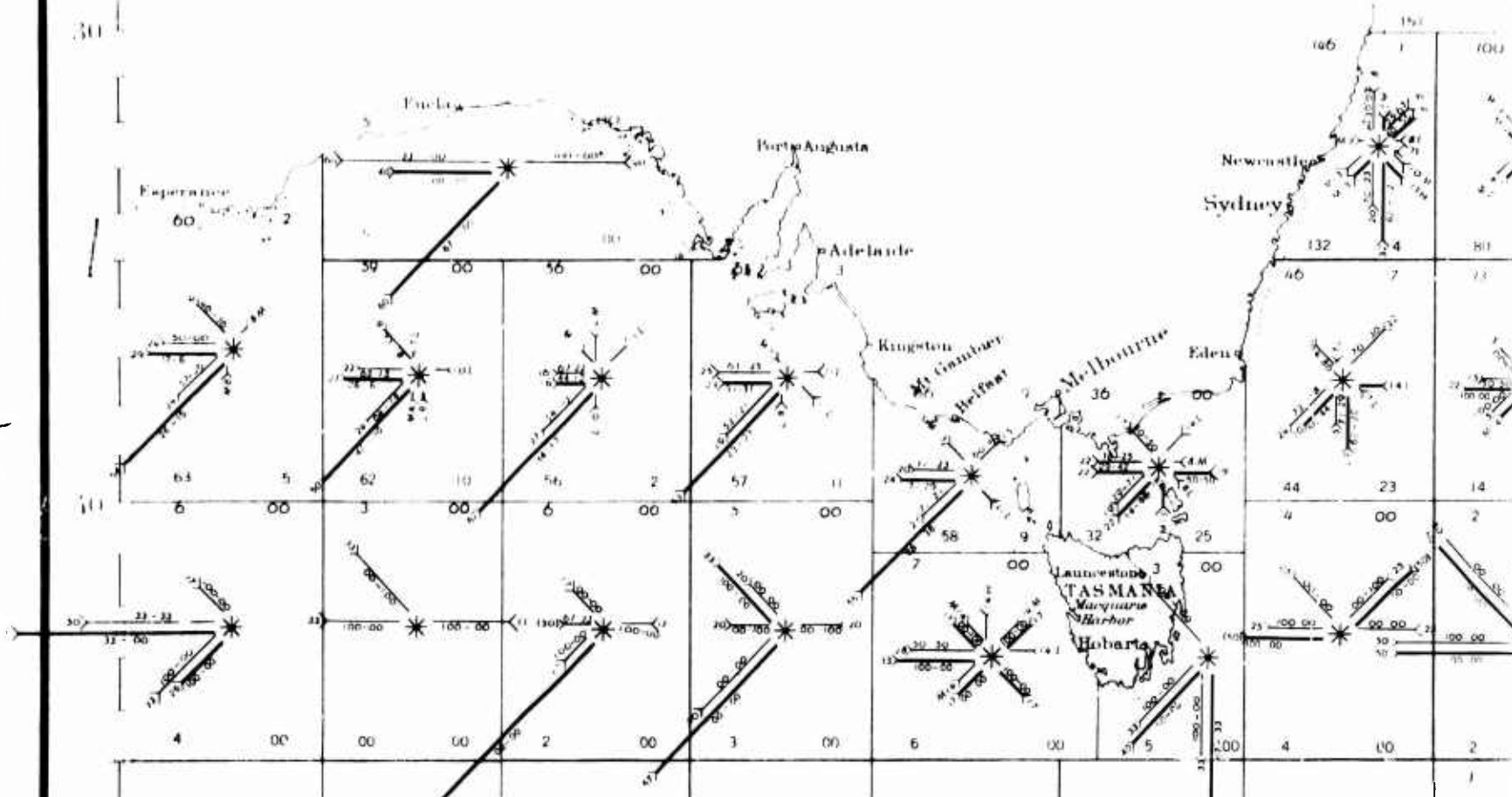
10

20

30

40





PREVAILING SEAS, SWELLS AND CALMS

The information shown on this chart has been compiled from observations made during the month by the cooperating observers of the Oceanographic Office to and including the year 1942, the majority of the observations having been taken during the years 1932 to 1940 inclusive. The Oceanographic Office has shown all information in its files, however slight, and in some areas where the number of observations is small the graphical presentation will convey a false impression unless examined thoroughly. In evaluating the reliability of the information for any given area consider the number of observations, the geographical position, the percentages of direction and the adjacent roses. THE COMPUTATIONS FOR SEA AND SWELL WERE MADE SEPARATELY AND ALTHOUGH THE CONDITIONS FOR BOTH ARE SHOWN ON THE SAME CHART FOR THE CONVENIENCE OF THE USER, IT SHOULD BE UNDERSTOOD THAT THE DIRECTION OF SEA AND SWELL AS WELL AS THE CONDITIONS UNDER THOSE DIRECTIONS WILL NOT NECESSARILY BE IDENTICAL AT ANY GIVEN TIME OR PLACE.

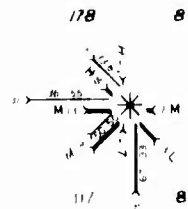
METHOD OF PRESENTATION

The purpose of this chart is to show both graphically and with figures, by means of an eight point double rose, printed in black, the character of the seas and swells that have prevailed within the areas outlined on the chart. THE SEA CONDITIONS ARE REPRESENTED BY THE LIGHT LINE ARROWS AND SLANTING TYPE, WHILE THE SWELL CONDITIONS ARE REPRESENTED BY THE HEAVY LINE ARROWS AND VERTICAL TYPE. No arrow is shown when the percent of direction is less than 7. In instances where the number of observations in any direction is 15 or over but the percent of direction is less than 7, the conditions within that direction may be shown in the usual manner without the arrow. The arrows point in the directions toward which the seas or swells move. The length of the arrow measured from the center mark, when placed on the attached scale and the numeral at the tail of the arrow gives the number of times in each 100 observations that the seas or swells have been moving from or near the given point. In instances where the full length of the arrow cannot be shown, the shaft is shortened as much as necessary and the true percent at the tail of the arrow is placed in parenthesis.

When the percent of direction is 15 or over, the conditions within the direction are shown along the shaft of the arrow in percentage of low and medium seas or swells, the first figure from the center is always the percent of low. The percent of high seas or swells within the direction is the remainder of the percentage. When the percent of direction is less than 15 but more than 6, the conditions within the direction are shown by the letter L, M, or H (meaning predominately low, medium or high) beside the percentage figures for direction. The conditions of seas and swells (low, medium and high) within each direction, are defined as follows: low seas or swells, those of amounts 1 and 2; medium seas or swells, those of amounts 3 and 4; high seas or swells, those of amounts 5 and above.

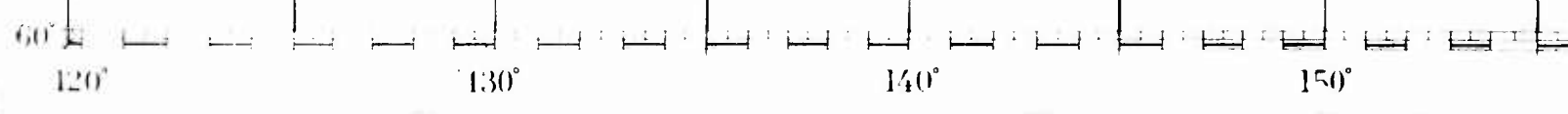
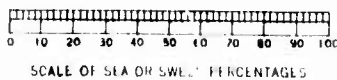
The number of observations for sea is shown in the upper left hand corner of the area and the percent of calms for those observations in the upper right hand corner. The number of observations for swell is shown in the lower left hand corner of the area and the percent of calms for those observations in the lower right hand corner.

For example: The attached rose should be read as follows:

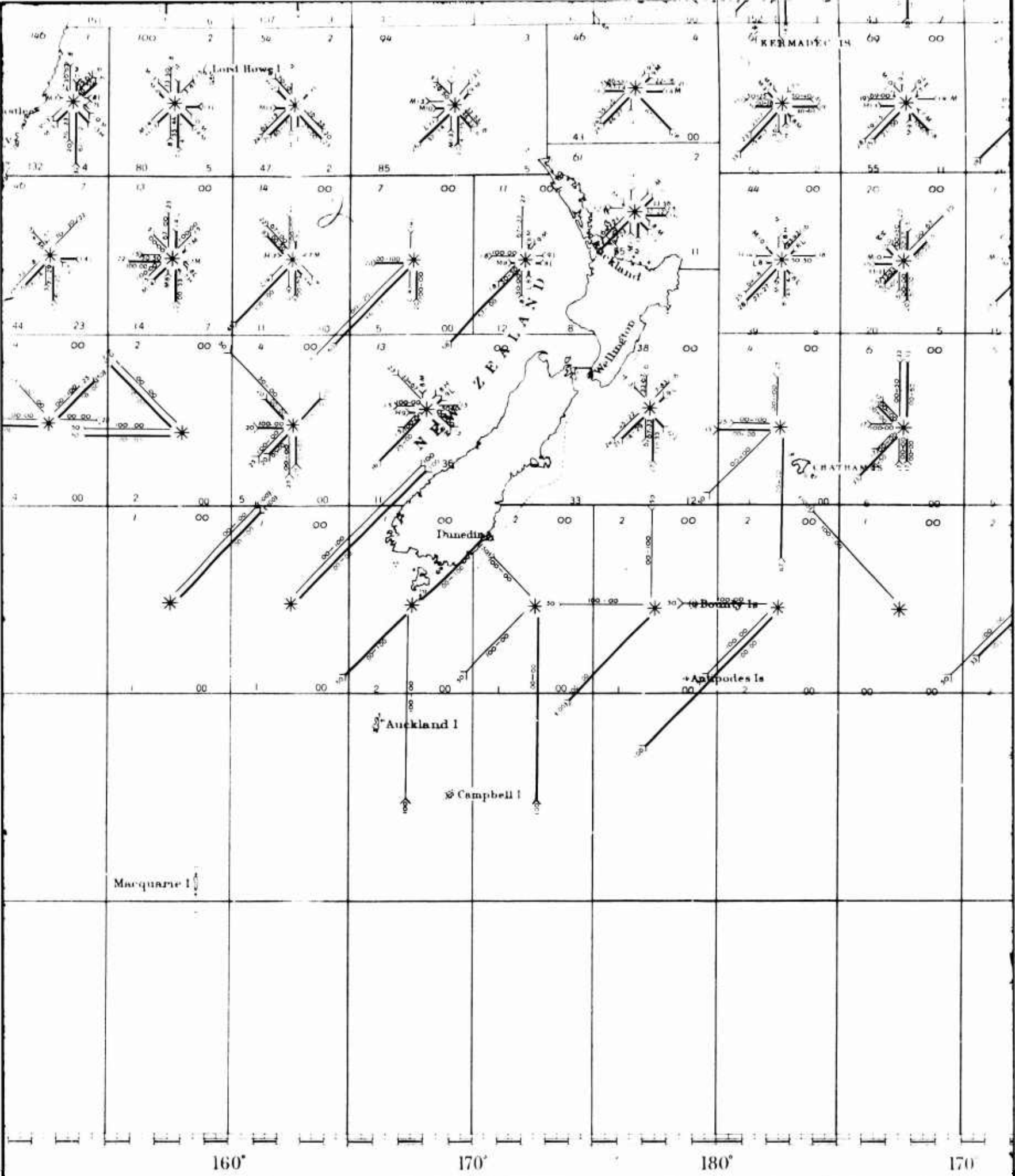


Sea calculations (light line arrow) were based on 178 observations of which 8 percent were calms. 14 percent were from the southwest and predominately medium; 31 percent were from the west, of which 15 percent were low and 36 percent were medium; 17 percent were from the northwest, of which 67 percent were low and 33 percent were medium; 7 percent were from the north and predominately high.

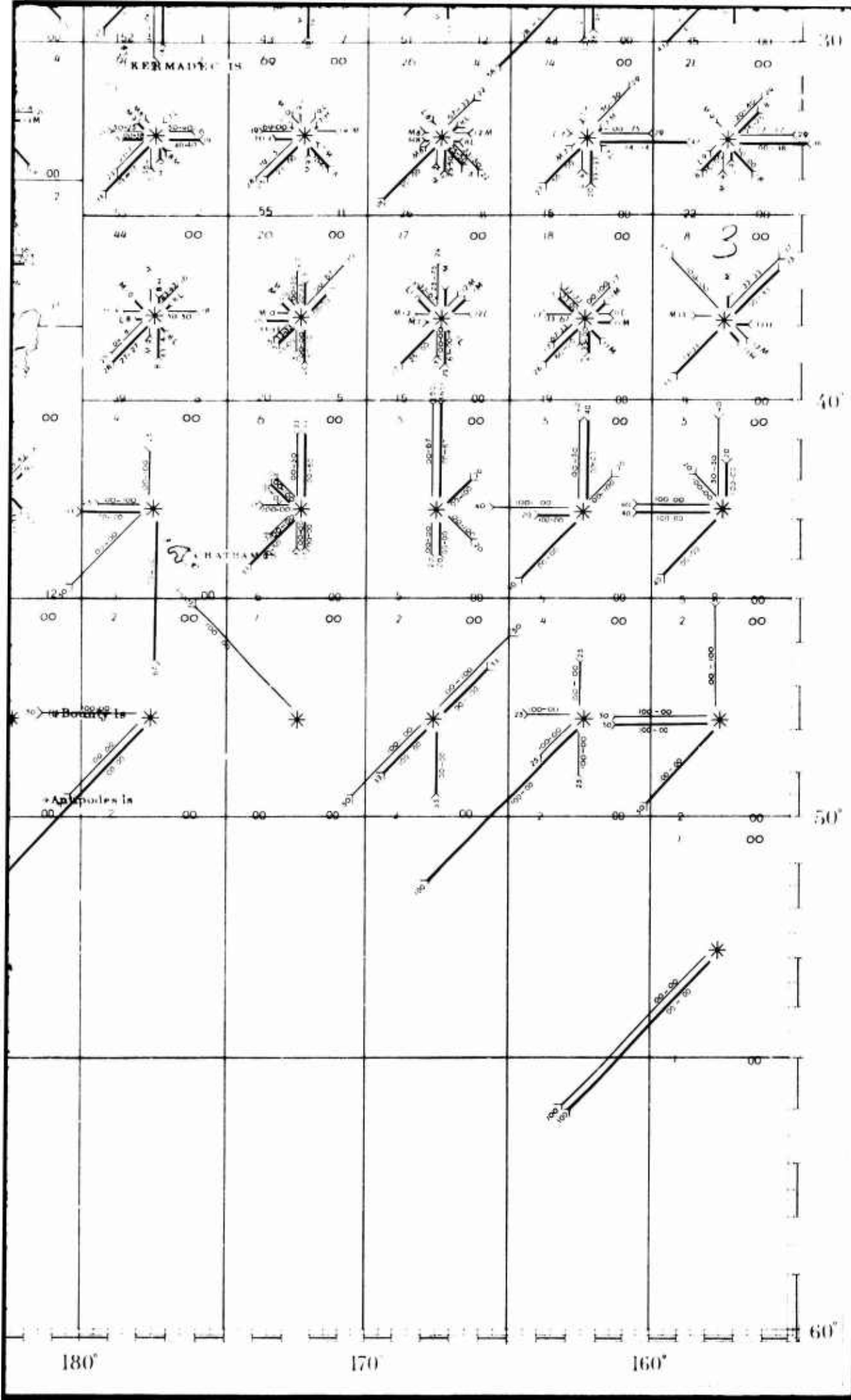
Swell calculations (heavy line arrow) were based on 117 observations of which 8 percent were calms. 7 percent were from the east and predominately medium; 14 percent were from the southeast and predominately low; 26 percent were from the south of which 33 percent were low and 67 percent were medium; 17 percent were from the southwest, of which 50 percent were low and 50 percent were medium; 14 percent were from the west and predominately medium; 8 percent were from the northwest and predominately high.



4

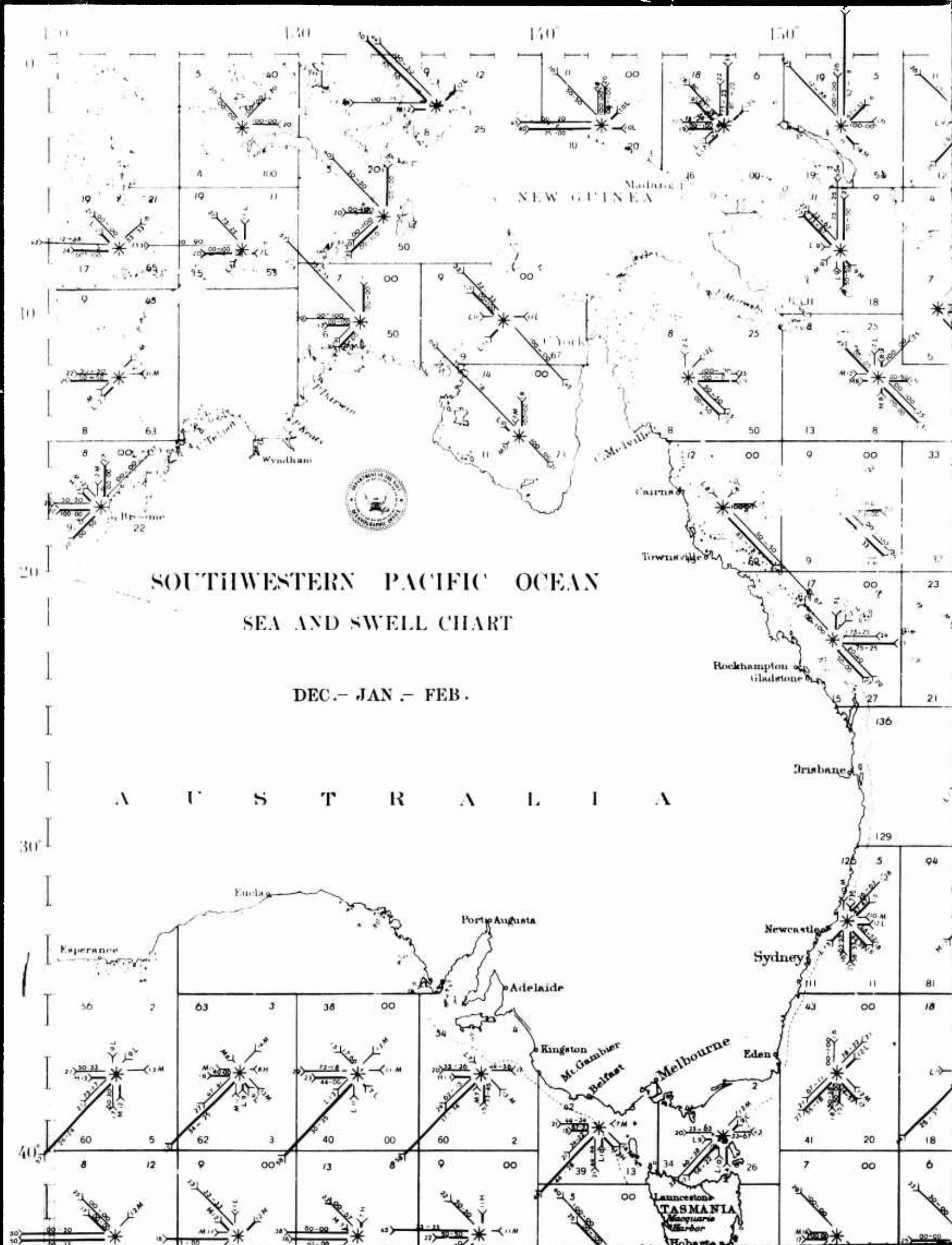


5



6

Magnetic Variation for the Region of the South Pacific



SOUTHWESTERN PACIFIC OCEAN
SEA AND SWELL CHART

DEC.- JAN. - FEB.

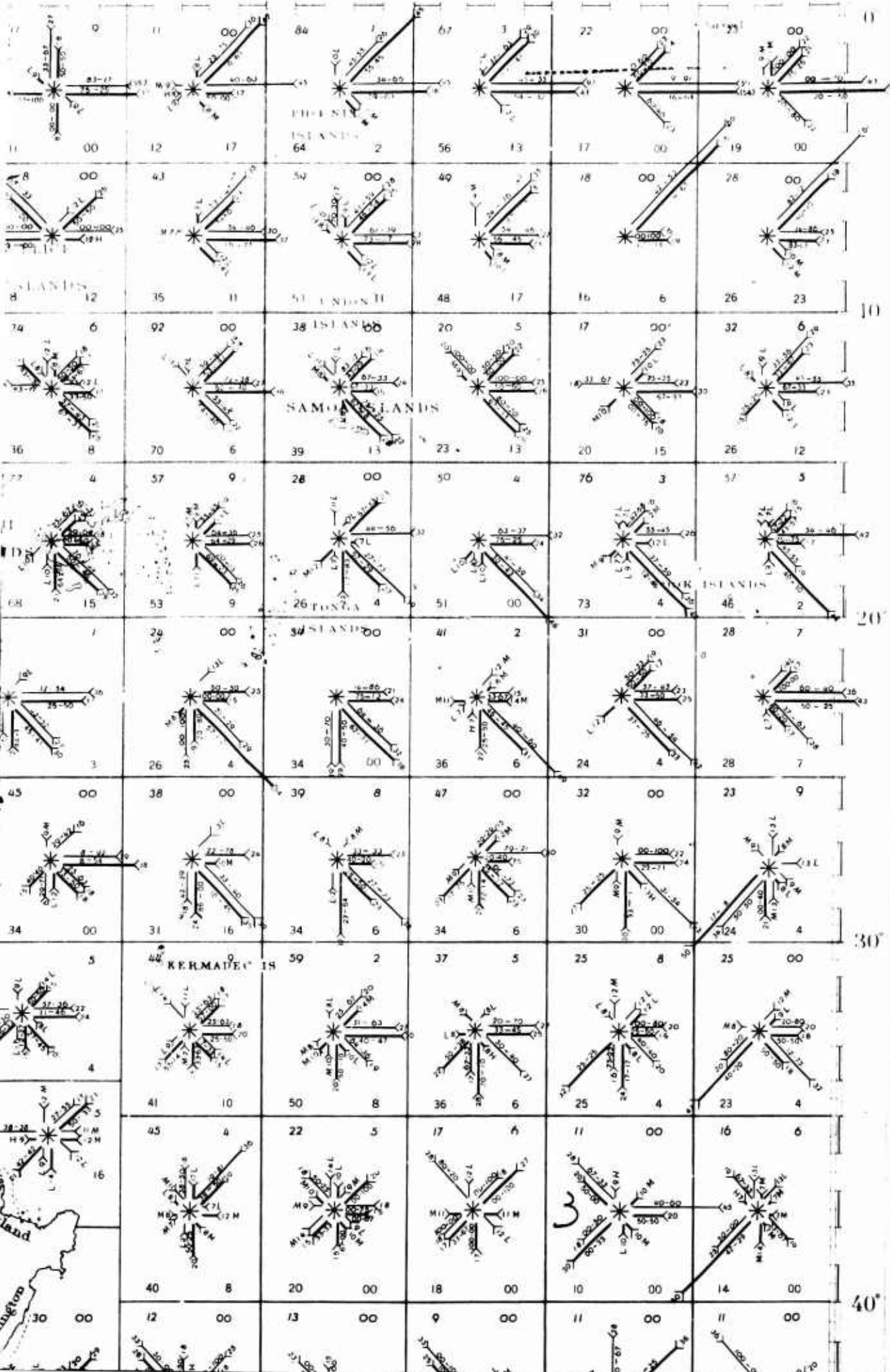
A U S T R A L I A



130

170

160



0

10

20

30

40

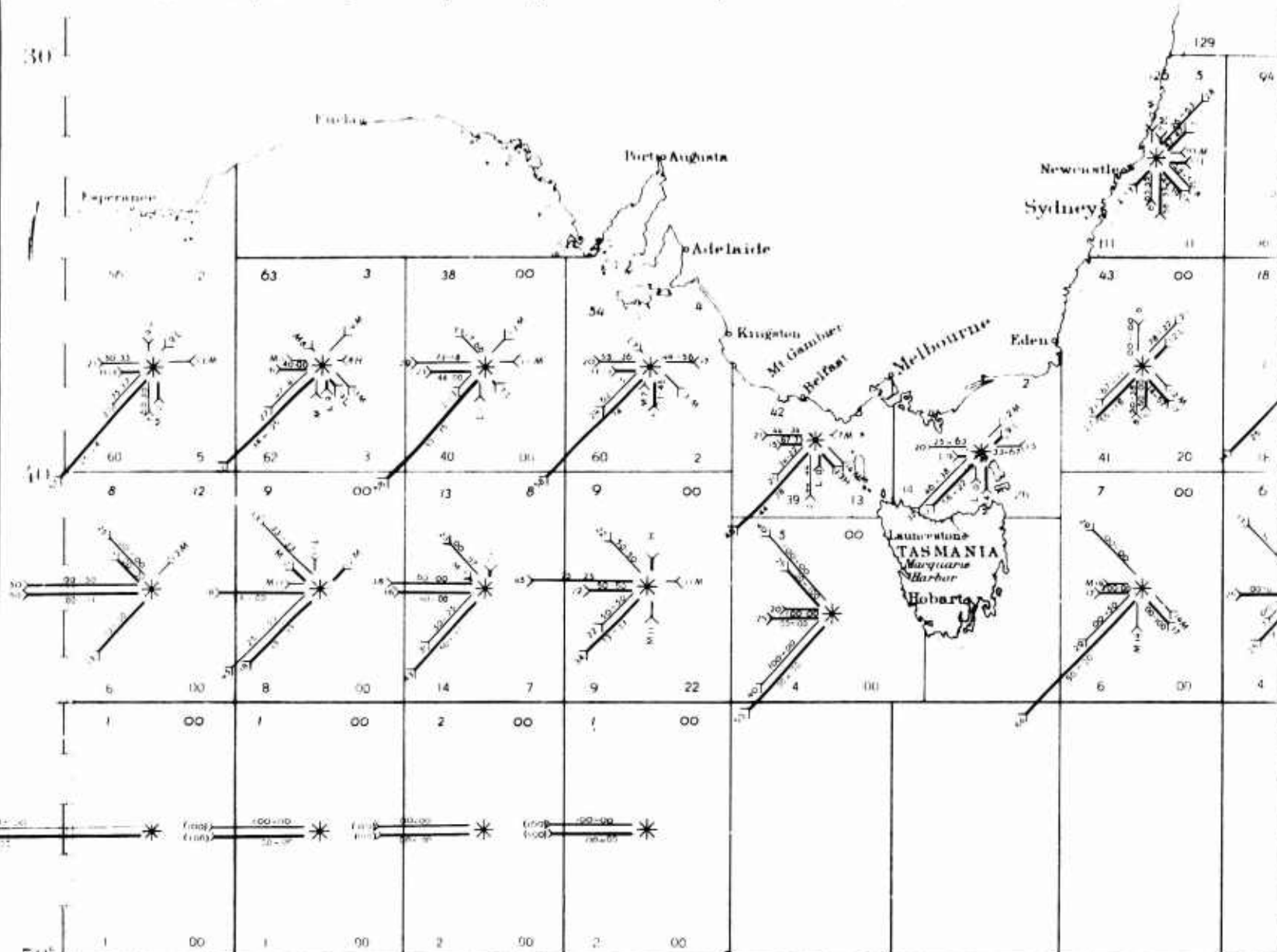
00

10

20

30

40



PREVAILING SEAS, SWELLS AND CALMS

The information shown on this chart has been compiled from observations made during the month by the cooperating observers of the Oceanographic Office to and including the year 1942, the majority of the observations having been taken during the years 1932 to 1940 inclusive. The Oceanographic Office has shown all information in its files, however slight, and in some areas where the number of observations is small the graphical presentation will convey a false impression unless examined thoroughly. In evaluating the reliability of the information for any given area consider the number of observations, the geographical position, the percentages of direction and the adjacent areas. THE COMPUTATIONS FOR SEA AND SWELL WERE MADE SEPARATELY AND ALTHOUGH THE CONDITIONS FOR BOTH ARE SHOWN ON THE SAME CHART FOR THE CONVENIENCE OF THE USER, IT SHOULD BE UNDERSTOOD THAT THE DIRECTION OF SEA AND SWELL AS WELL AS THE CONDITIONS UNDER THOSE DIRECTIONS WILL NOT NECESSARILY BE IDENTICAL AT ANY GIVEN TIME OR PLACE.

METHOD OF PRESENTATION

The purpose of this chart is to show both graphically and with figures, by means of an eight point double rose, printed in black, the character of the seas and swells that have prevailed within the areas outlined on the bronze base. THE SEA CONDITIONS ARE REPRESENTED BY THE LIGHT LINE ARROWS AND SLANTING TYPE, WHILE THE SWELL CONDITIONS ARE REPRESENTED BY THE HEAVY LINE ARROWS AND VERTICAL TYPE. No arrow is shown when the percent of direction is less than 7. In instances where the number of observations in any direction is 15 or over, but the percent of direction is 10% or less, the conditions within that direction may be shown in the outer margin without the arrow. The arrows point in the direction toward which the seas or swells move. The length of the arrow measured from the center mark, when placed on the attached scale and the numeral at the tail of the arrow, gives the number of times in each 100 observations that the seas or swells have been moving from or near the given point. In instances where the full length of the arrow cannot be shown, the shaft is shortened as much as necessary and the true percent at the tail of the arrow is placed in parentheses.

When the percent of direction is 15 or over, the conditions within the direction are shown along the shaft of the arrow in percentage of low and medium seas or swells, the first figure from the center is always the percent of low. The percent of high seas or swells within the direction is the remainder of the percentage. When the percent of direction is less than 15 but more than 6, the conditions within the direction are shown by the letter L, M, or H (meaning predominately low, medium or high) inside the percentage figures for direction. The conditions of seas and swells (low, medium and high) within each direction, are defined as follows: low seas or swells, those of amounts 1 and 2; medium seas or swells, those of amounts 3 and 4; high seas or swells, those of amounts 5 and above.

The number of observations for sea is shown in the upper left hand corner of the area and the percent of calms for those observations in the upper right hand corner. The number of observations for swell is shown in the lower left hand corner of the area and the percent of calms for those observations in the lower right hand corner.

Example

For example—The station 178

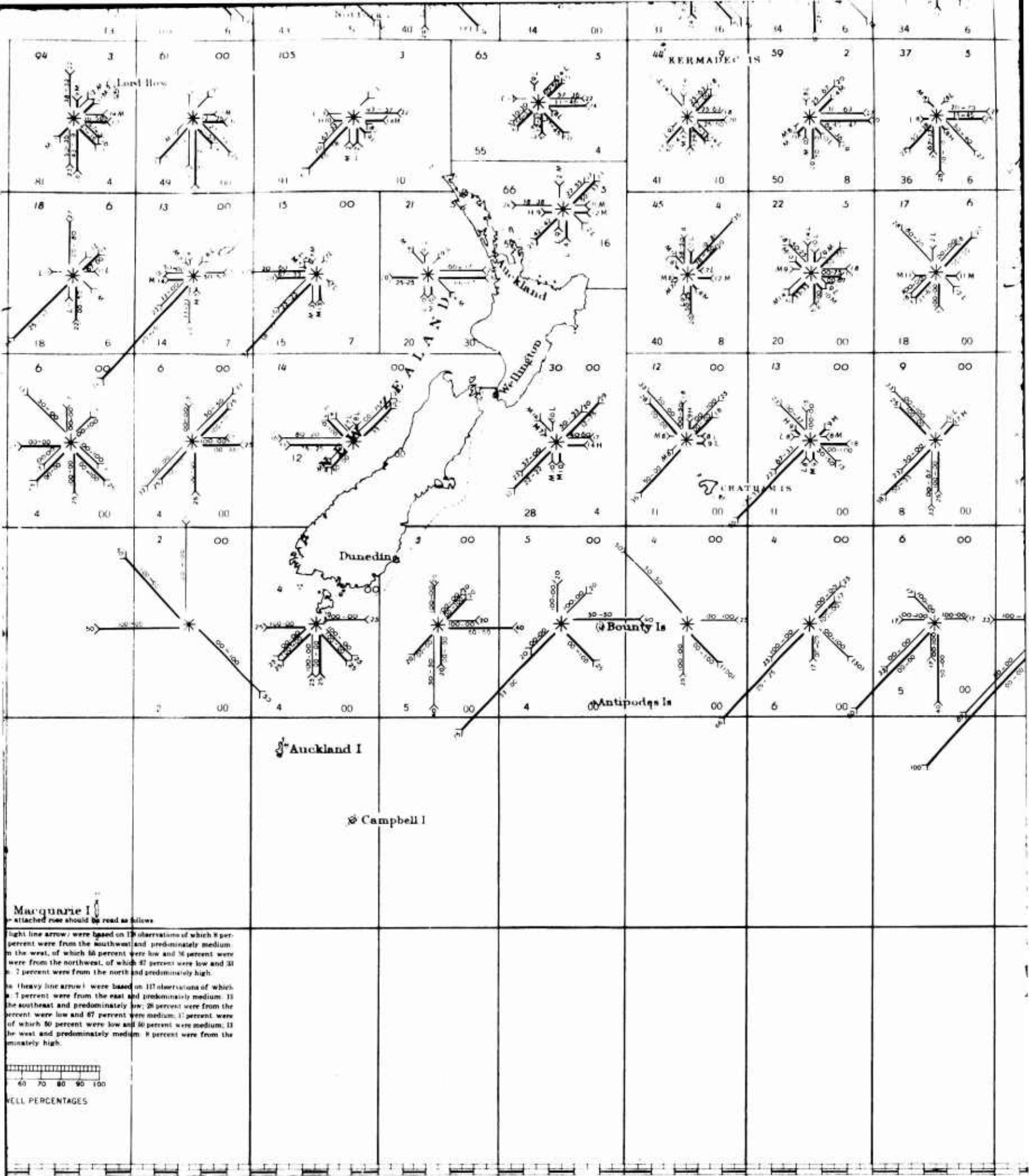
Sea calculations (light line arrows) 14 percent were calms; 14 percent were from the west, 31 percent were from the southwest, of which 50 percent were from the west and north-west and predominately high.

Swell calculations (heavy line arrows) 8 percent were calms; 7 percent were from the southeast, south of which 33 percent were from the southwest, of which 50 percent were from the west and north-west and predominately high.

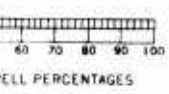
0 10 20 30 40 50 60 70

SCALE OF SEA OR SWELL PERCENT

4



Macquarie I
 attached rose should be read as follows
 light line arrow) were based on 12 observations of which 8 percent were from the southwest and predominately medium from the west, of which 50 percent were low and 16 percent were from the northwest, of which 47 percent were low and 33 percent were from the north and predominately high.
 heavy line arrow) were based on 117 observations of which 1 percent were from the east and predominately medium; 13 percent were from the southeast and predominately low; 20 percent were from the west and predominately low and 67 percent were medium; 17 percent were from the southwest and predominately low and 40 percent were medium; 11 percent were from the west and predominately medium; 8 percent were from the north and predominately high.



160°

170°

180°

170°

