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NO. PUB. 799-G

AD A950789



ATLAS
OF
SEA AND SWELL CHARTS,

INDIAN OCEAN.

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DISTRIBUTION STATEMENT A
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PUBLISHED BY THE U.S. NAVAL OCEANOGRAPHIC
OFFICE, UNITED STATES NAVY UNDER THE
AUTHORITY OF THE SECRETARY OF THE NAVY

WASHINGTON
1941
PRICE \$2.00

UNANNOUNCED

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER NOP-799G	2. GOVT ACCESSION NO. AD-A950789	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Atlas of Sea and Swell Charts - Indian 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 1944	
	13. NUMBER OF PAGES 12	
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)	15. SECURITY CLASS. (of this report) Unclassified	
	15a. 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 Naval Oceanographic Office in 1974.		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Sea Swell Indian Ocean Winds Waves		
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.		

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

10° 20° 30° 40° 50°



A R A B I A

INDIAN 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 Hydrographic Office to and including the year 1942, the majority of the observations having been taken during the years 1922 to 1940 inclusive. The Hydrographic 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 area 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 'aft' is shortened as much as necessary and the true percent at the tail of the arrow is placed in parenthesis.

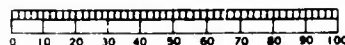
When the percent of direction is 15 or over, the conditions within the direction are shown along the shaft of the arrow in percentage of low and medium seas or swells, the first figure from the center is always the percent of low. The percent of high seas or swells within the direction is the remainder 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 9 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.

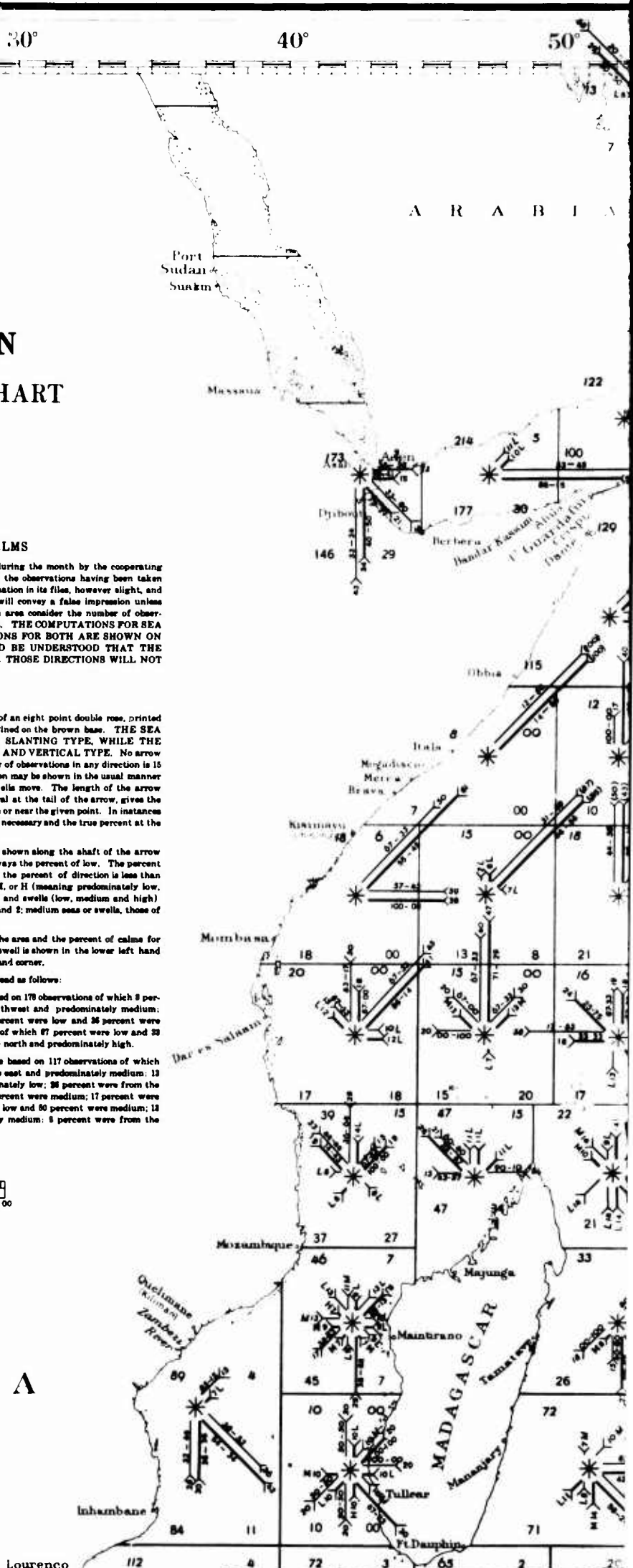
Swell calculations (heavy line arrow) were based on 117 observations of which 8 percent were calms; 7 percent were from the east and predominately medium; 13 percent were from the southeast and predominately low; 36 percent were from the south of which 33 percent were low and 67 percent were medium; 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; 5 percent were from the northwest and predominately high.



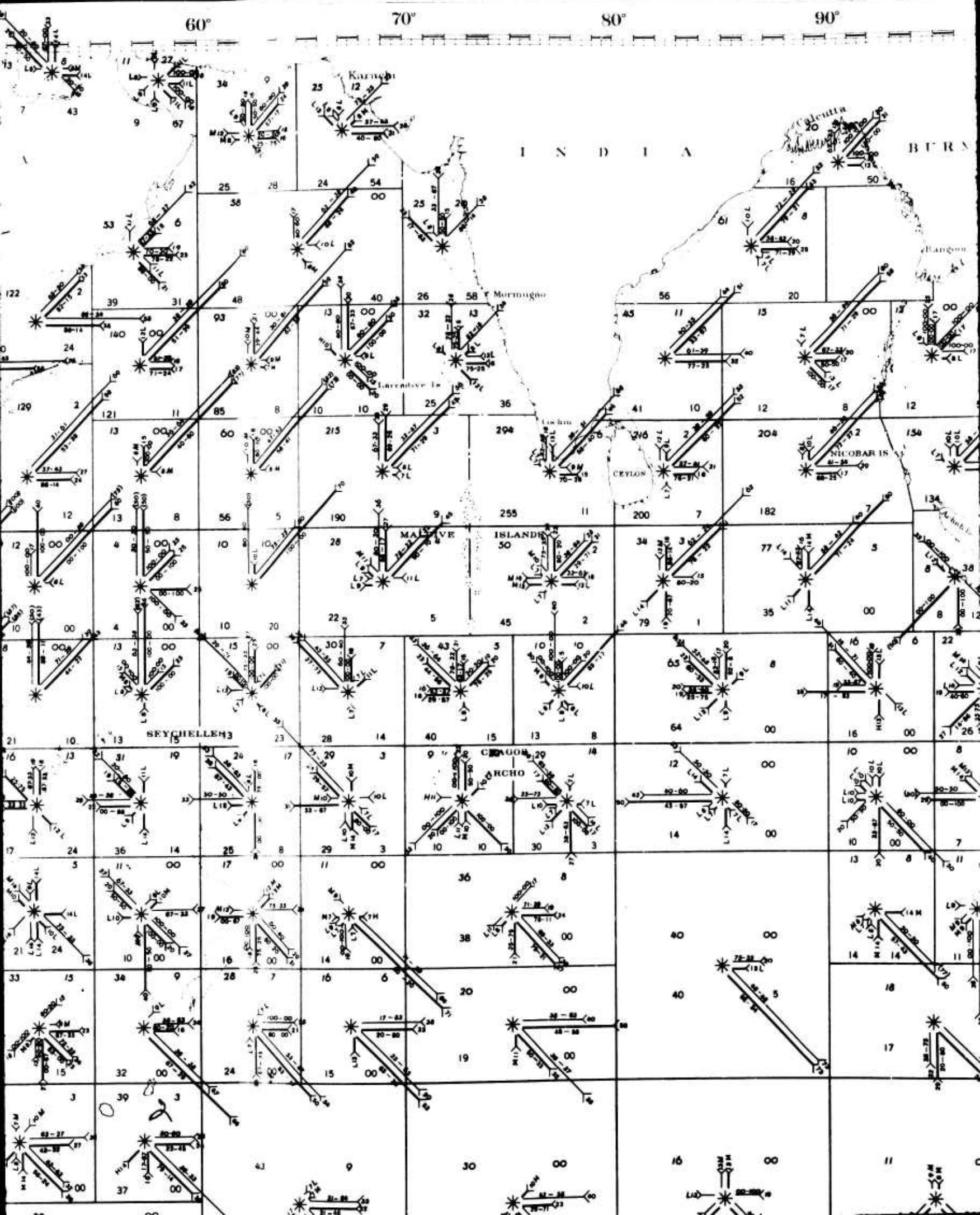
SCALE OF SEA OR SWELL PERCENTAGES

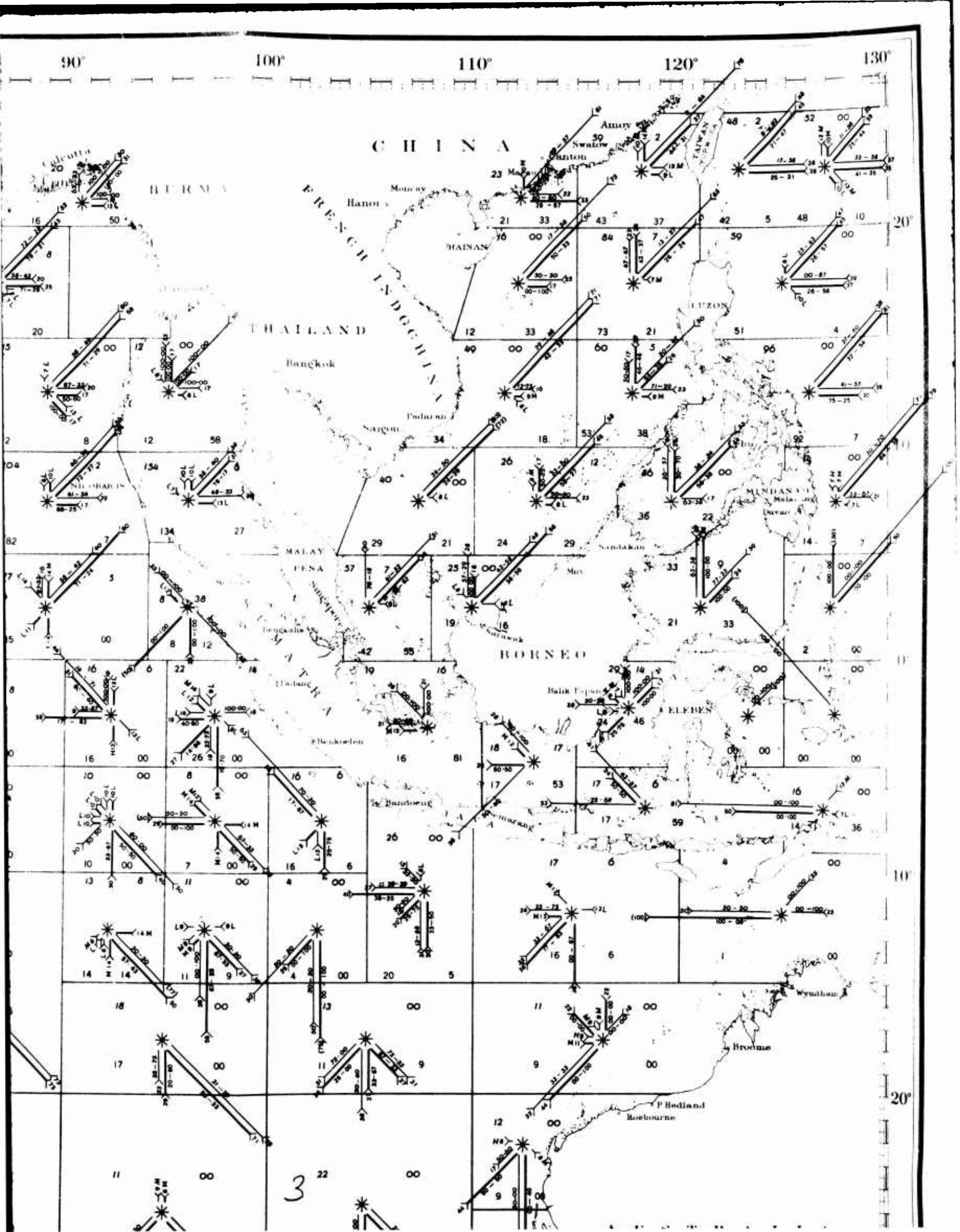


A F R I C A

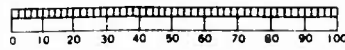


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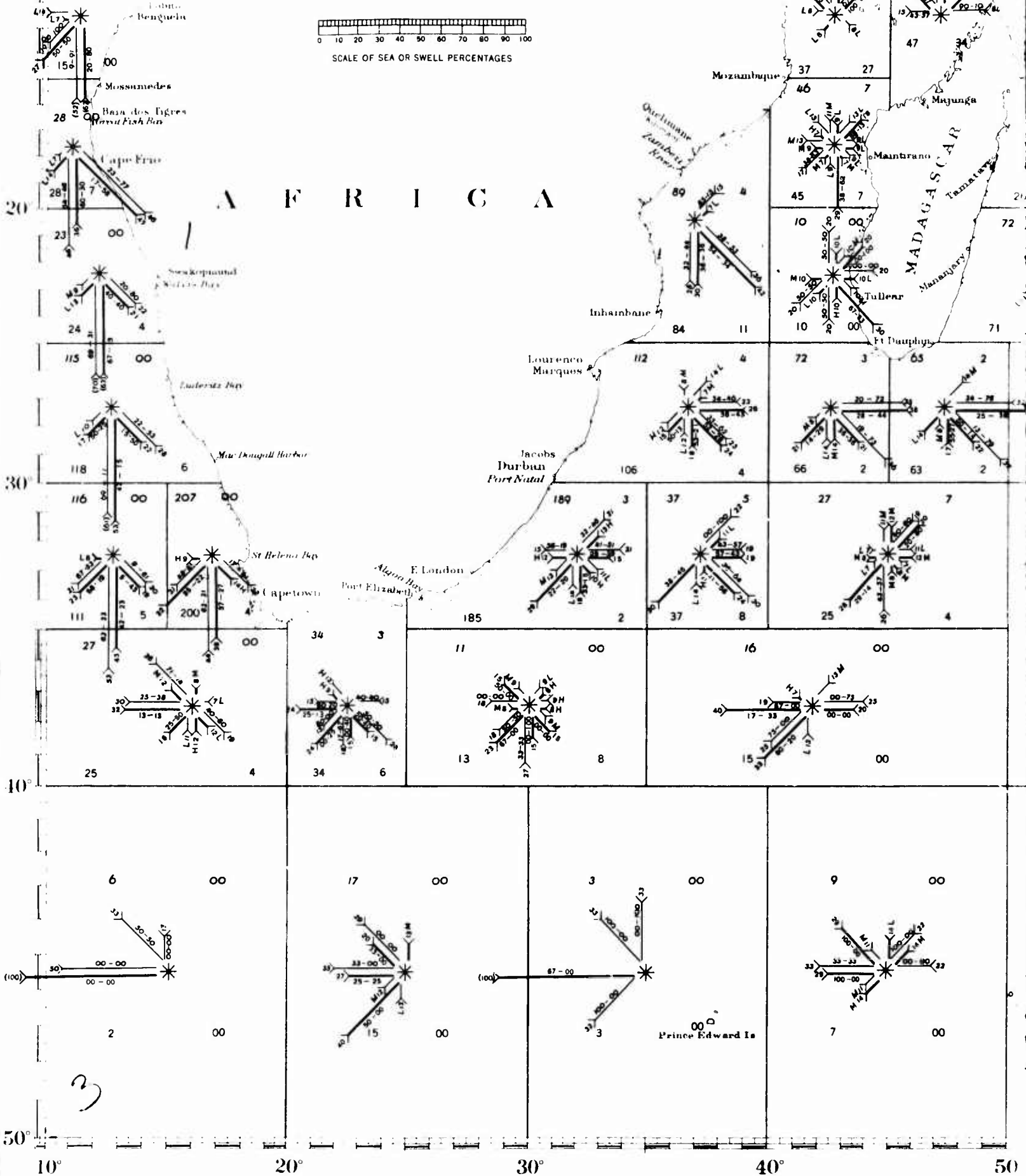




Luanda Benguela



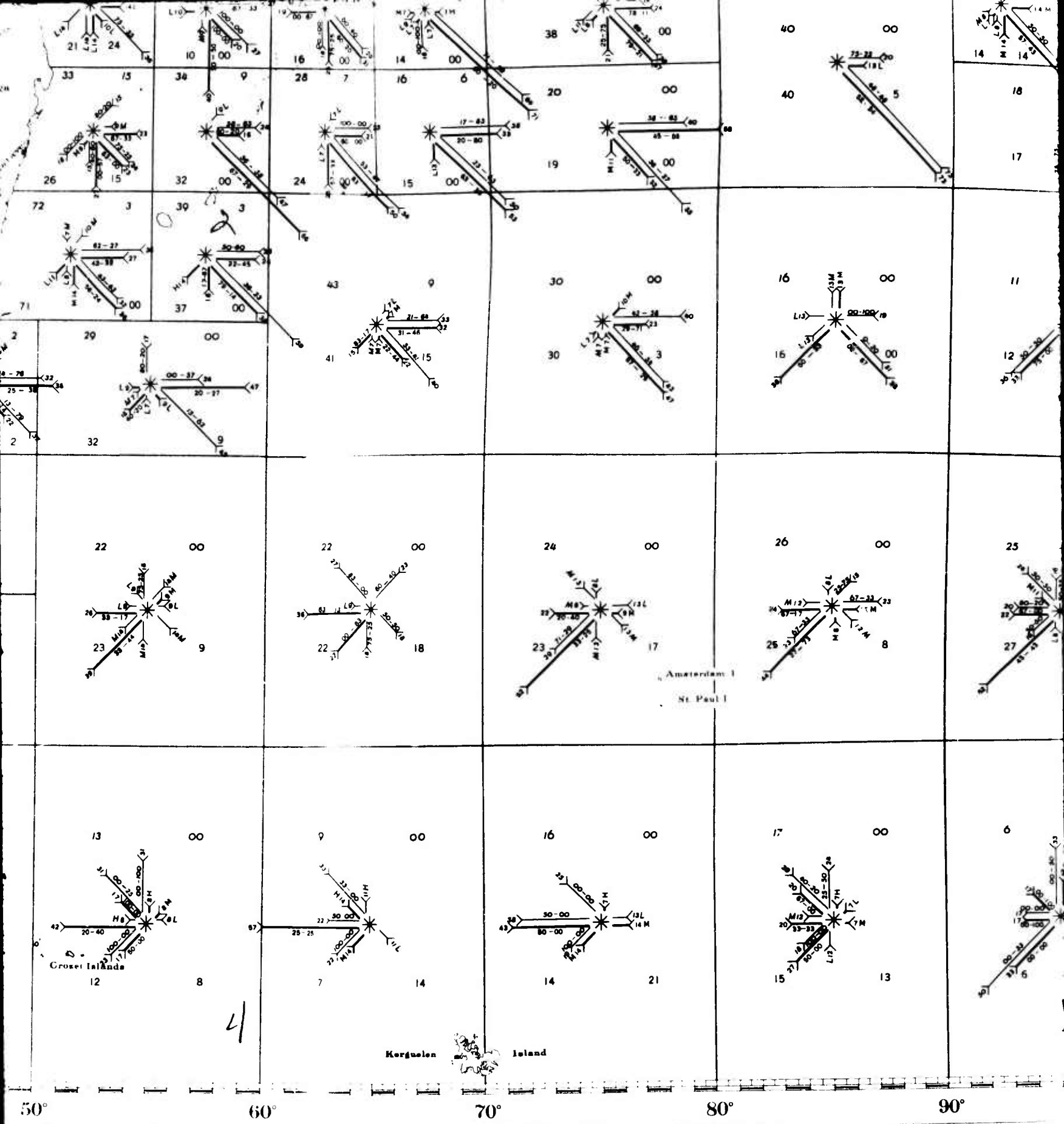
SCALE OF SEA OR SWELL PERCENTAGES



A F R I C A

MADAGASCAR

10° 20° 30° 40° 50°



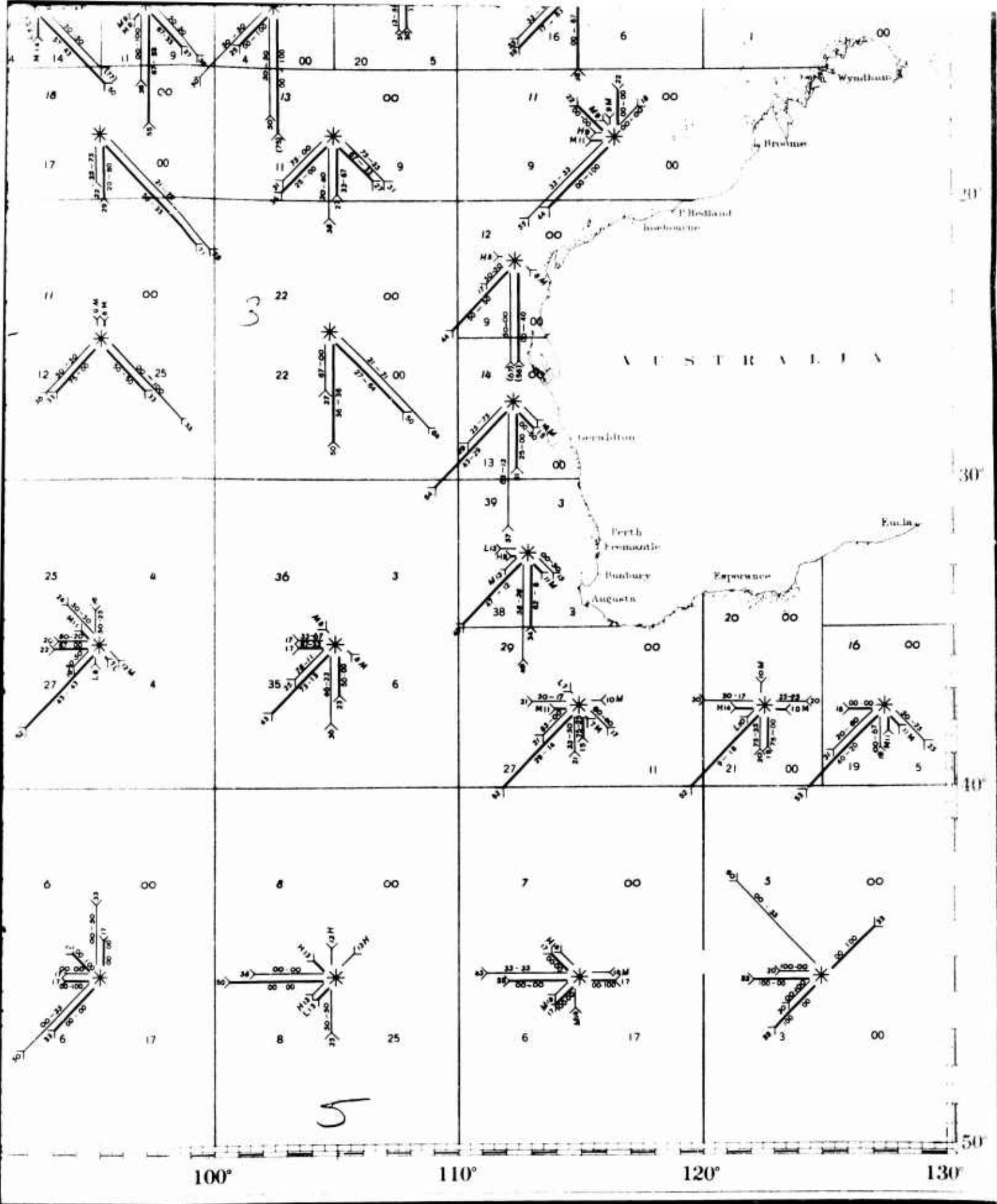
50°

60°

70°

80°

90°



6

10° 20° 30° 40° 50°



INDIAN 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 Hydrographic Office to and including the year 1942, the majority of the observations having been taken during the years 1932 to 1940 inclusive. The Hydrographic 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.

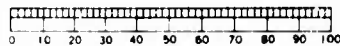
When the percent of direction is 15 or over, the conditions within the direction are shown along the shaft of the arrow in percentage of low and medium seas or swells, the first figure from the center is always the percent of low. The percent of high seas or swells within the direction is the remainder 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.

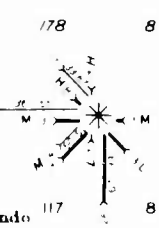
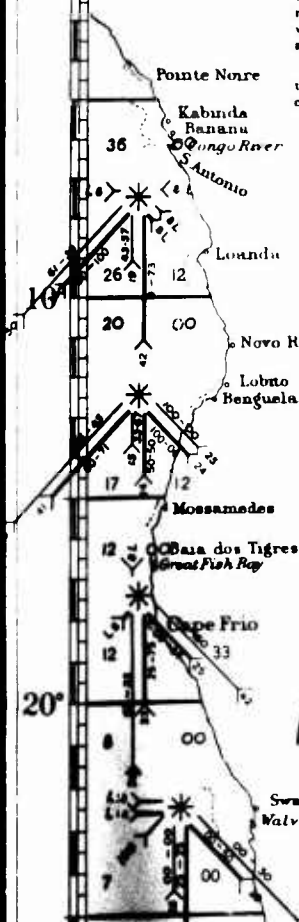
For example - The attached rose should be read as follows

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.

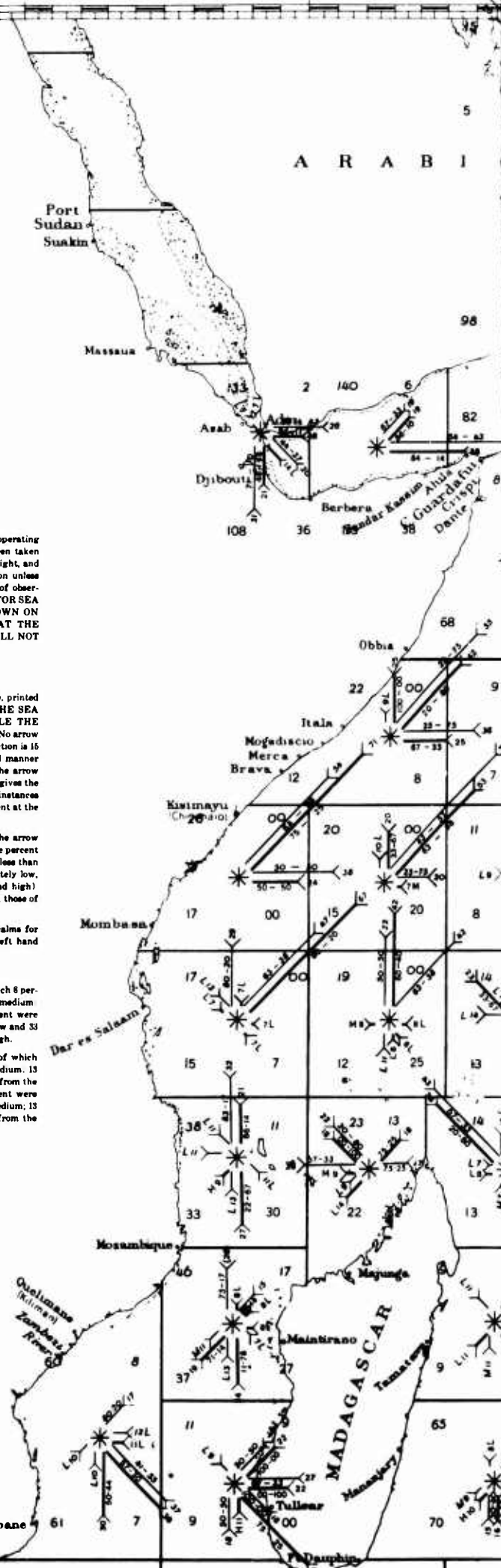
Swell calculations (heavy line arrow) were based on 117 observations of which 8 percent were calms, 7 percent were from the east and predominately medium, 13 percent were from the southeast and predominately low; 26 percent were from the south of which 33 percent were low and 67 percent were medium;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

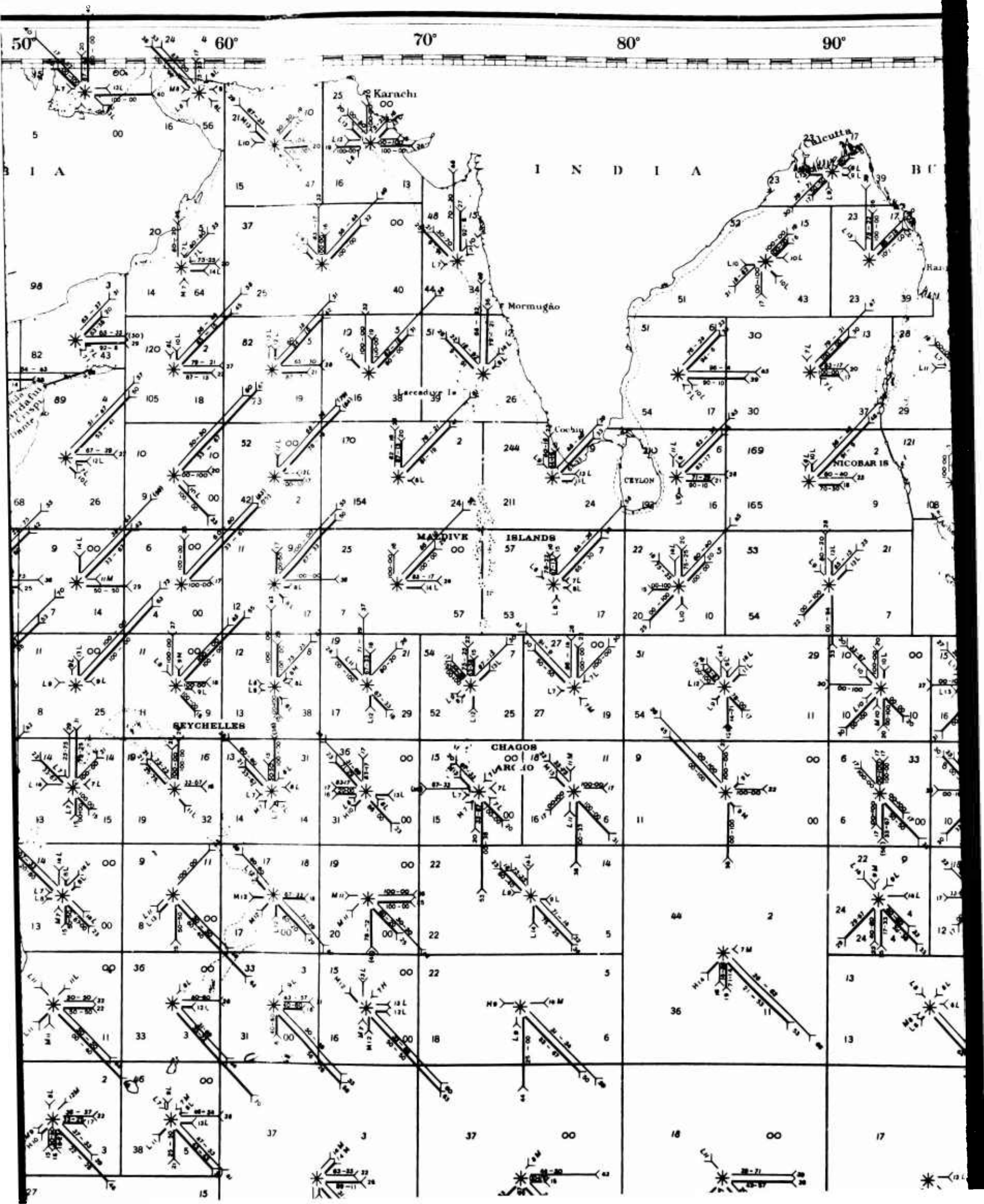


SCALE OF SEA OR SWELL PERCENTAGES



A F R I C A





100°

110°

120°

130°

CHINA

BERMA

FRENCH INDOCHINA

THAILAND

LUZON

MINDANAO

BORNEO

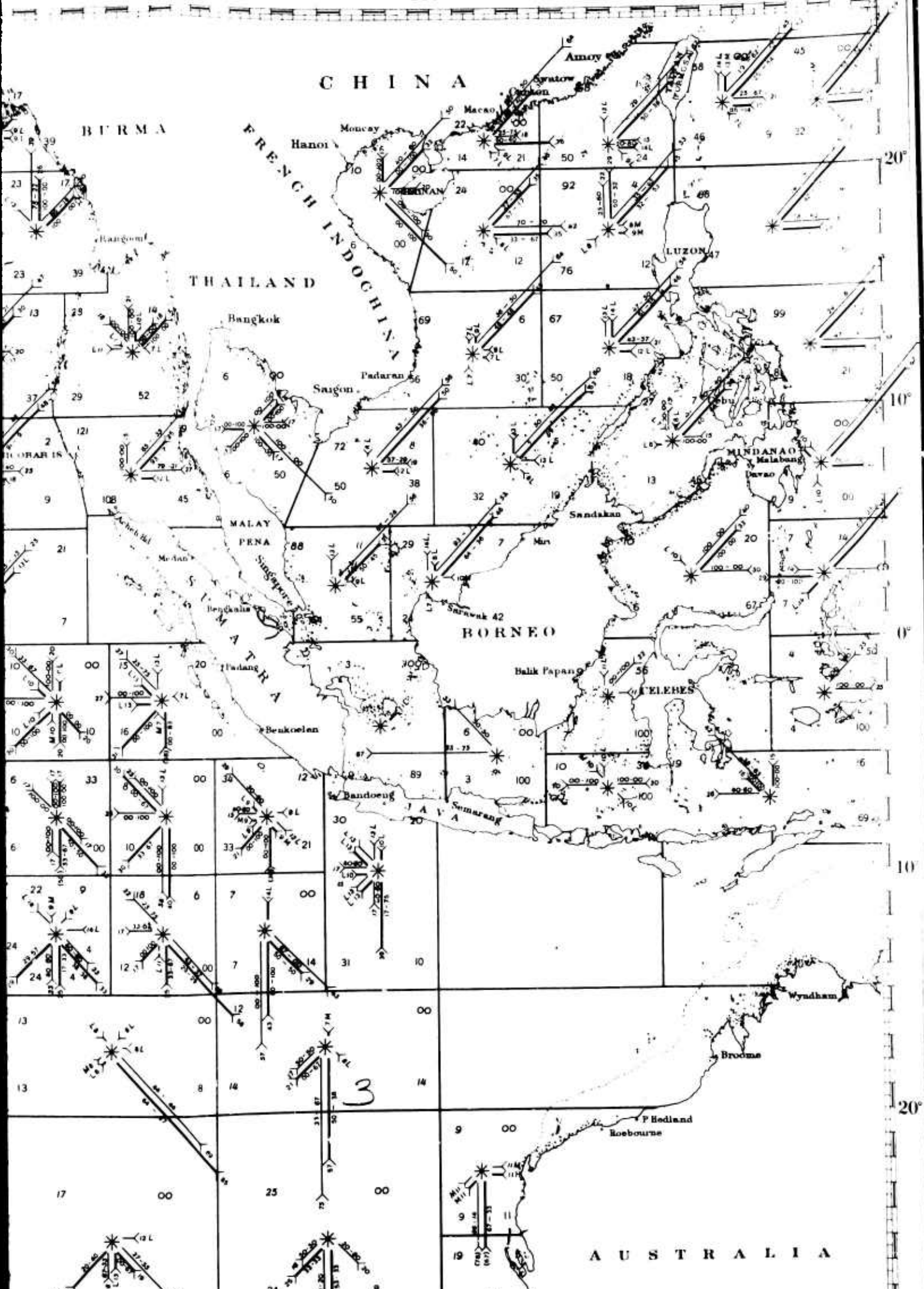
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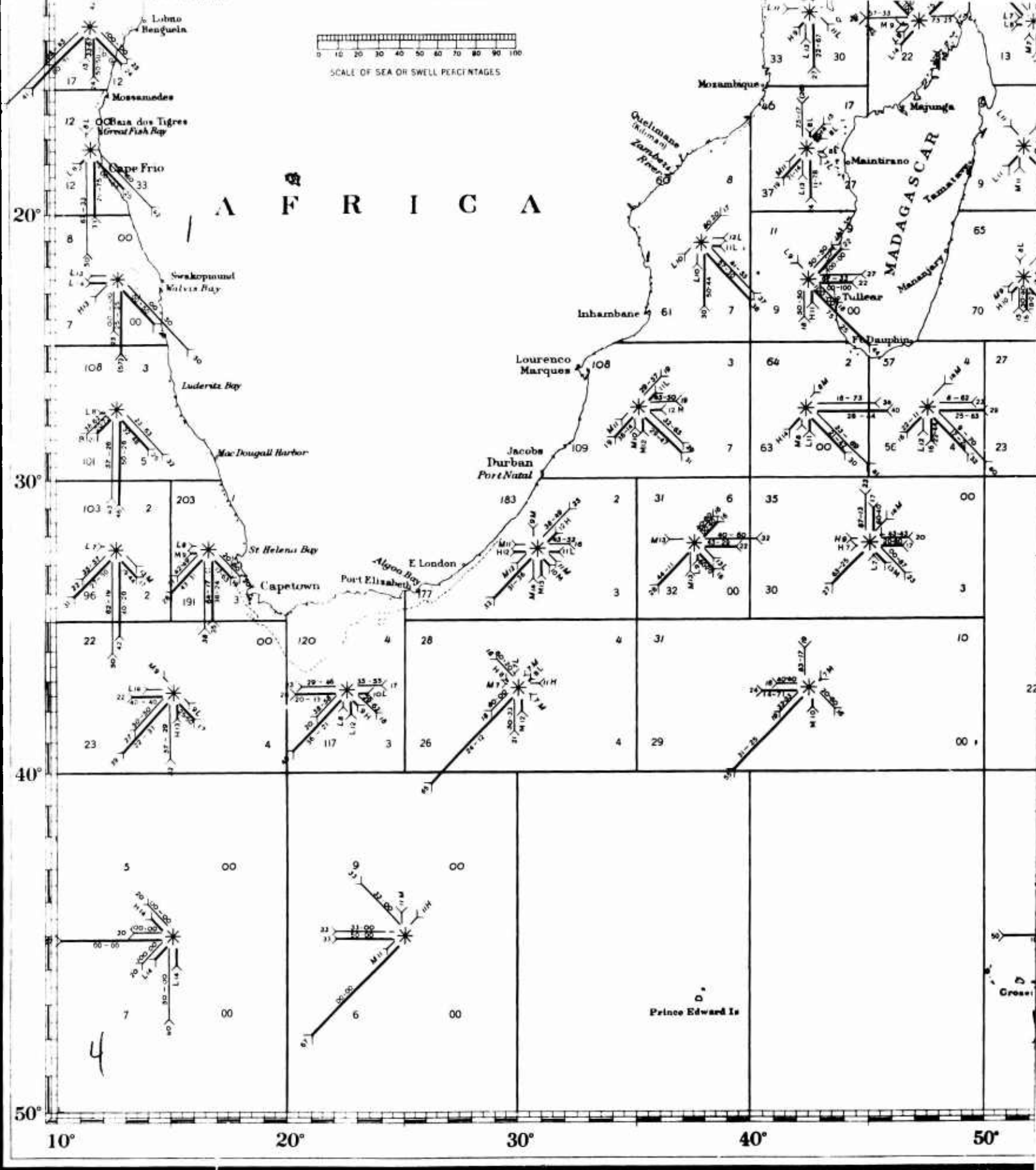
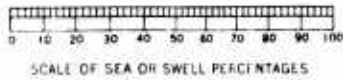
MALAY PENINSULA

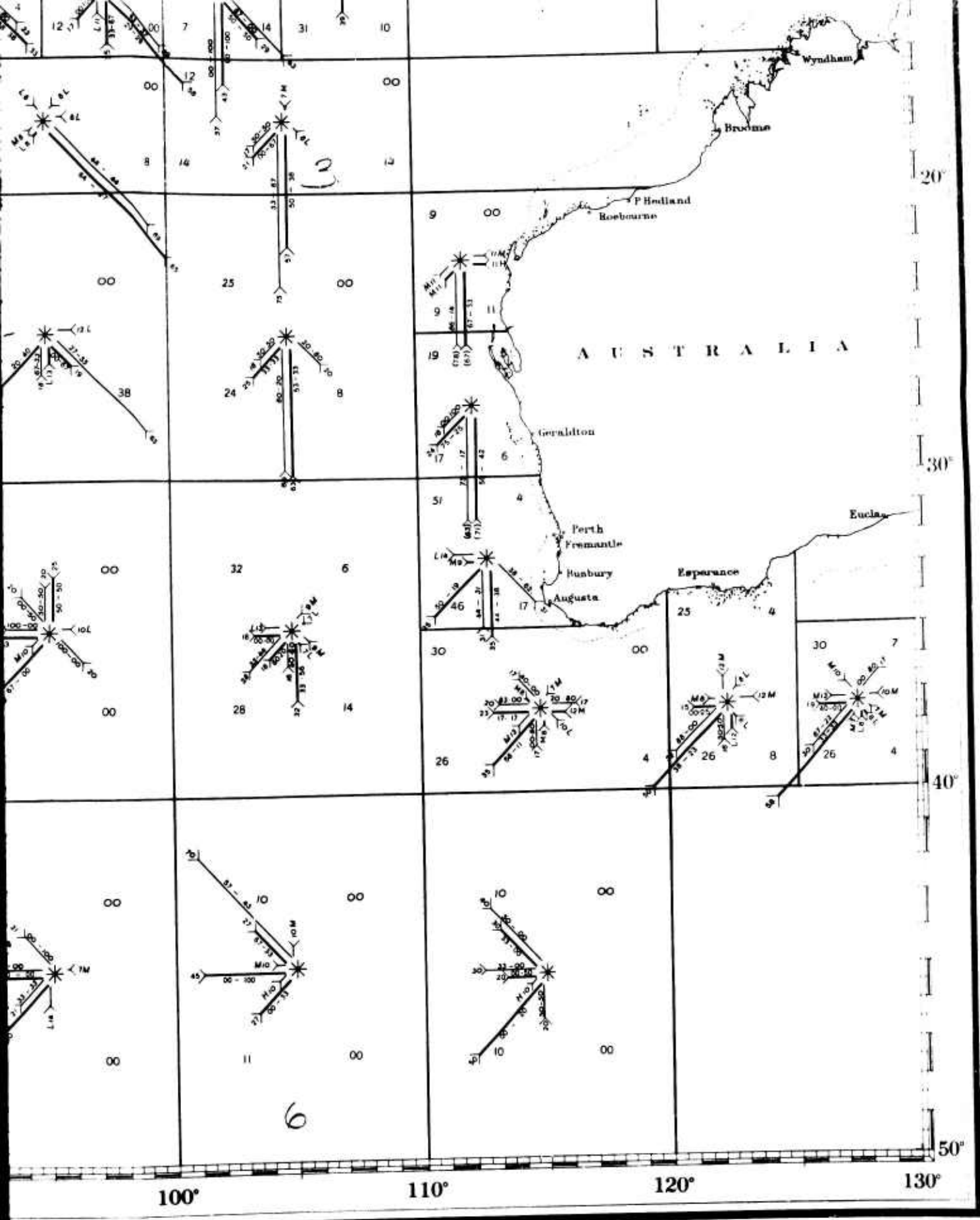
SUMATRA

JAVA

A U S T R A L I A









INDIAN OCEAN SEA AND SWELL CHART

MARCH

PREVAILING SEAS, SWELLS AND CALMS

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METHOD OF PRESENTATION

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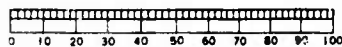
When the percent of direction is 15 or over, the conditions within the direction are shown along the shaft of the arrow in percentage of low and medium seas or swells, the first figure from the center is always the percent of low. The percent of high seas or swells within the direction is the remainder 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.

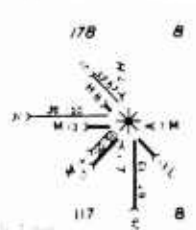
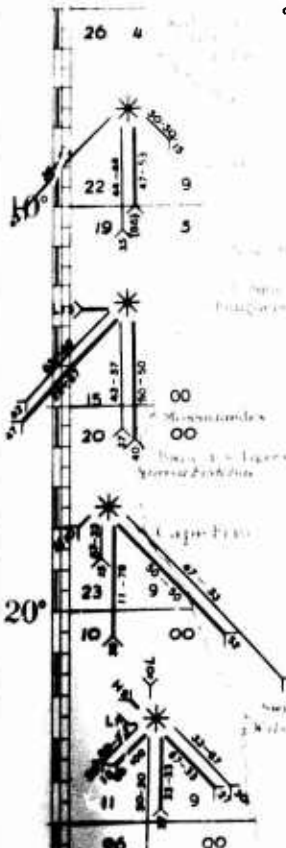
For example—The attached rose should be read as follows:

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 34 percent were medium; 17 percent were from the northwest, of which 67 percent were low and 22 percent were medium; 7 percent were from the north and predominately high.

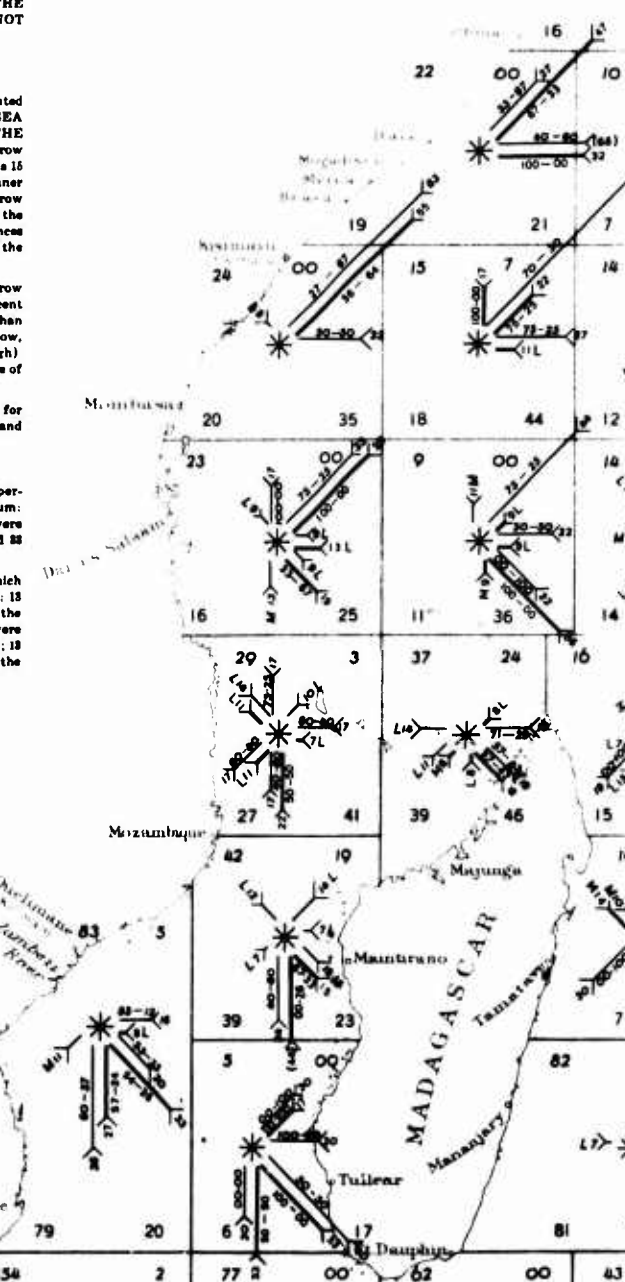
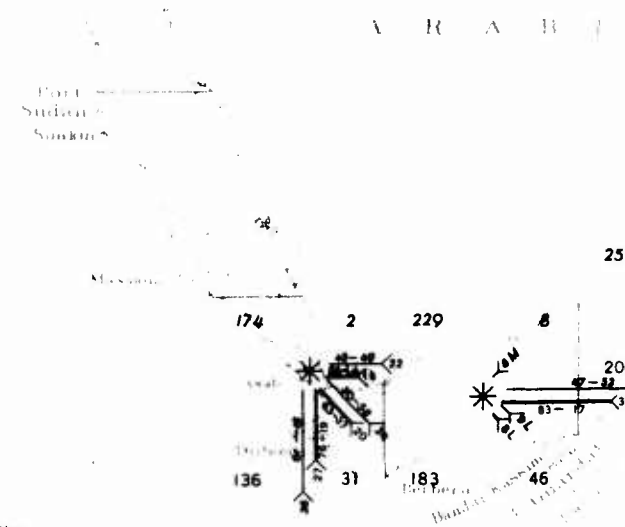
Swell calculations (heavy line arrow) were based on 117 observations of which 8 percent were calms; 7 percent were from the east and predominately medium; 18 percent were from the southeast and predominately low; 26 percent were from the south of which 33 percent were low and 67 percent were medium; 17 percent were from the southwest, of which 50 percent were low and 50 percent were medium; 18 percent were from the west and predominately medium; 8 percent were from the northwest and predominately high.

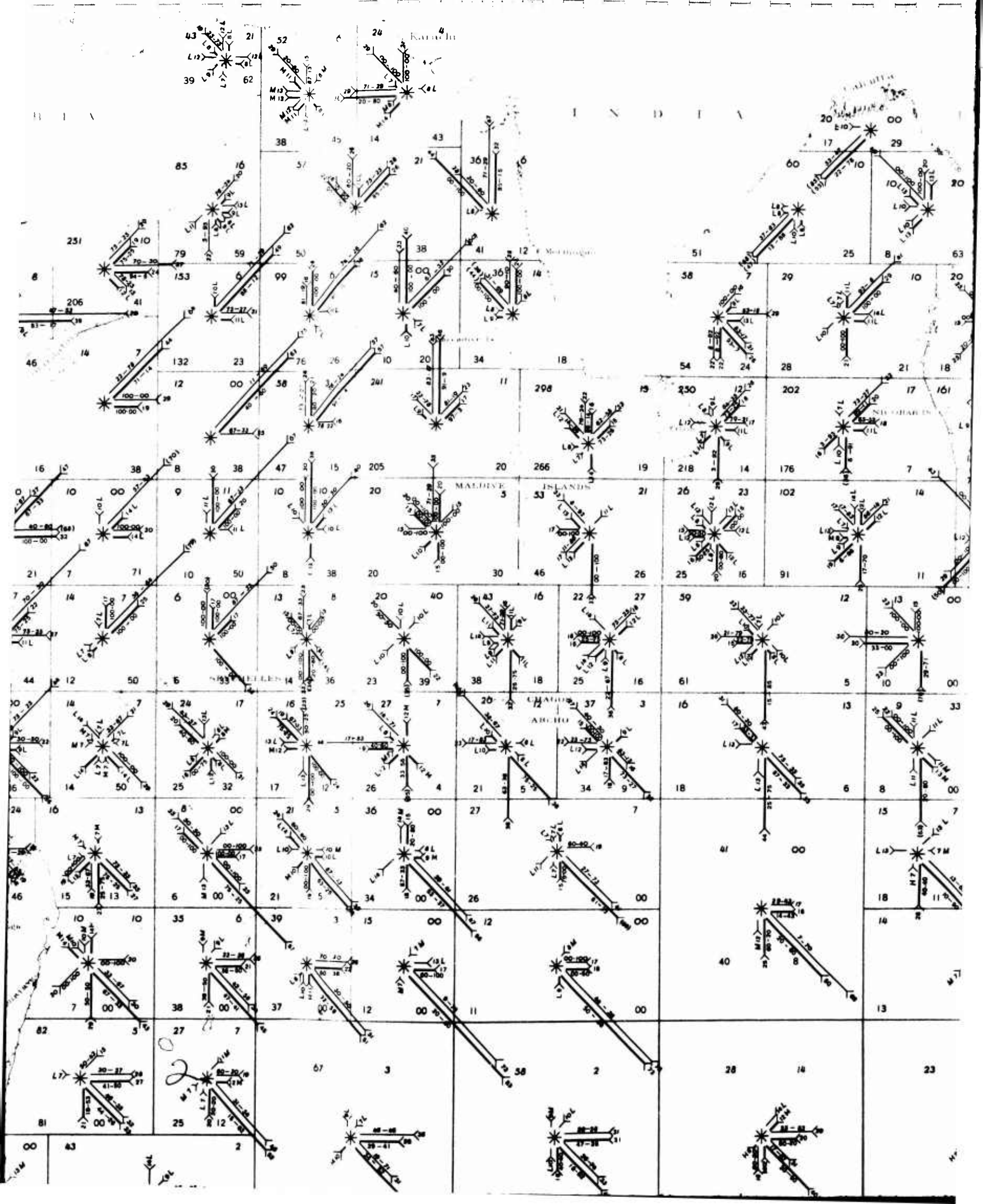


SCALE OF SEA OR SWELL PERCENTAGES



A F R I C A





CHINA

THE GREAT WALL OF CHINA

HAINAN

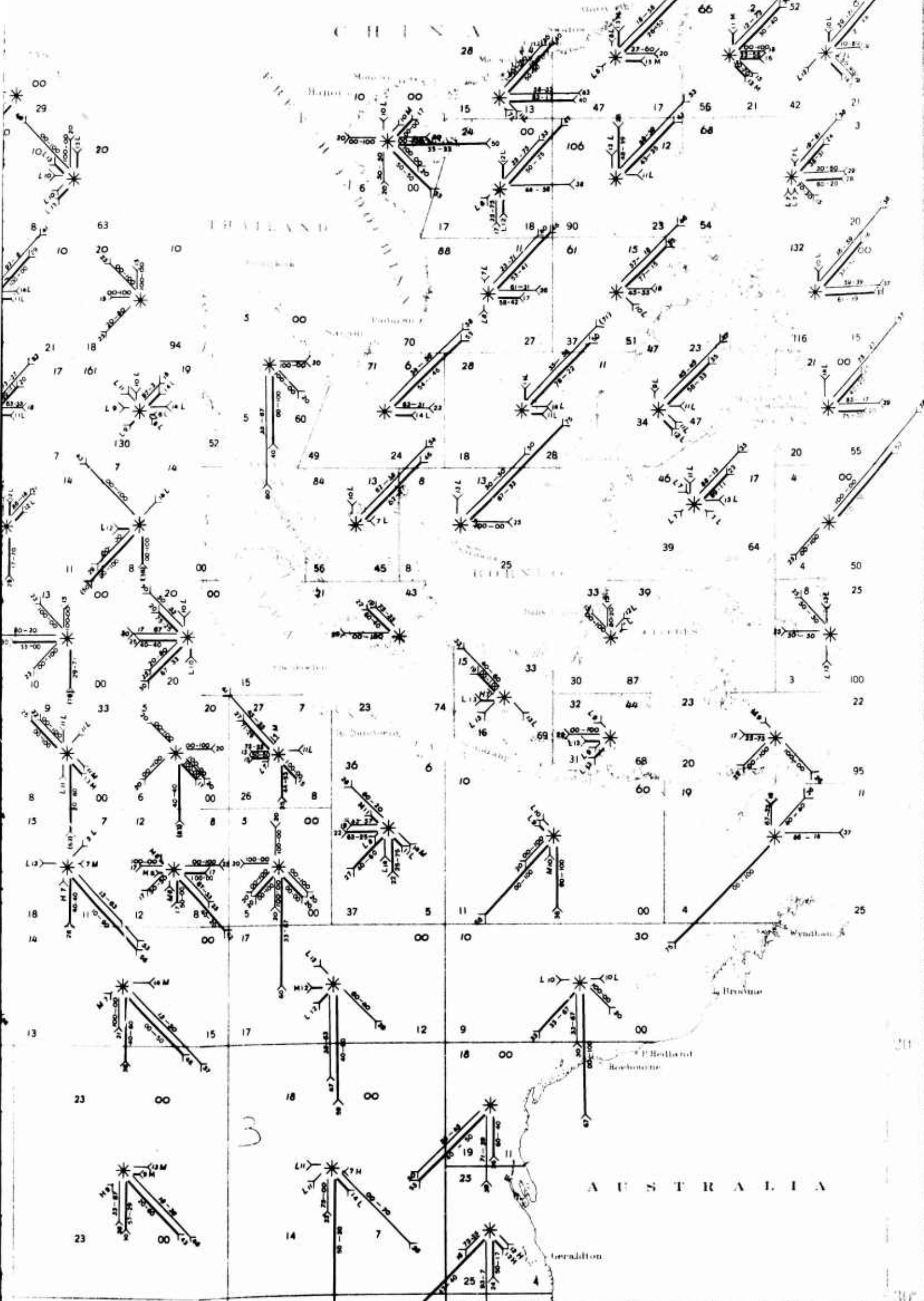
INDONESIA

THE PHILIPPINES

THE MALAY PENINSULA

A U S T R A L I A

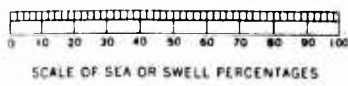
Geraldton



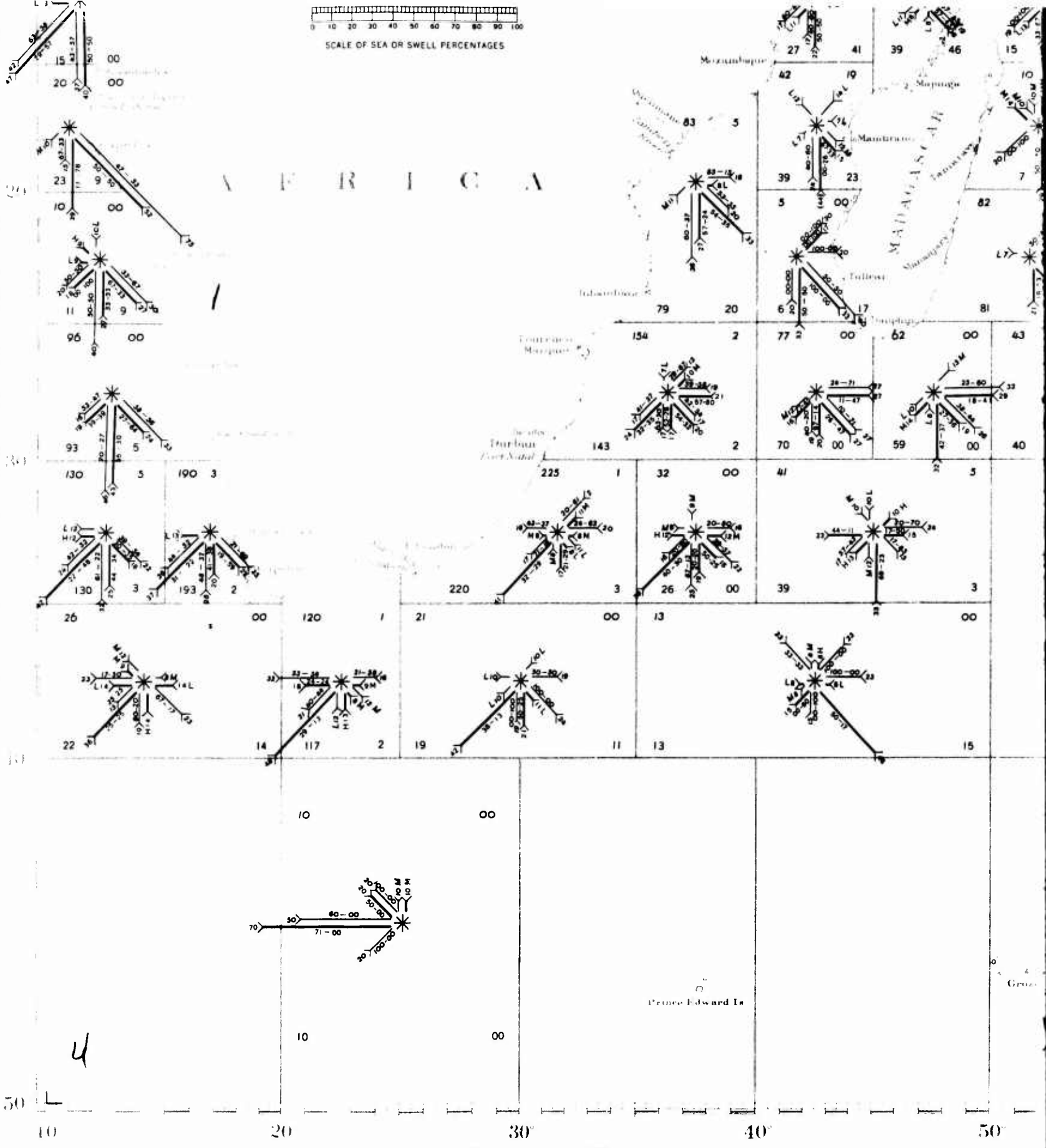
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11

11

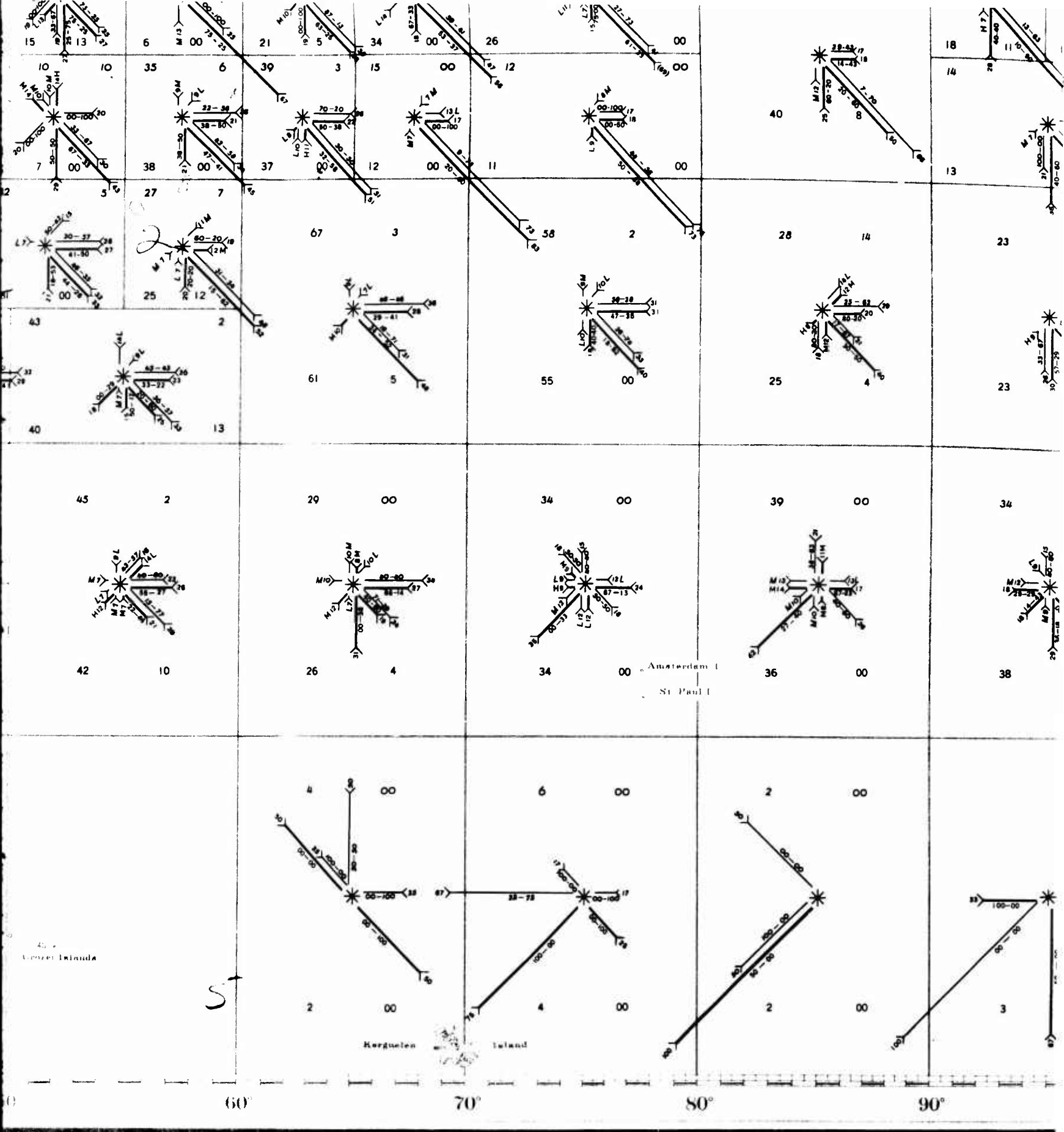


A F R I C A



4





S

40
Cape Verde Islands

Herguelen Island

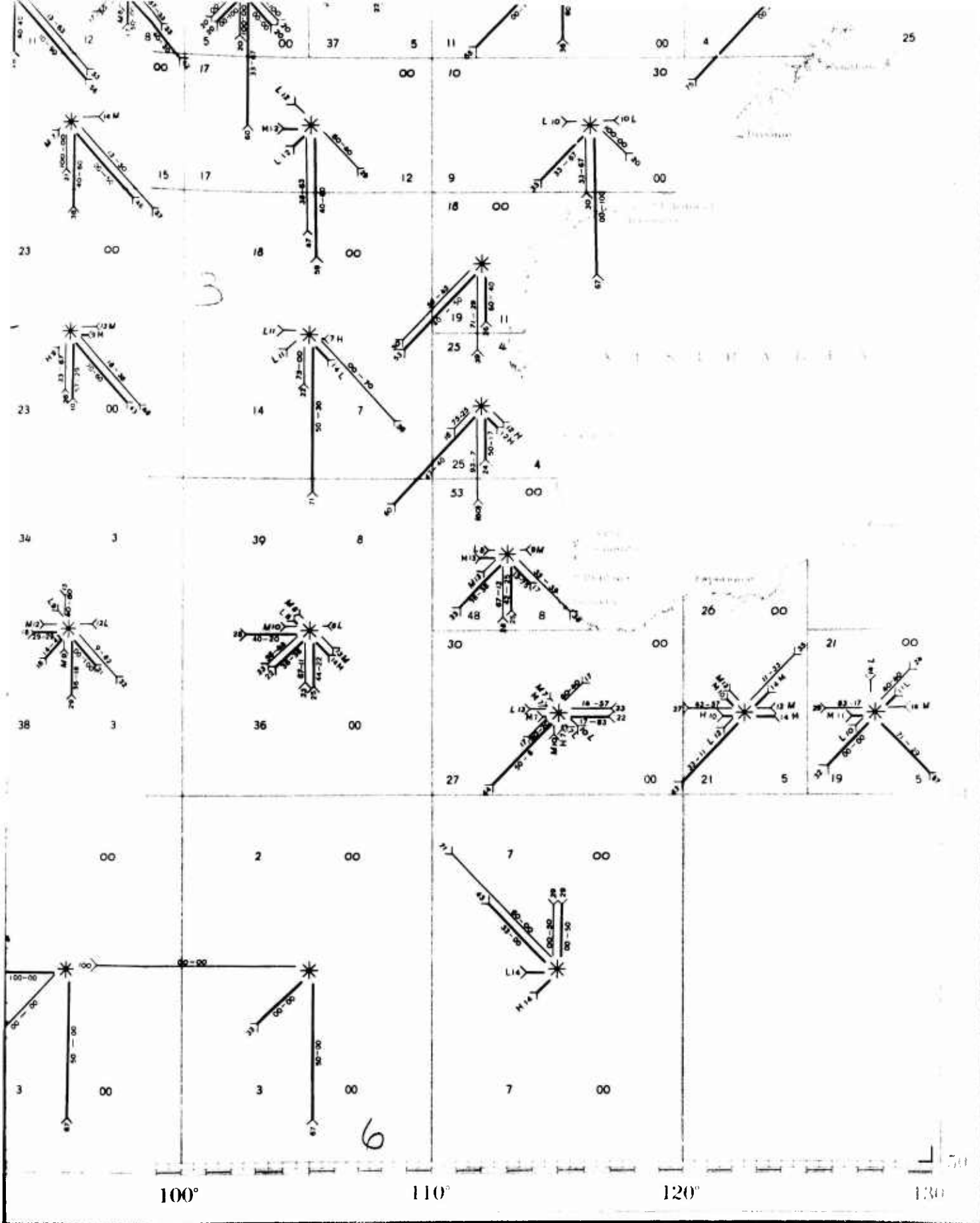
Amsterdam I
St. Paul I

60°

70°

80°

90°



10° 20° 30° 40° 50° 30



INDIAN OCEAN SEA AND SWELL CHART

APRIL

PREVAILING SEAS, SWELLS AND CALMS

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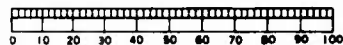
When the percent of direction is 15 or over, the conditions within the direction are shown along the shaft of the arrow in percentage of low and medium seas or swells, the first figure from the center is always the percent of low. The percent of high seas or swells within the direction is the remainder 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.

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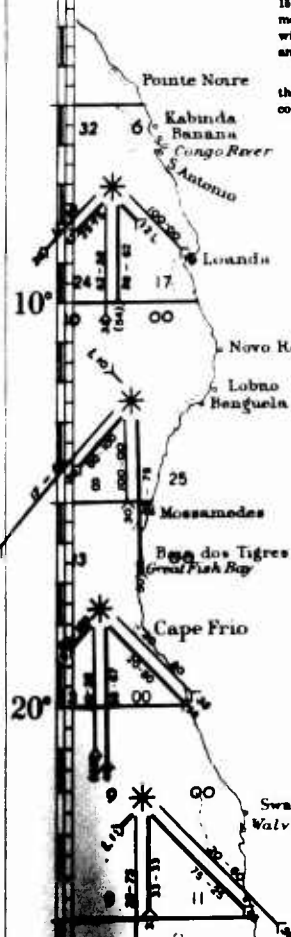
For example—The attached rose should be read as follows:

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 23 percent were medium; 7 percent were from the north and predominately high.

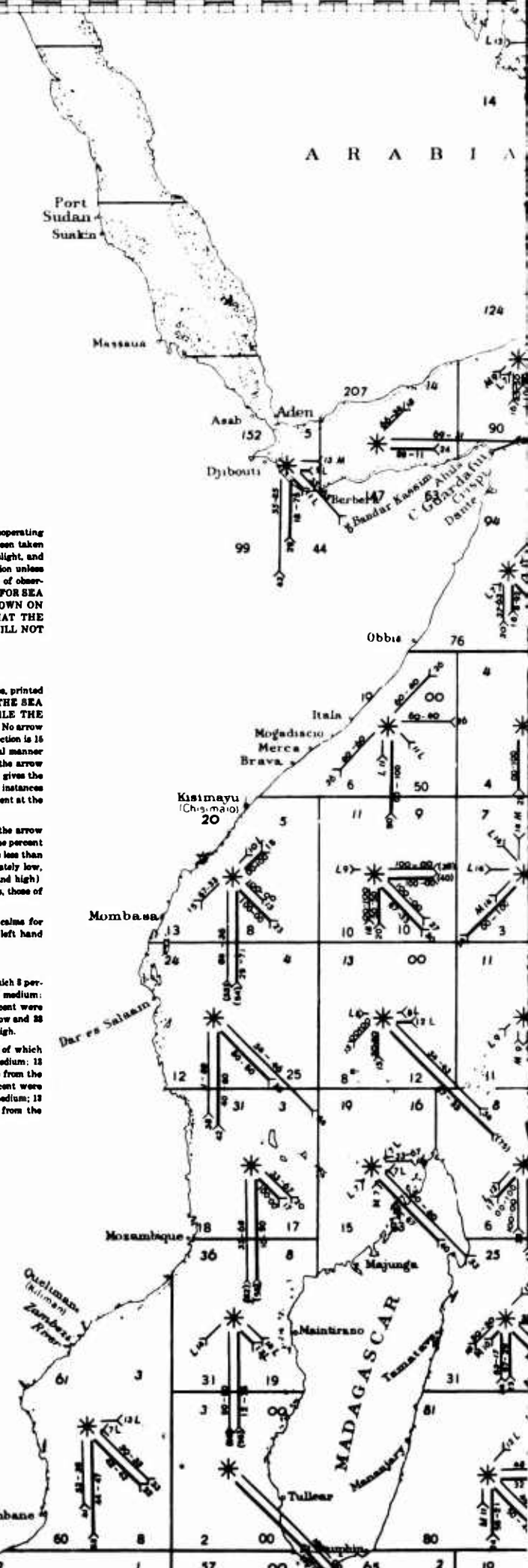
Swell calculations (heavy line arrow) were based on 117 observations of which 8 percent were calms; 7 percent were from the east and predominately medium; 18 percent were from the southeast and predominately low; 26 percent were from the south of which 23 percent were low and 67 percent were medium; 17 percent were from the southwest, of which 80 percent were low and 20 percent were medium; 12 percent were from the west and predominately medium; 5 percent were from the northwest and predominately high.



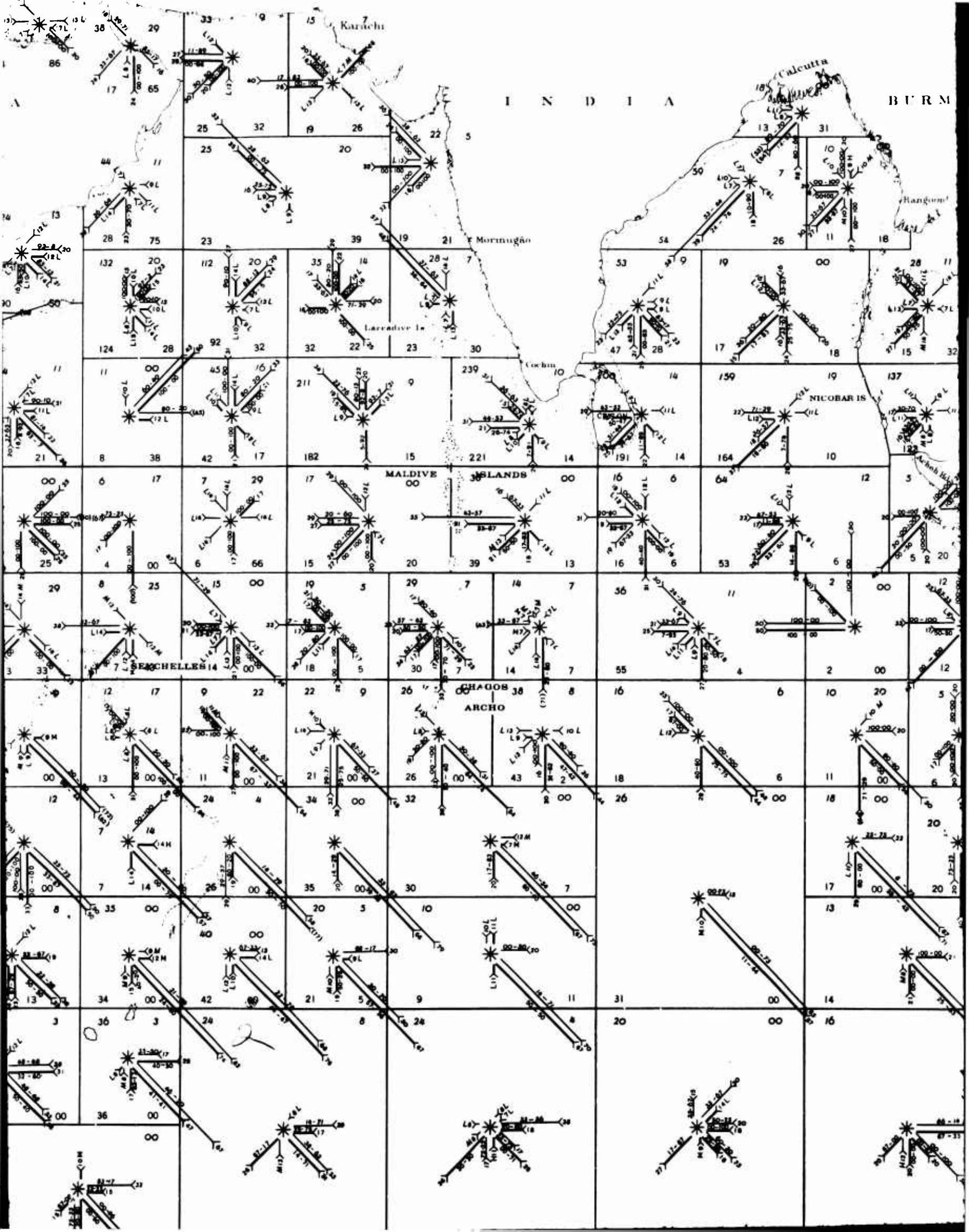
SCALE OF SEA OR SWELL PERCENTAGES

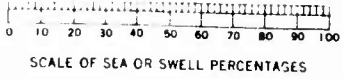


A F R I C A

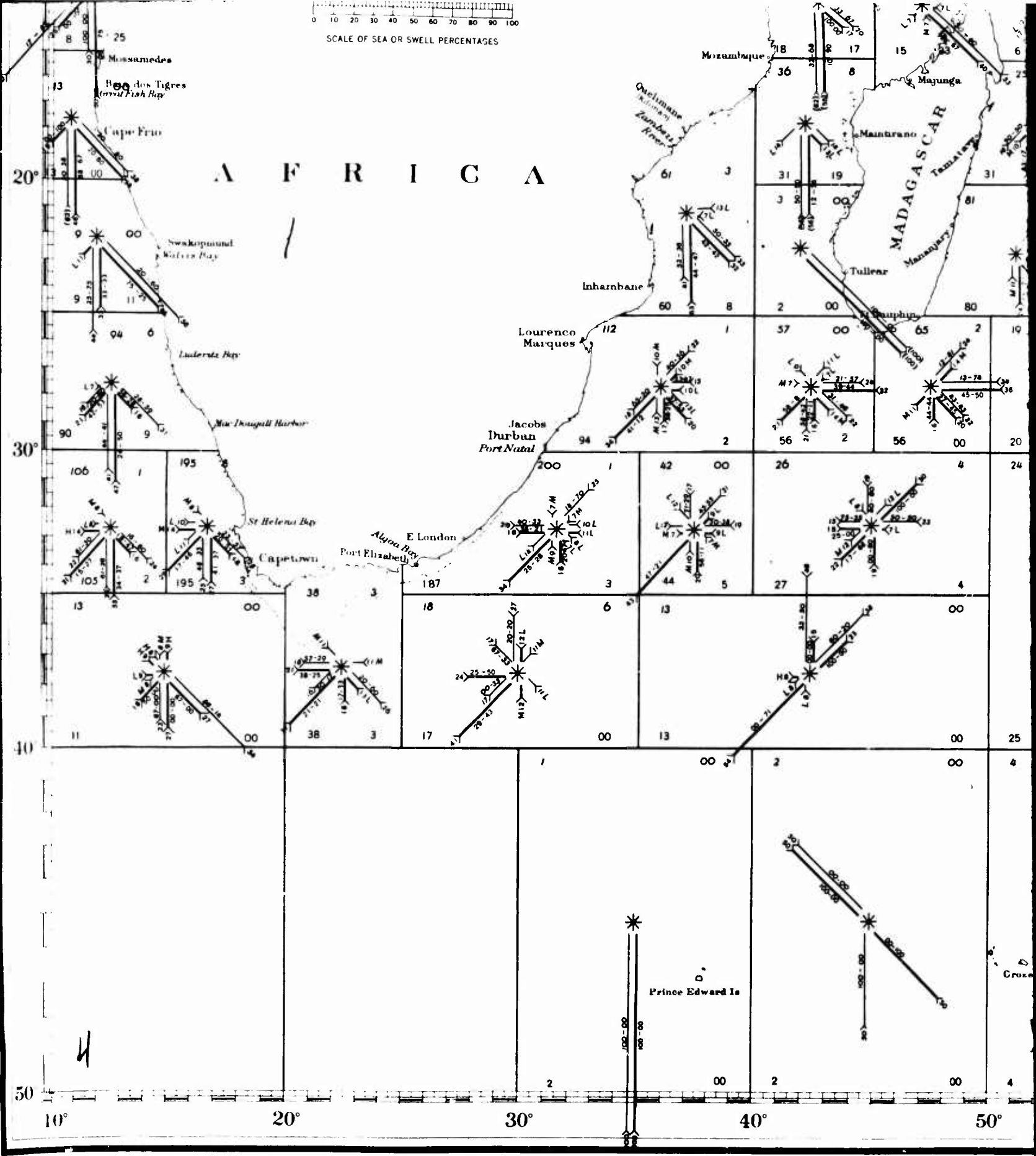


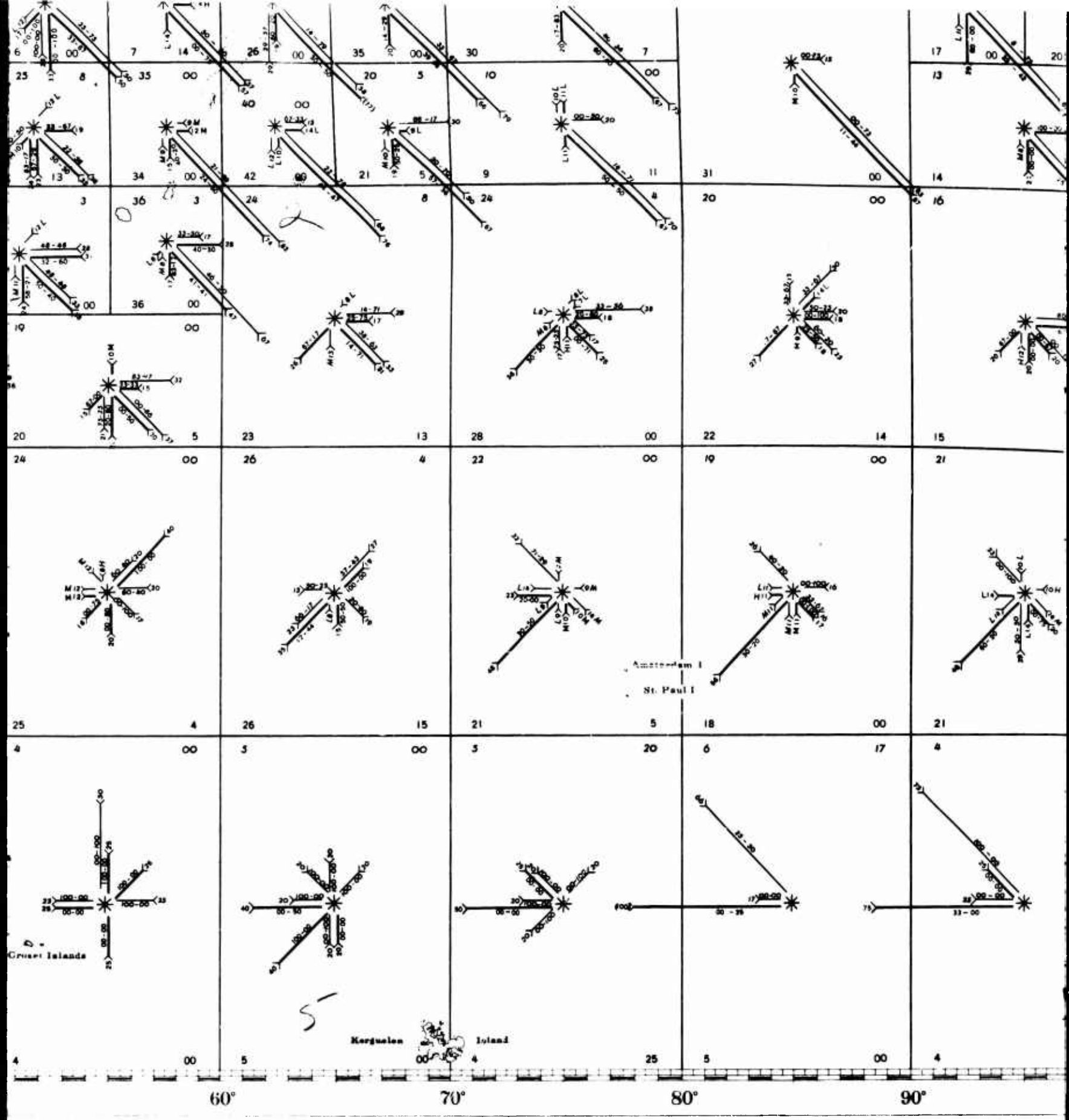
A R A B I A

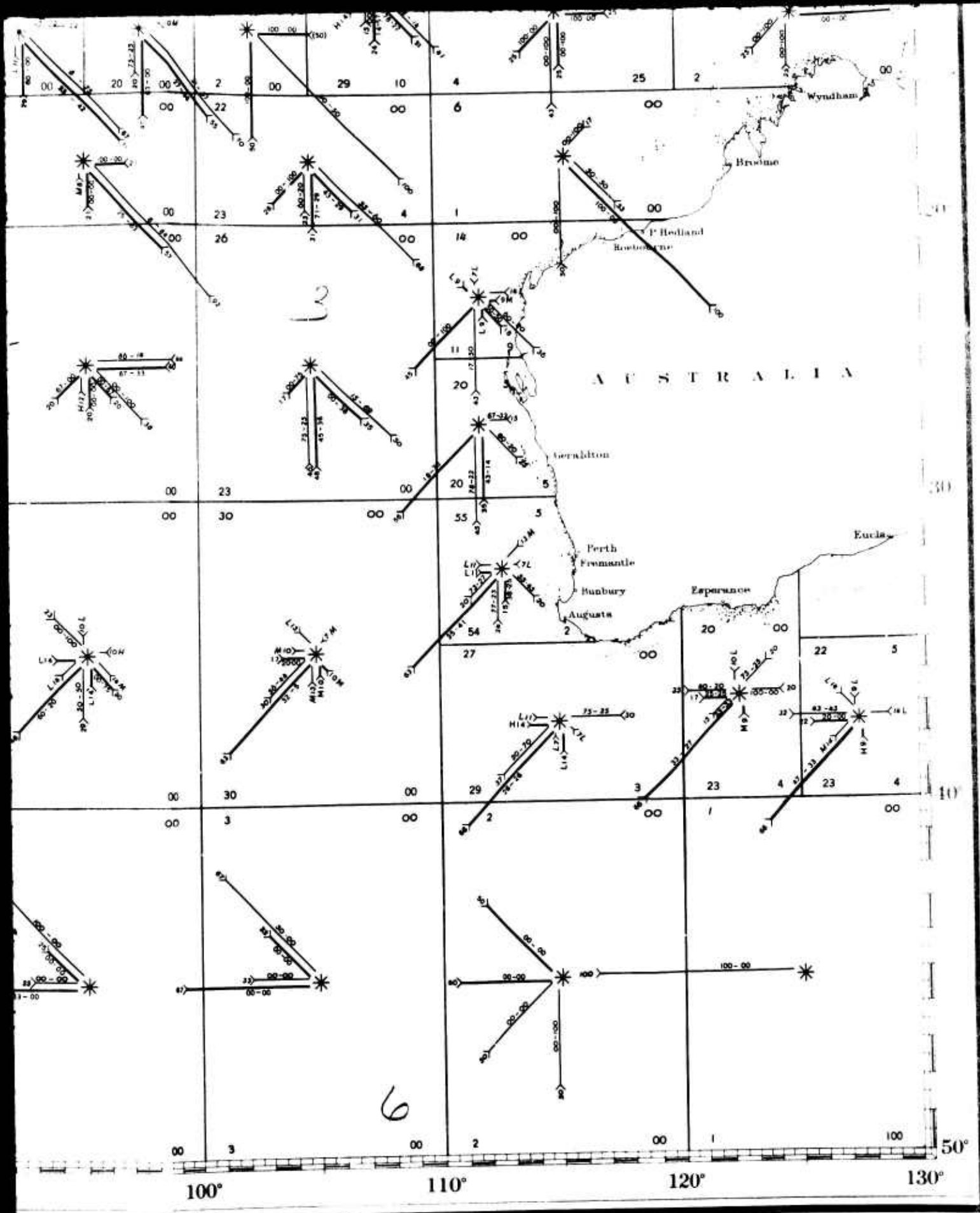


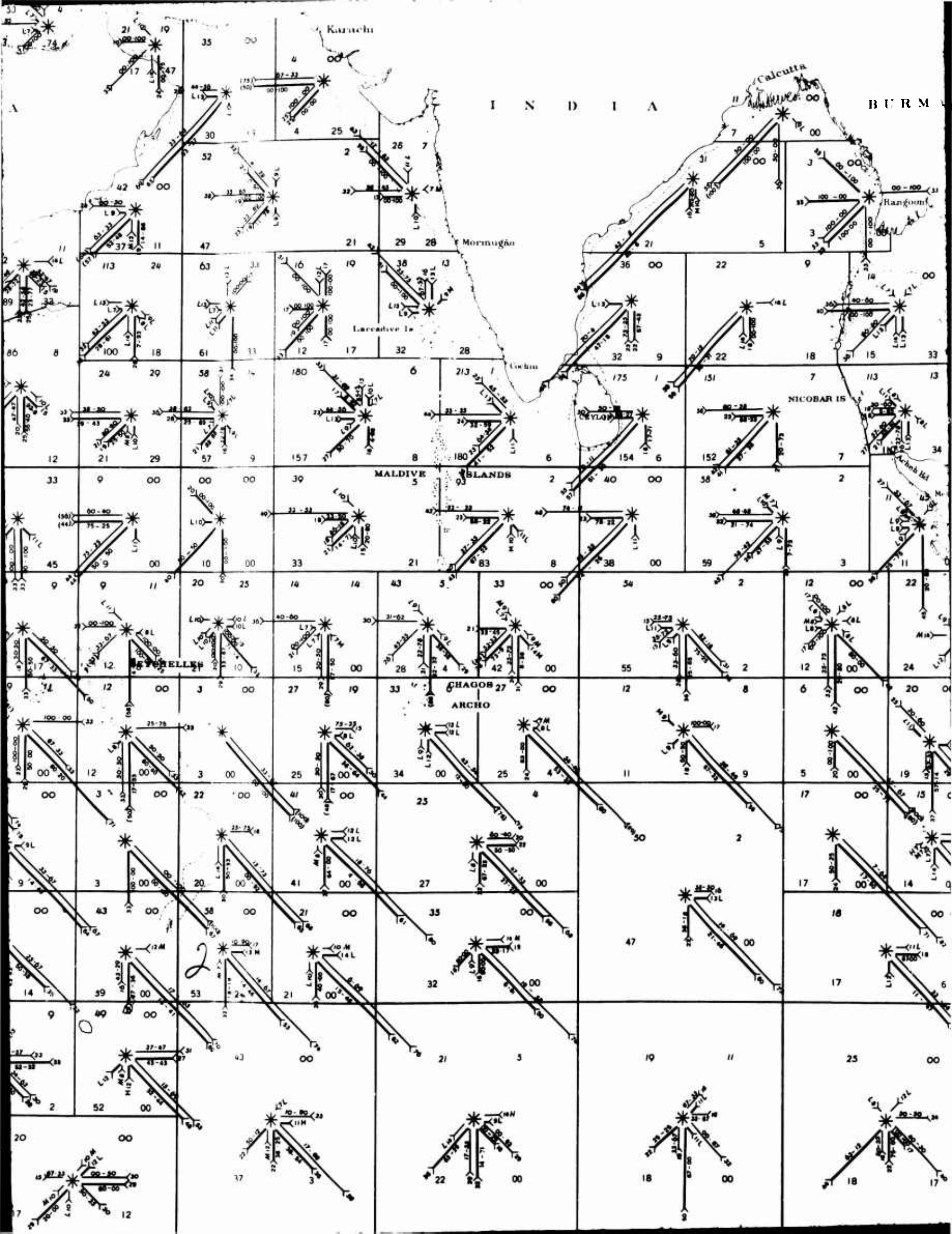


A F R I C A



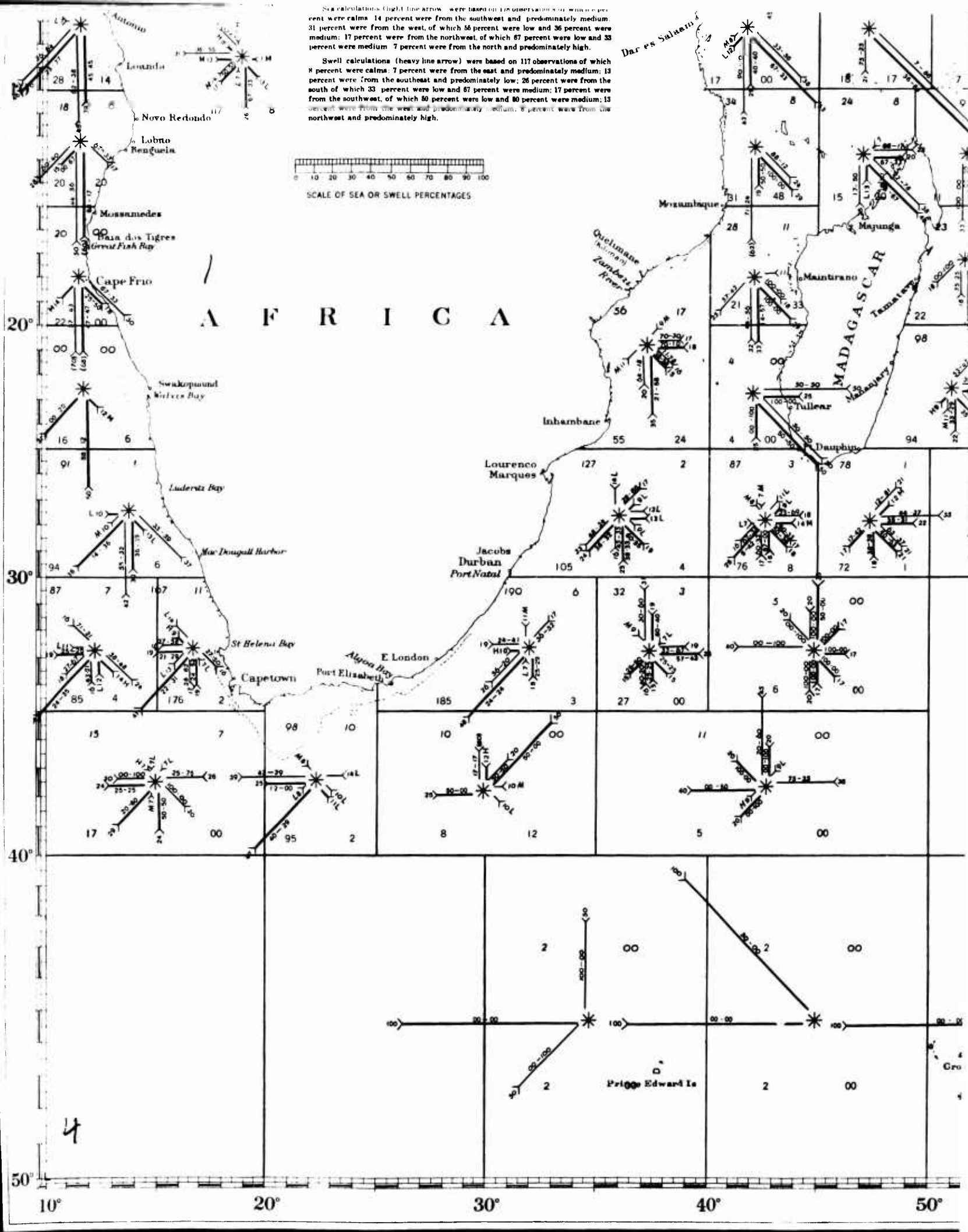


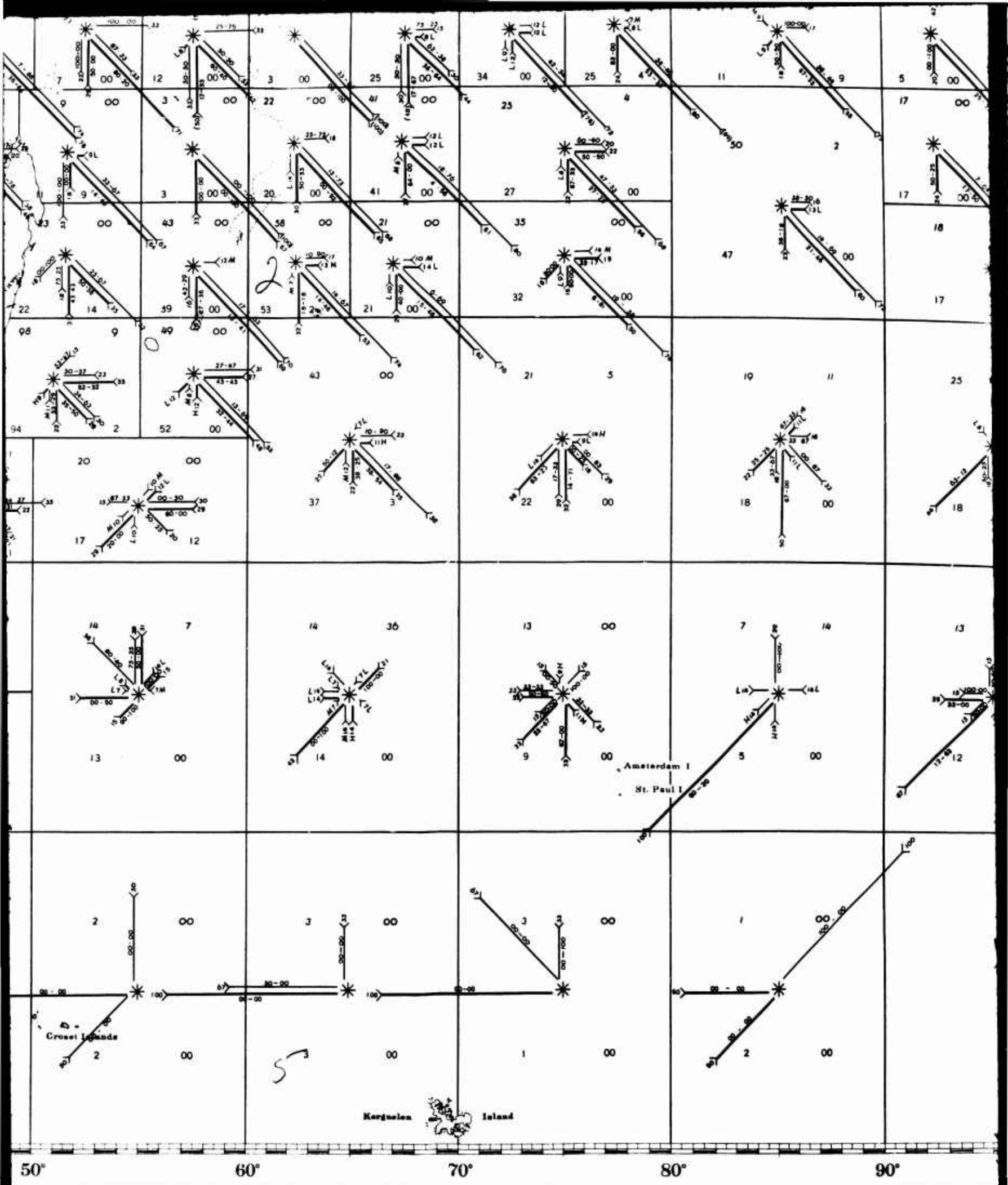




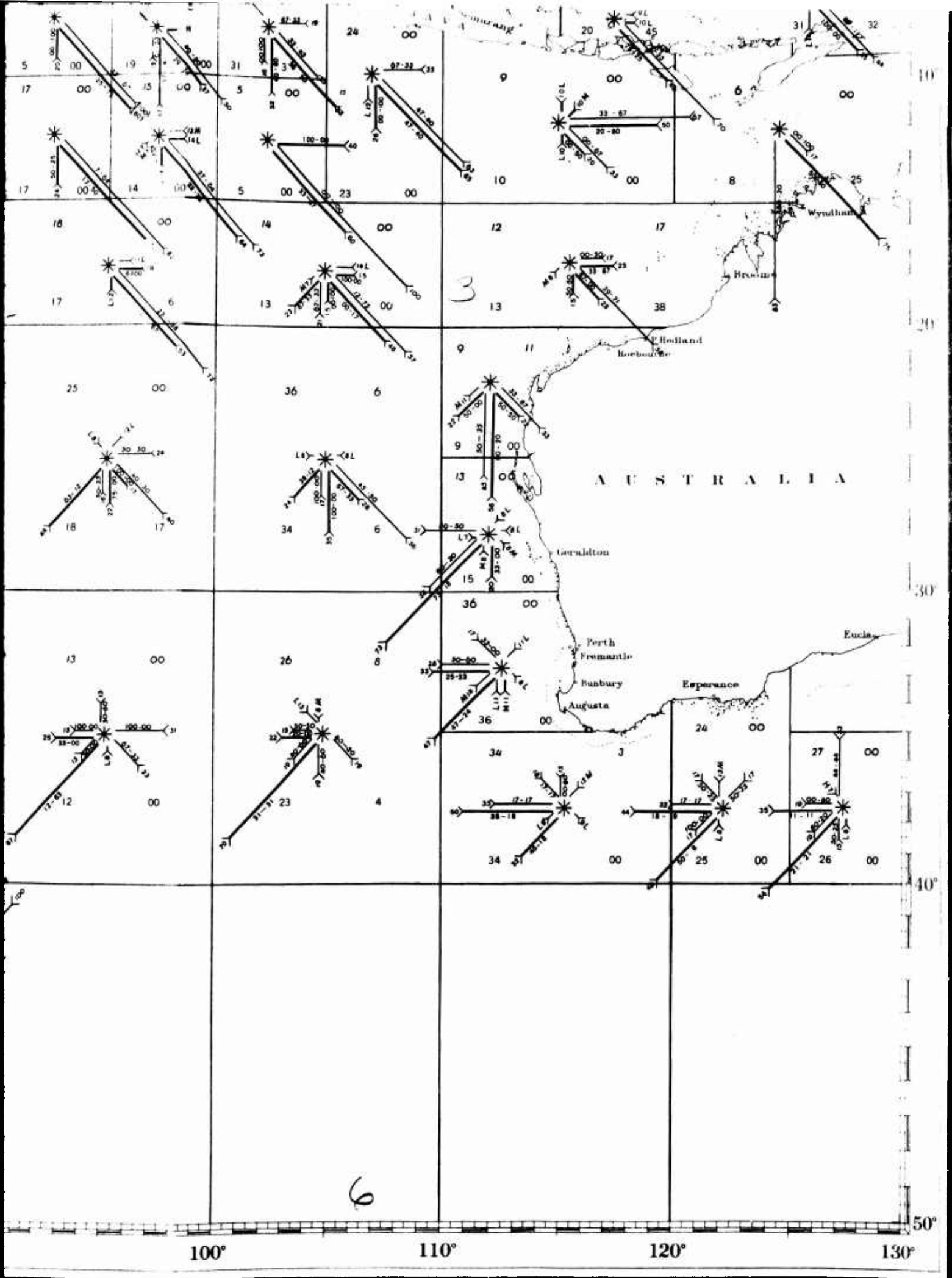
Sea calculations (thick line arrow) were based on 117 observations of which 8 percent were calms, 14 percent were from the southwest and predominately medium, 31 percent were from the west, of which 16 percent were low and 36 percent were medium, 17 percent were from the northwest, of which 67 percent 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 80 percent were low and 80 percent were medium, 13 percent were from the west and predominately medium, 8 percent were from the northwest and predominately high.





50° 60° 70° 80° 90°



10° 20° 30° 40° 50°



INDIAN 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 Hydrographic Office to and including the year 1942, the majority of the observations having been taken during the years 1932 to 1940 inclusive. The Hydrographic 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 seas 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.

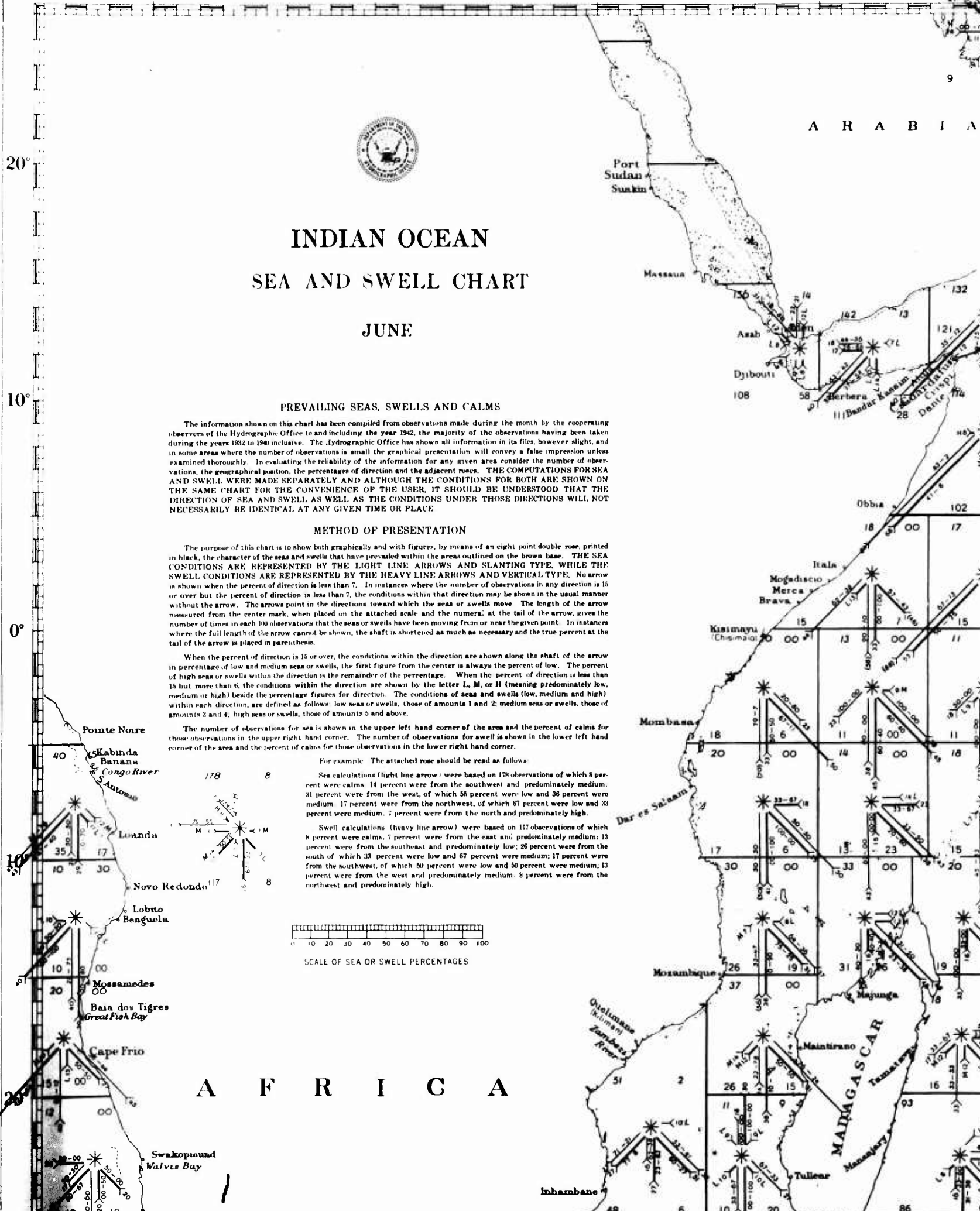
Swell calculations (heavy line arrow) were based on 117 observations of which 8 percent were calms, 7 percent were from the east and predominately medium; 13 percent were from the southeast and predominately low; 28 percent were from the south of which 33 percent were low and 67 percent were medium;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

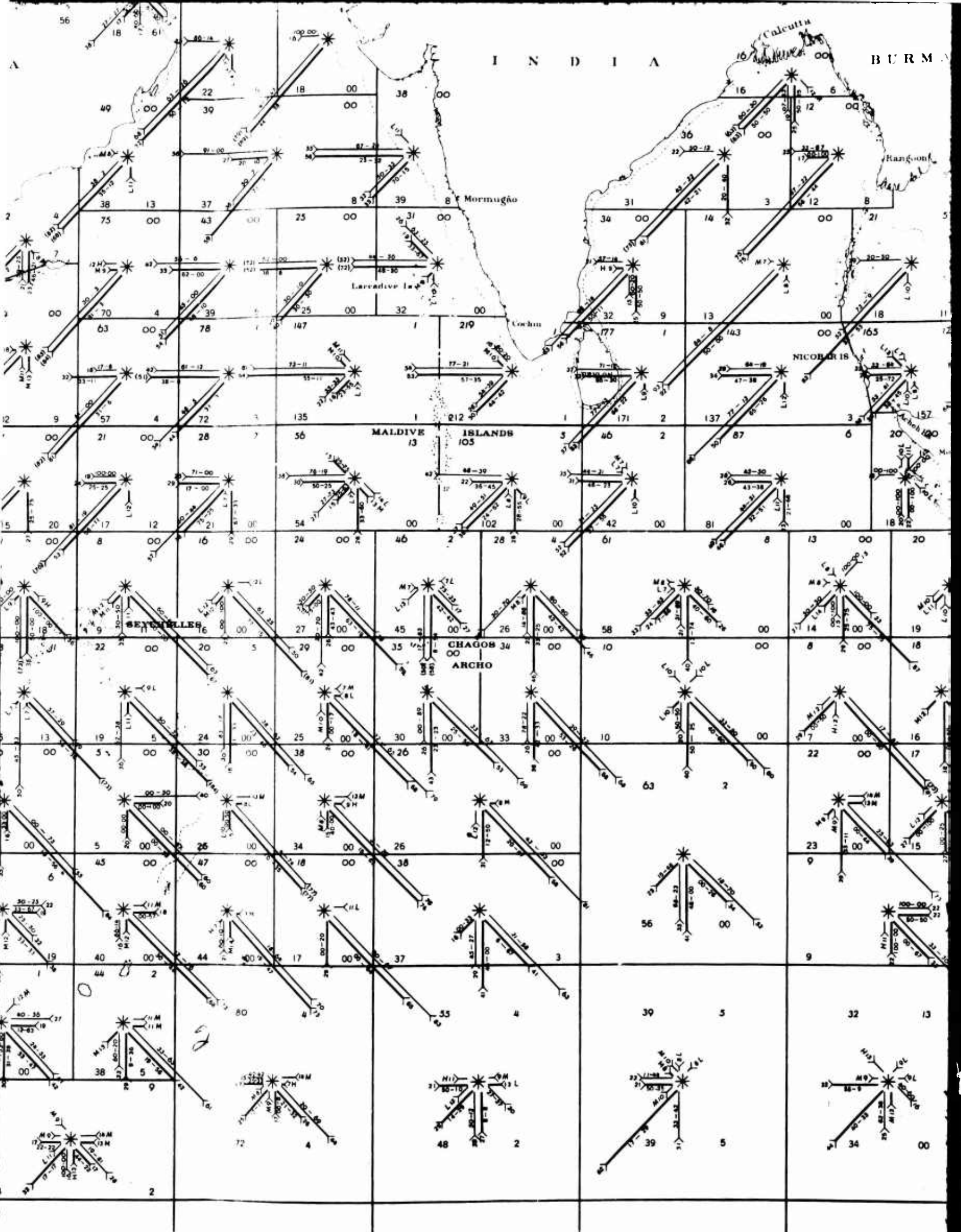


SCALE OF SEA OR SWELL PERCENTAGES

A F R I C A

A R A B I A



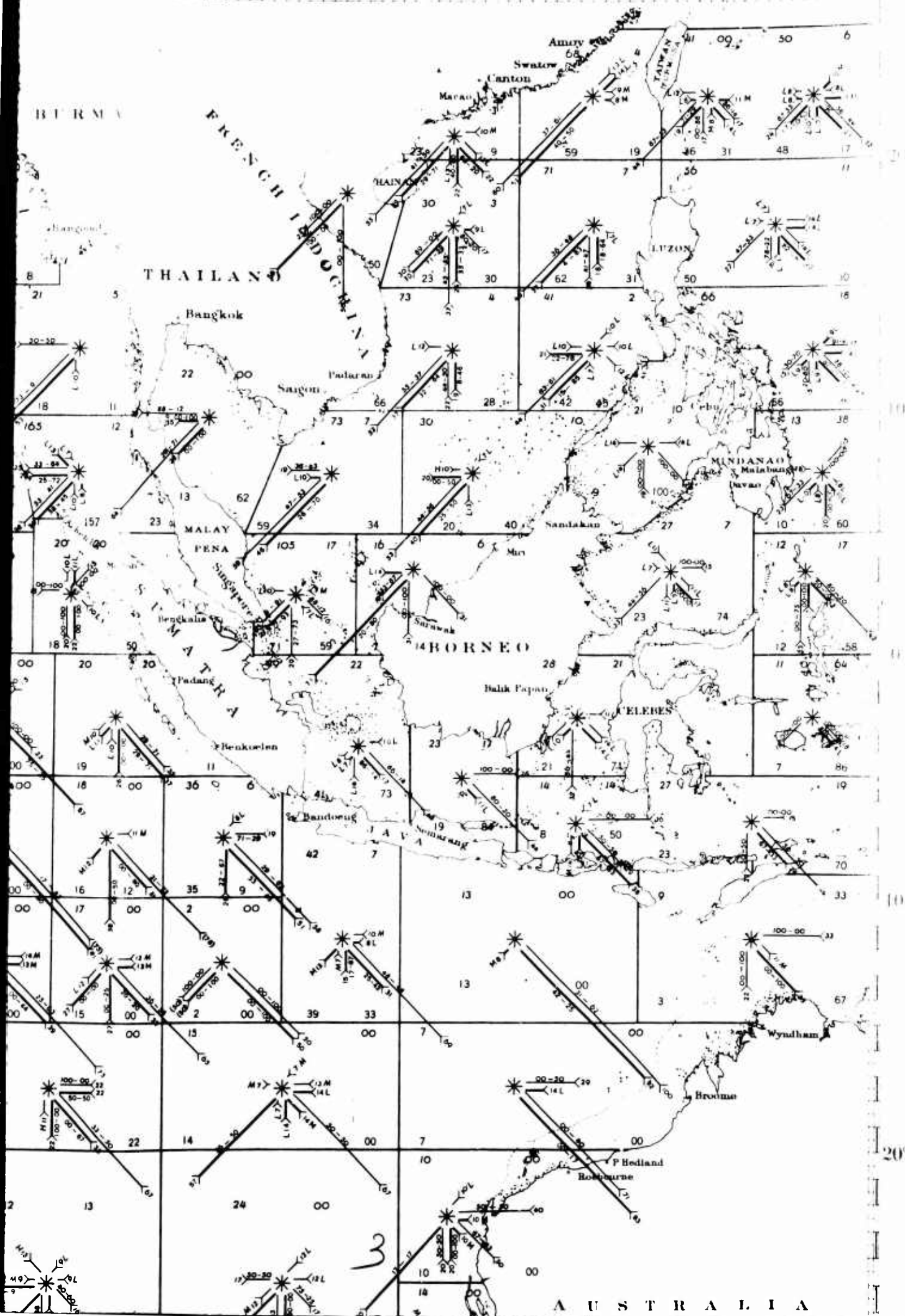


100°

110°

120°

130°



BERMA

THAILAND

Bangkok

MALAY PENINSULA

SINGAPORE

BORNEO

CELEBES

BROOME

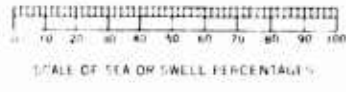
A U S T R A L I A

3

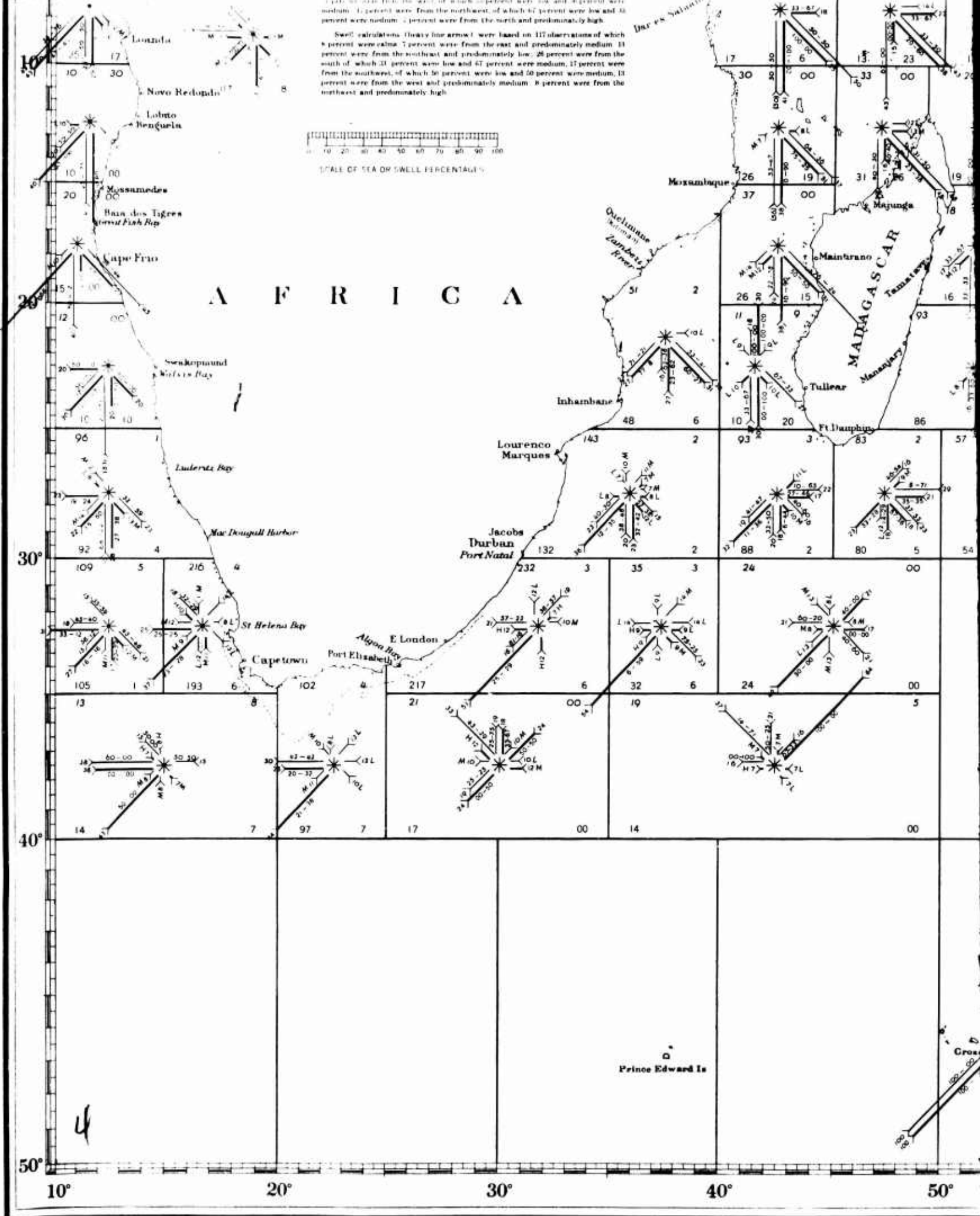
20°

1 percent were from the west, of which 6 percent were low and 4 percent were medium; 1 percent were from the northwest, of which 67 percent were low and 33 percent were medium; 2 percent were from the north and predominately high.

Swell calculations (heavy line arrow) were based on 117 observations of which 8 percent were calm; 7 percent were from the east and predominately medium; 11 percent were from the southwest 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 36 percent were low and 64 percent were medium; 11 percent were from the west and predominately medium; 8 percent were from the northwest and predominately high.

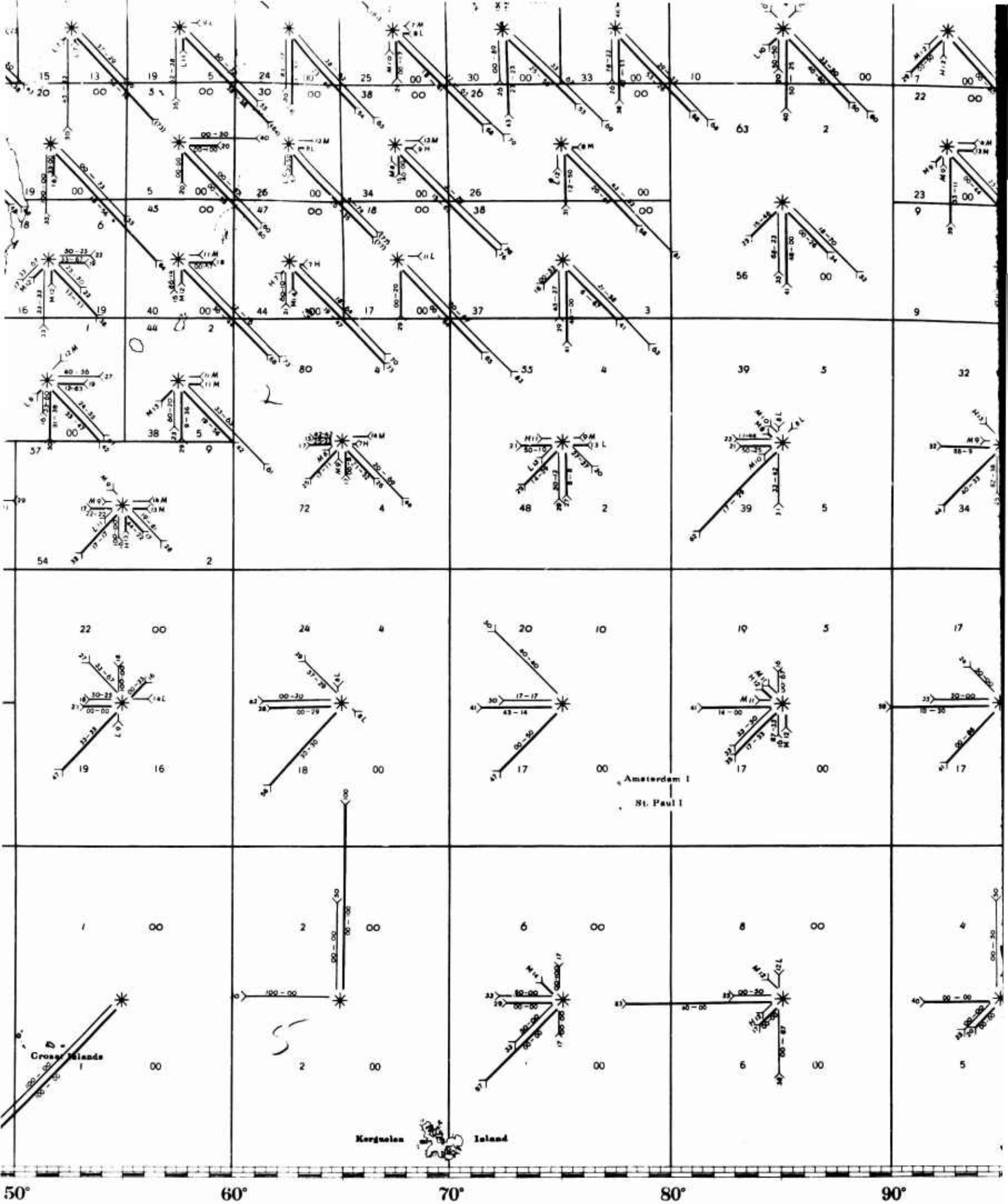


A F R I C A

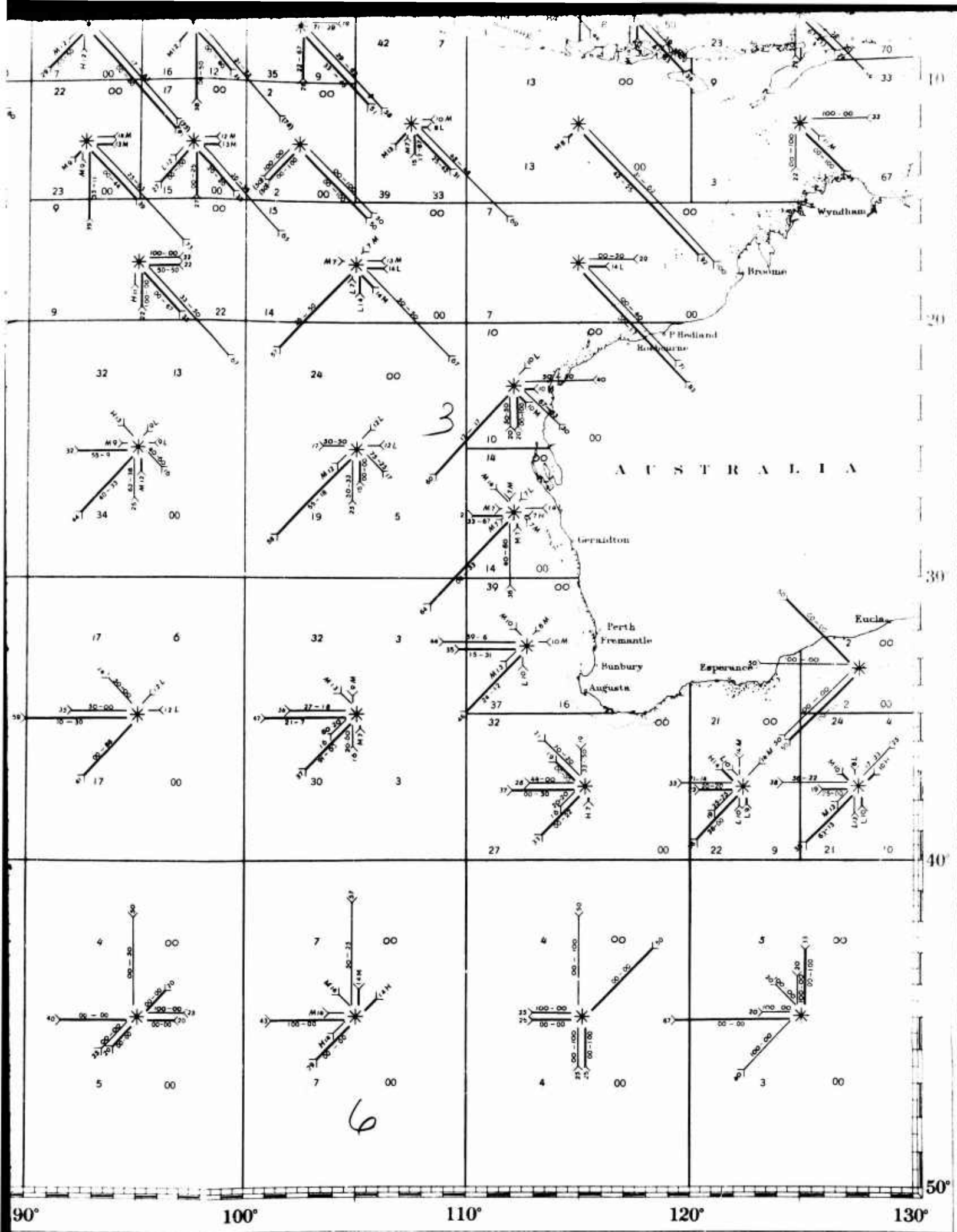


4

Gro...



50° 60° 70° 80° 90°



10° 20° 30° 40° 50°



INDIAN 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 Hydrographic Office to and including the year 1942, the majority of the observations having been taken during the years 1932 to 1940 inclusive. The Hydrographic 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.

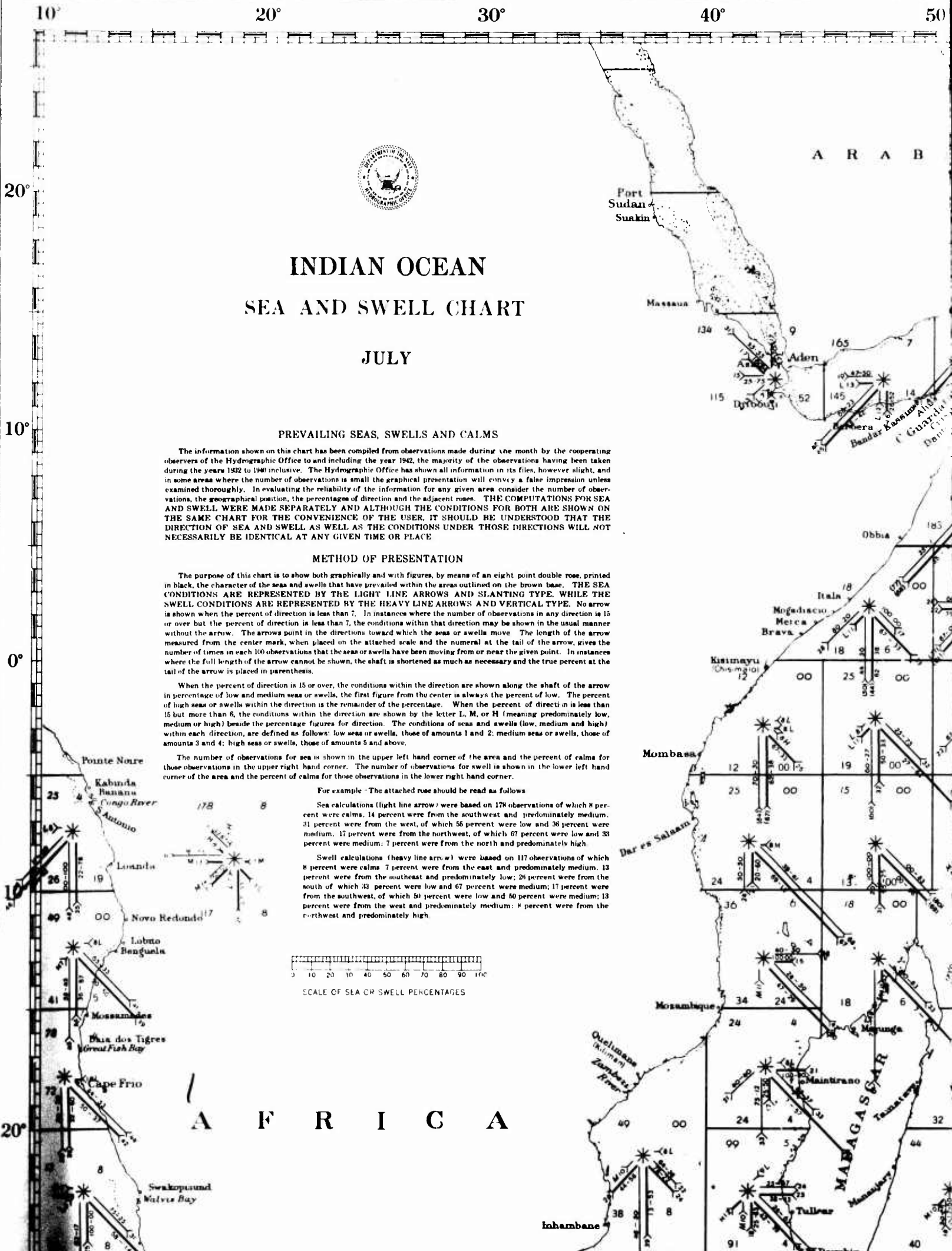
For example - The attached rose should be read as follows

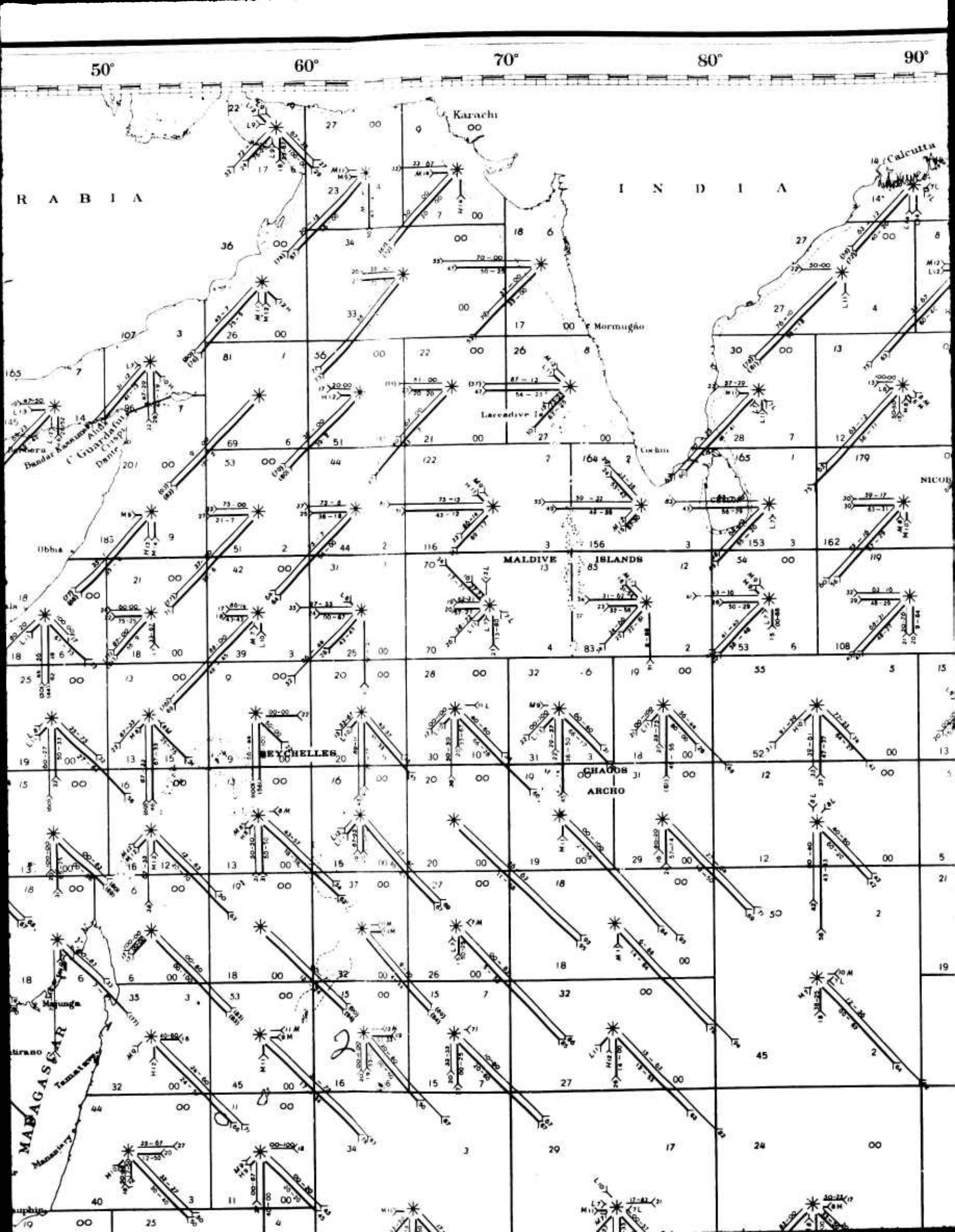
Sea calculations (light line arrow) were based on 178 observations of which 8 percent were calms, 14 percent were from the southwest and predominately medium, 31 percent were from the west, of which 55 percent were low and 36 percent were medium, 17 percent were from the northwest, of which 67 percent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

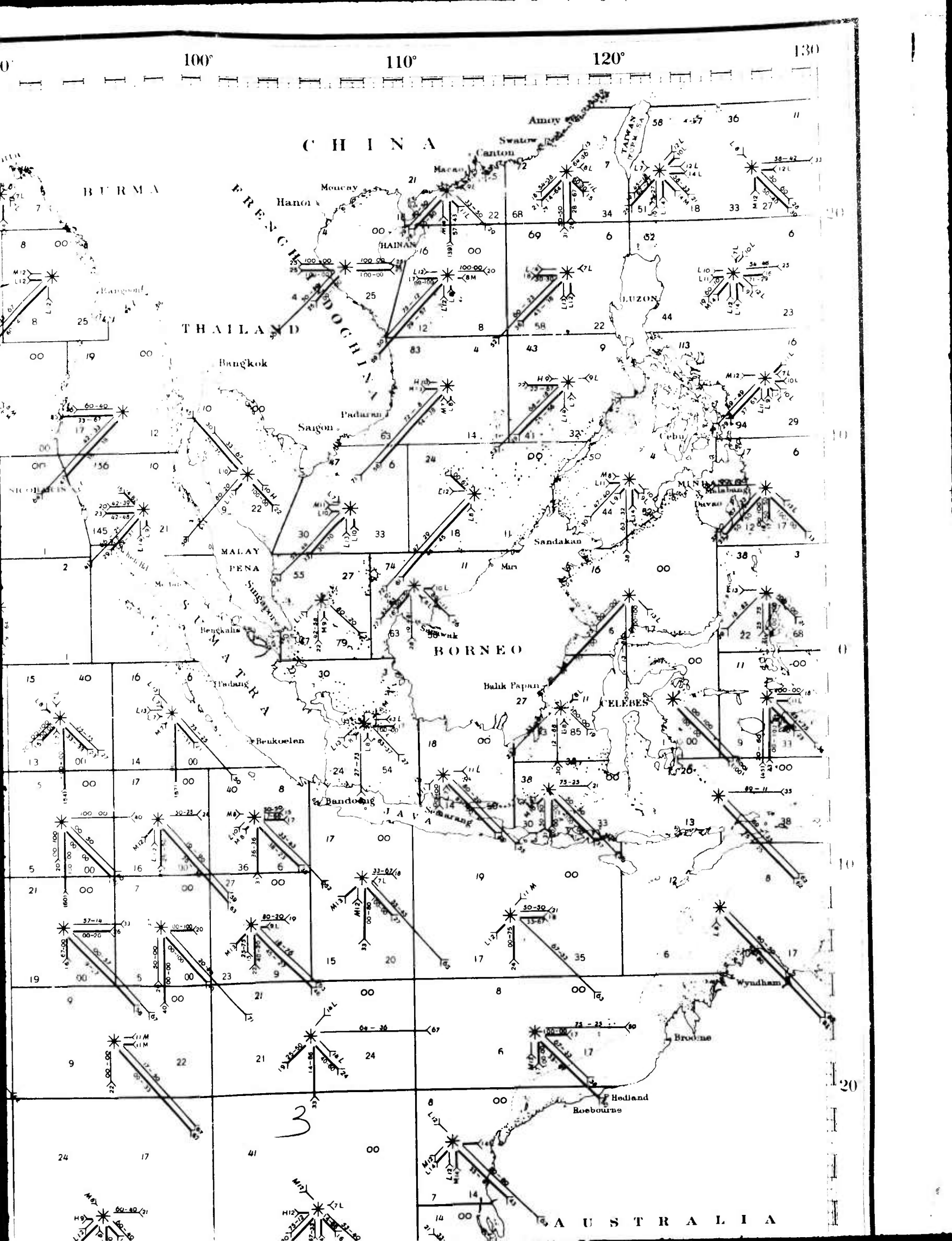
Swell calculations (heavy line arrow) were based on 117 observations of which 8 percent were calms, 7 percent were from the east and predominately medium, 13 percent were from the southeast and predominately low; 26 percent were from the south of which 31 percent were low and 67 percent were medium; 17 percent were from the southwest, of which 50 percent were low and 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







100°

110°

120°

130

CHINA

BURMA

FRENCH INDOCHINA

THAILAND

Bangkok

Saigon

Paduan

MALAY PENINSULA

Singapore

Bengkalis

Padang

Beukoelen

Bandoeng

BORNEO

Balik Papan

CELEBES

JAVA

SUMATRA

WYNDHAM

Broome

Hedland

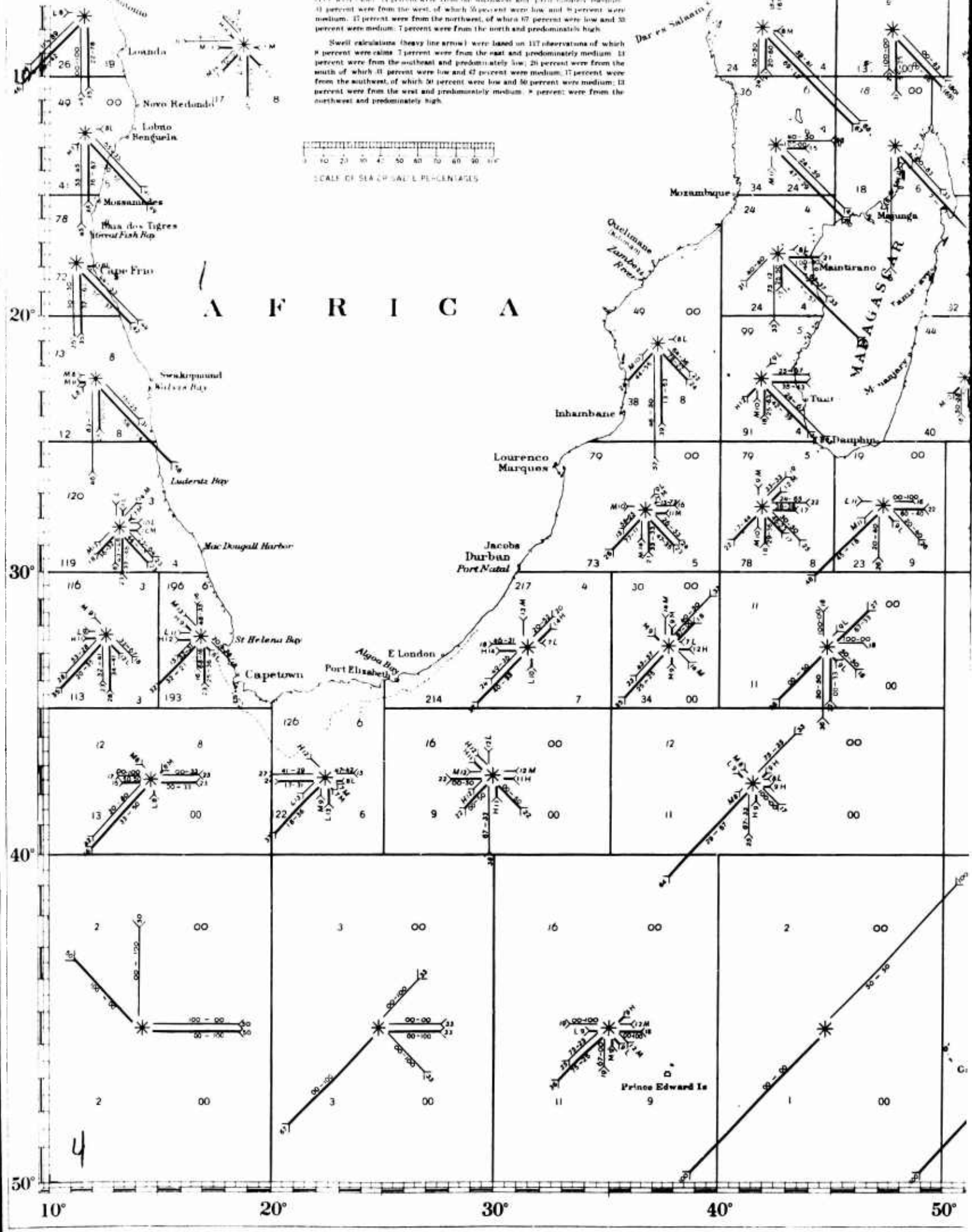
Roebourne

A U S T R A L I A

3

0.00 were calm; 13 percent were from the southwest and predominately medium; 41 percent were from the west, of which 56 percent were low and 8 percent were medium; 17 percent were from the northwest, of which 67 percent were low and 20 percent were medium; 7 percent were from the north and predominately high.

Swirl calculations (heavy line arrow) were based on 117 observations of which 8 percent were calm; 7 percent were from the east and predominately medium; 21 percent were from the southeast and predominately low; 20 percent were from the south, of which 31 percent were low and 42 percent were medium; 17 percent were from the southwest, of which 20 percent were low and 50 percent were medium; 11 percent were from the west and predominately medium; 8 percent were from the northwest and predominately high.

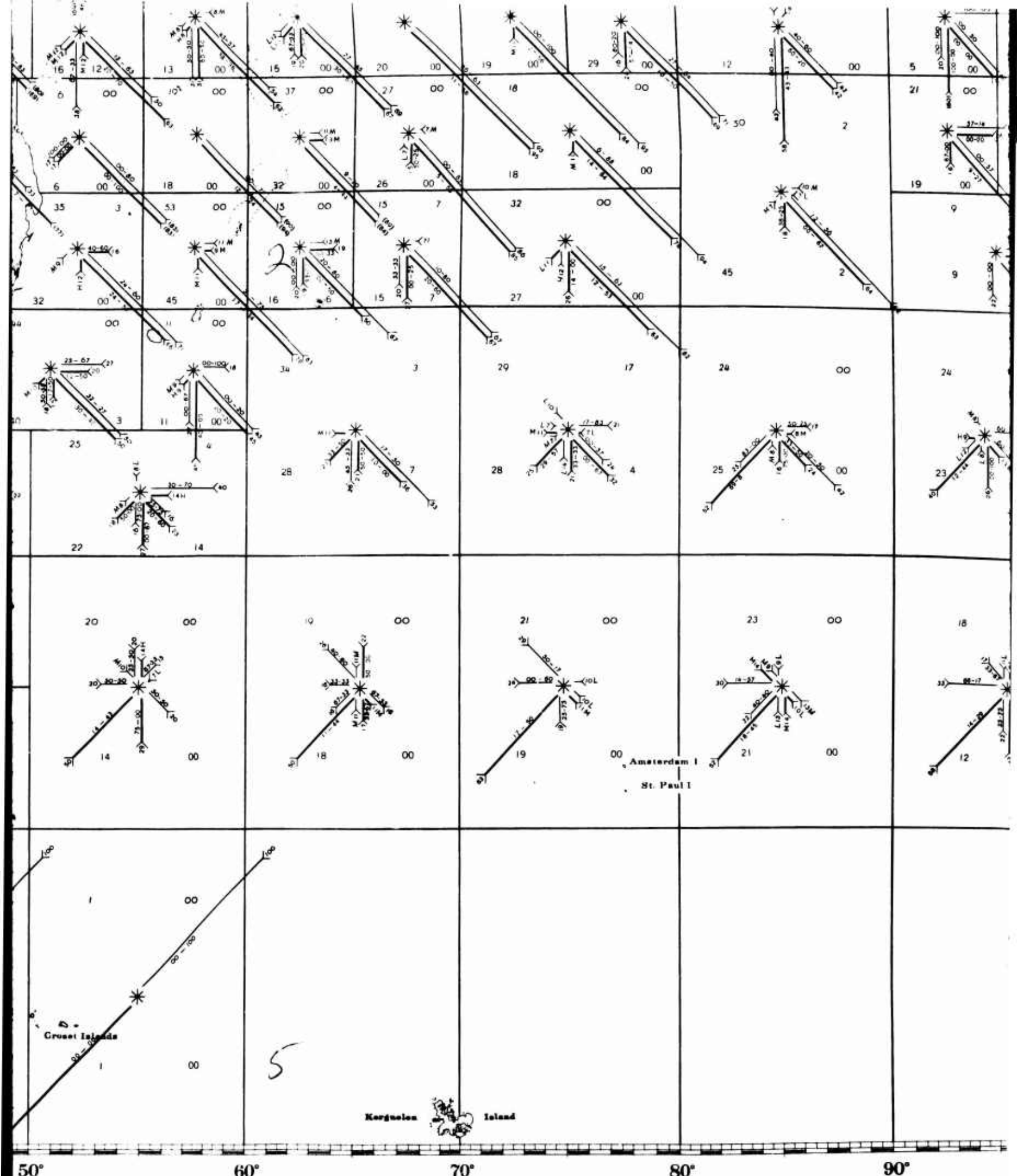


AFRICA

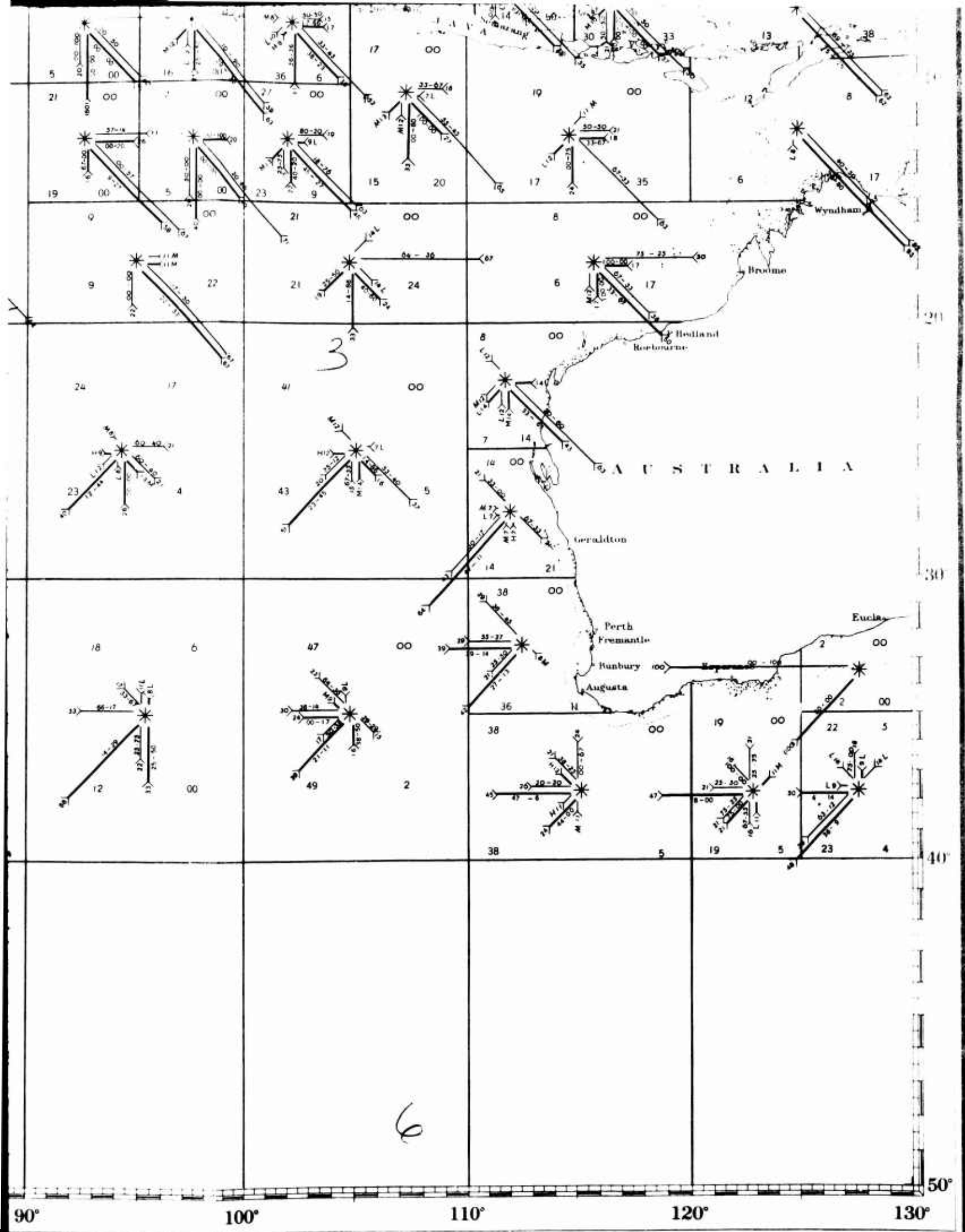
SCALE OF SEA OR GALE PERCENTAGES

4

C.



50° 60° 70° 80° 90°



10° 20° 30° 40° 50°



A R A B I A

INDIAN 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 Hydrographic Office to and including the year 1942, the majority of the observations having been taken during the years 1882 to 1940 inclusive. The Hydrographic 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.

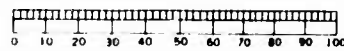
When the percent of direction is 15 or over, the conditions within the direction are shown along the shaft of the arrow in percentage of low and medium seas or swells, the first figure from the center is always the percent of low. The percent of high seas or swells within the direction is the remainder 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.

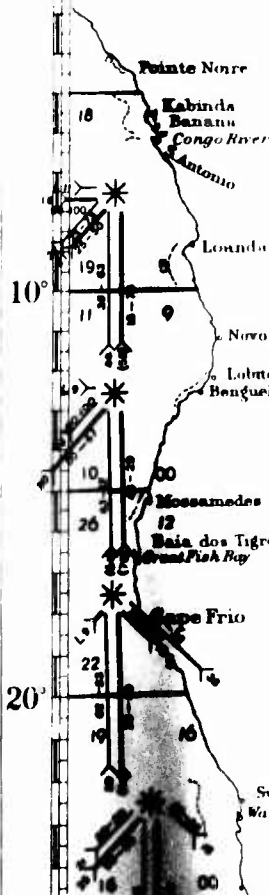
For example: The attached rose should be read as follows:

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 38 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.

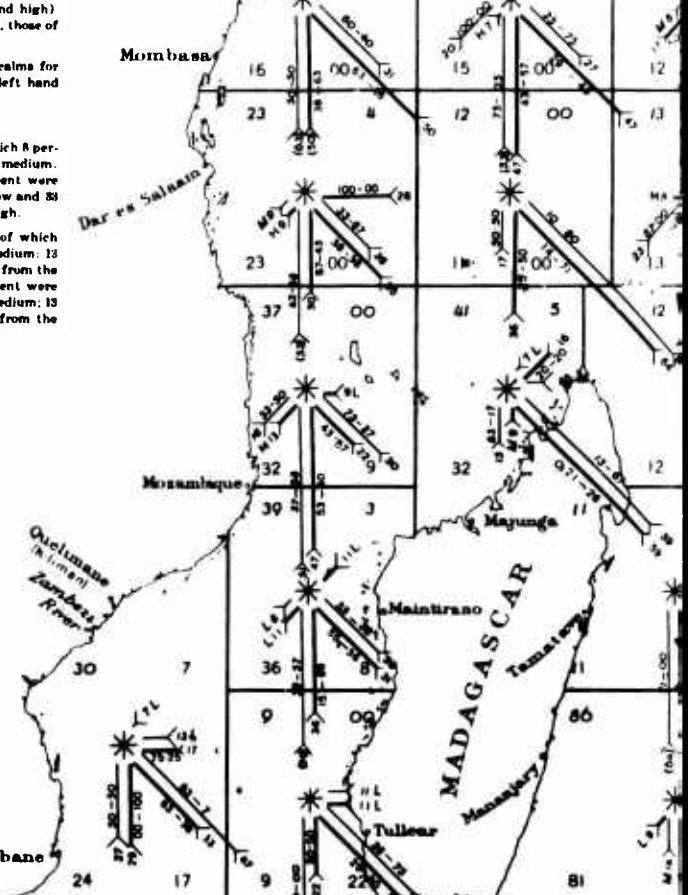
Swell calculations (heavy line arrow) were based on 117 observations of which 8 percent were calms 7 percent were from the east and predominately medium; 13 percent were from the southeast and predominately low; 26 percent were from the south of which 33 percent were low and 67 percent were medium; 17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



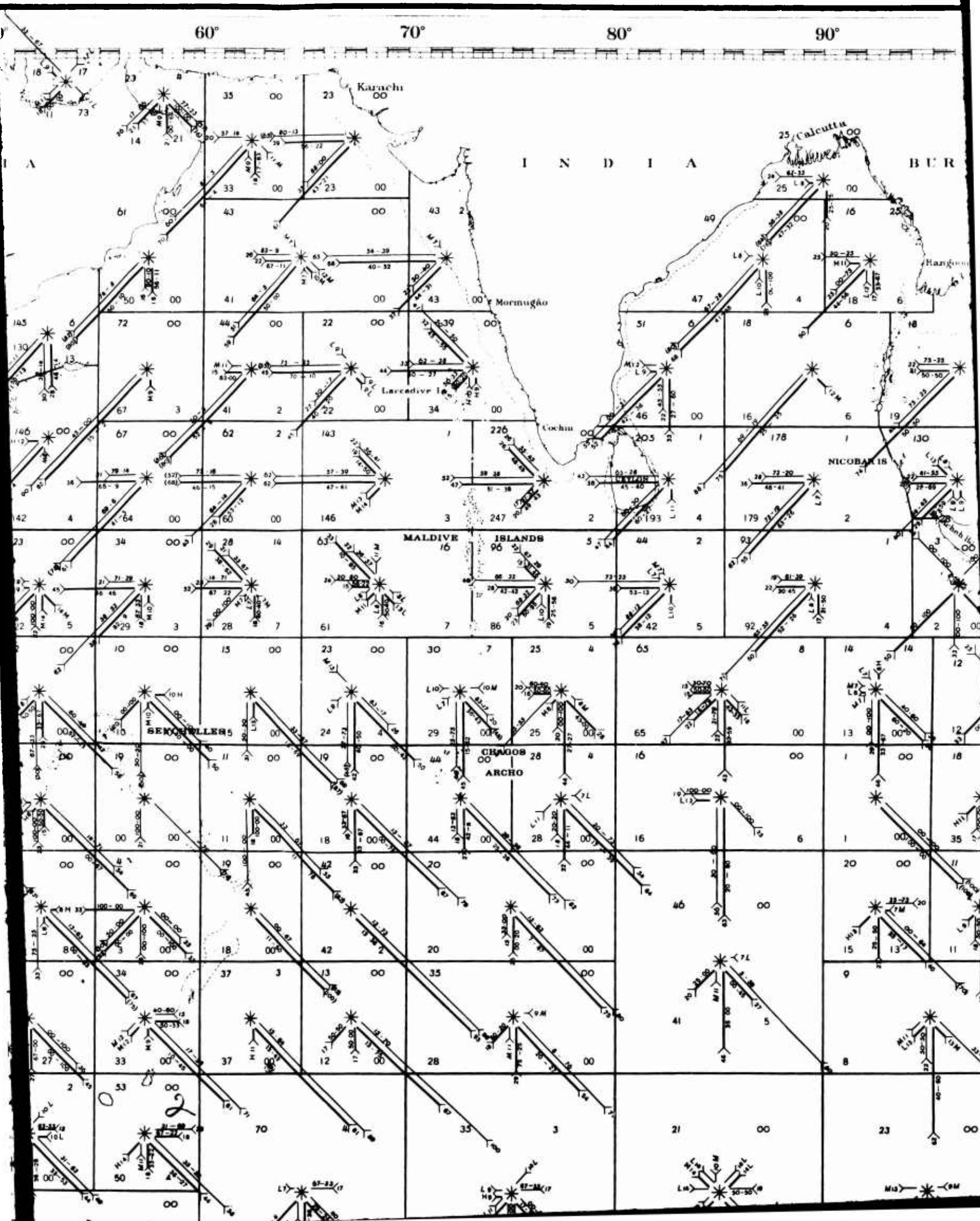
SCALE OF SEA OR SWELL PERCENTAGES



A F R I C A



MADAGASCAR



60°

70°

80°

90°

I N D I A B U R

Karachi

Calcutta

Mormugão

Cochin

Laccadive Is.

NICOBAR IS.

MALDIVES ISLANDS

SEMOBILLES

CHAGOS ARCH

A

145

142

140

130

120

110

23

61

72

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43

43

44

143

63

23

19

42

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35

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49

51

46

205

5

25

16

46

41

21

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16

18

178

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65

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130

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23

BUR

Bombay

Madras

Calcutta

Calcutta

Calcutta

Calcutta

Calcutta

Calcutta

100°

110°

120°

130°

CHINA

BURMA

FRENCH INDOCHINA

THAILAND

Bangkok

Saigon

MALAY PENINSULA

Singapore

Sumatra

Benkoelen

Dandoeng

JAVA

Samarang

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Amoy

Swatow

Canton

Macau

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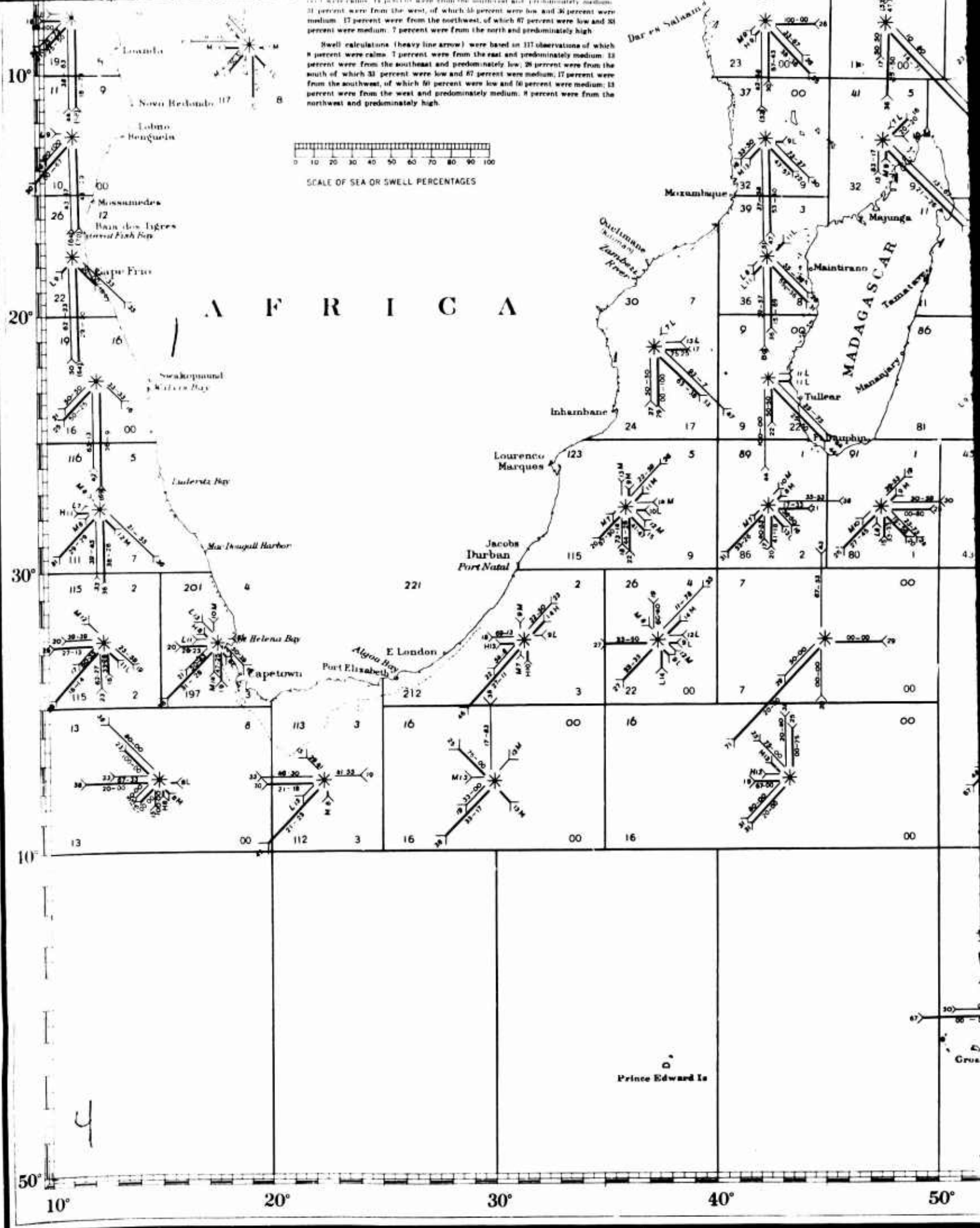
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32

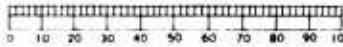
32

32



... were calm. 13 percent were from the southwest and predominately medium. 31 percent were from the west, of which 44 percent were low and 26 percent were medium. 17 percent were from the southwest, of which 67 percent were low and 33 percent were medium. 7 percent were from the south and predominately high.

Swell calculations (heavy line arrow) were based on 317 observations of which 8 percent were calm. 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 61 percent were low and 36 percent were medium; 13 percent were from the west and predominately medium; 8 percent were from the northwest and predominately high.



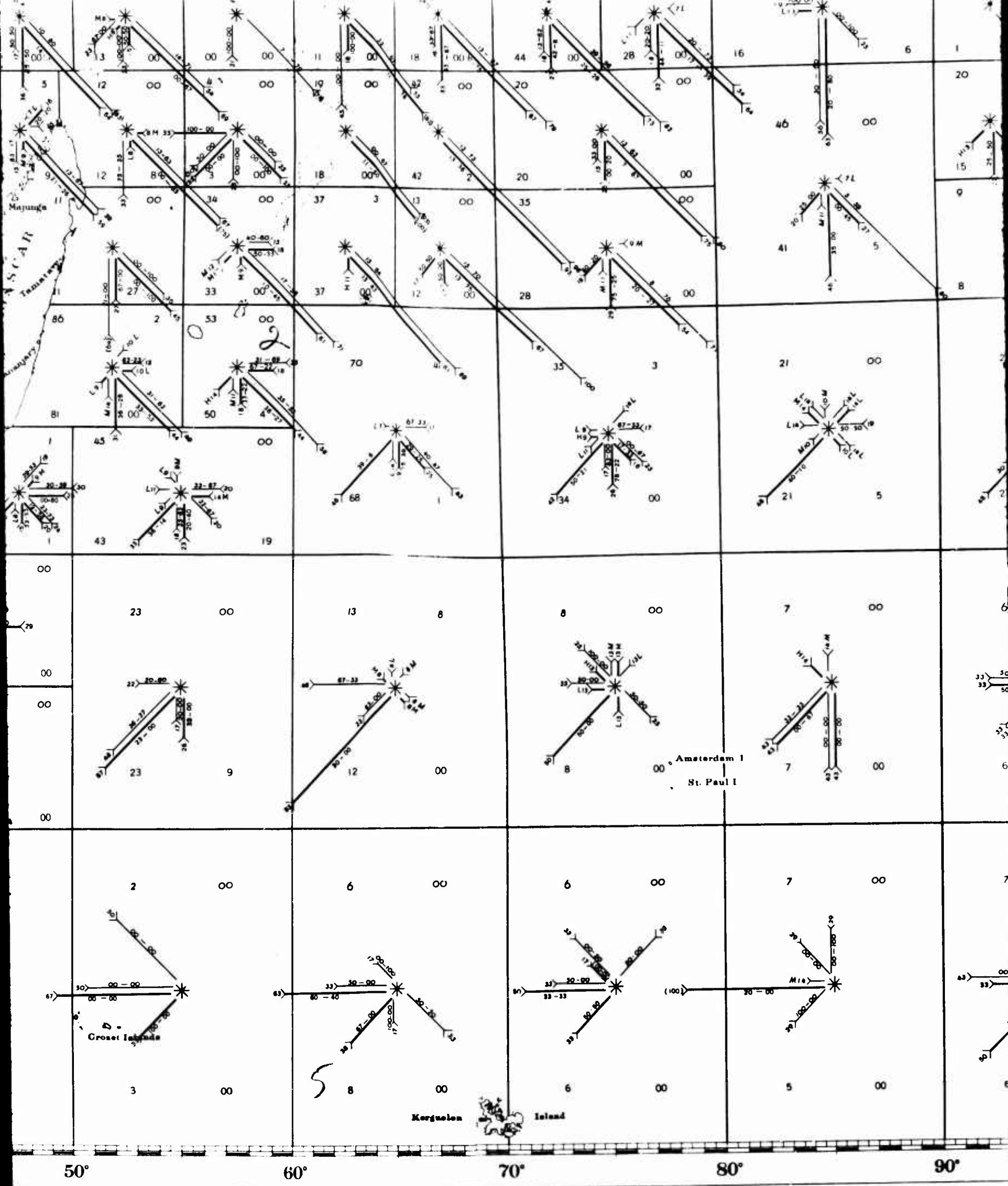
SCALE OF SEA OR SWELL PERCENTAGES

A F R I C A

Prince Edward Is

4

30
67
80
Grass



SCAR
Tamatapu

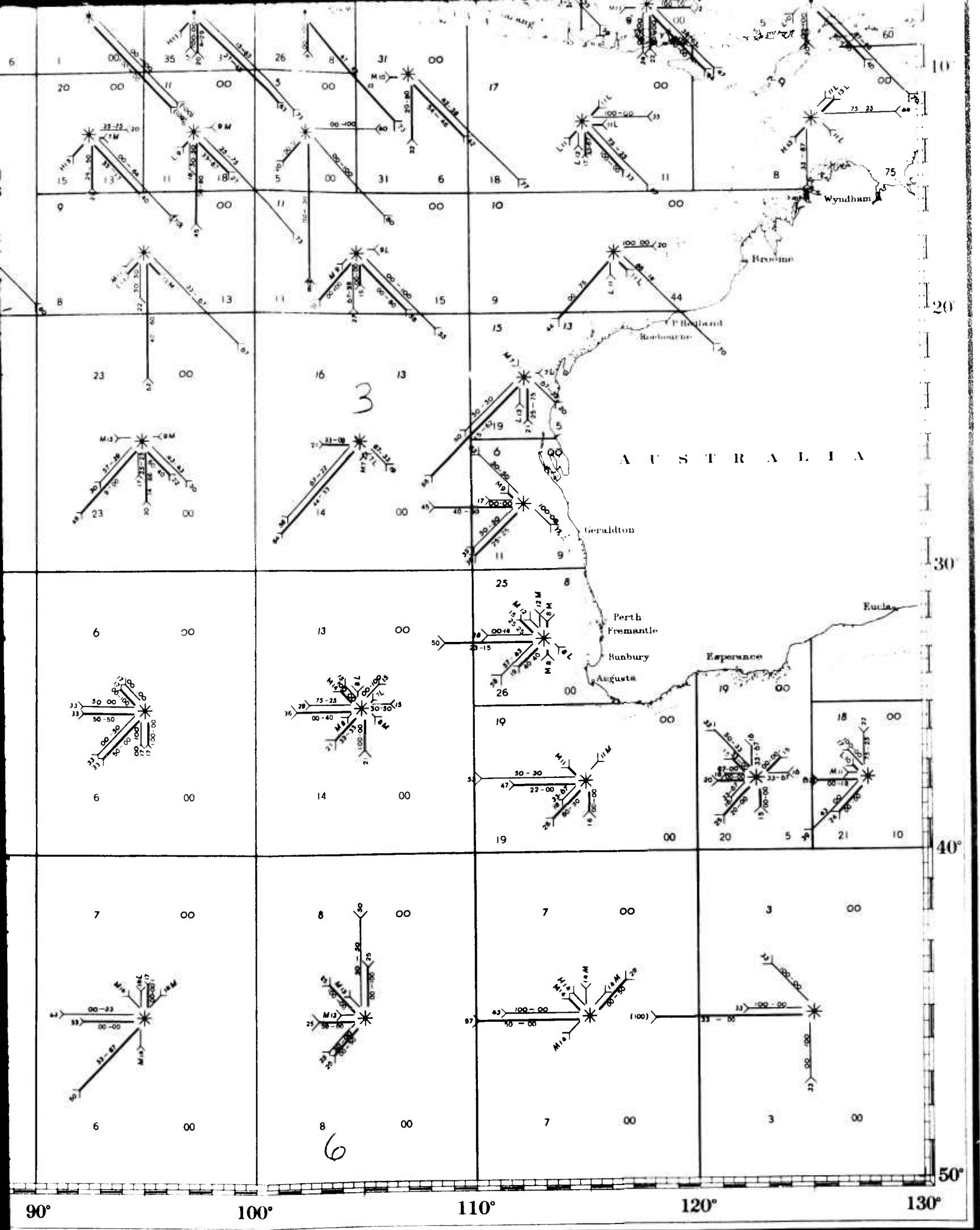
Matjunga

Grosset Island

Kerguelen Island

Amsterdam I
St. Paul I

50° 60° 70° 80° 90°



10° 20° 30° 40° 50°

A R A B I A



INDIAN 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 Hydrographic Office to and including the year 1942, the majority of the observations having been taken during the years 1932 to 1940 inclusive. The Hydrographic 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 percentage 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, given 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.

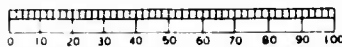
When the percent of direction is 15 or over, the conditions within the direction are shown along the shaft of the arrow in percentage of low and medium seas or swells, the first figure from the center is always the percent of low. The percent of high seas or swells within the direction is the remainder 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.

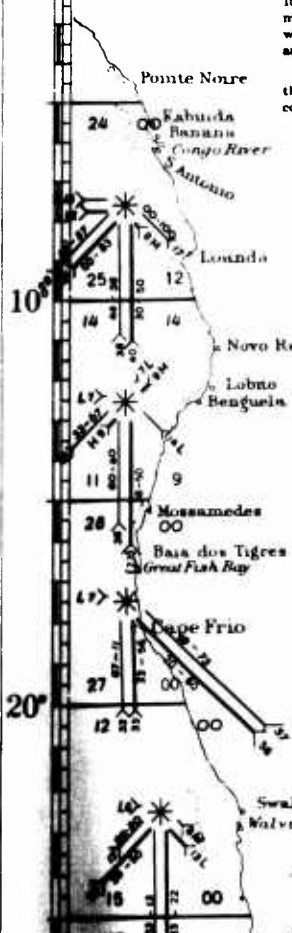
For example—The attached rose should be read as follows

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

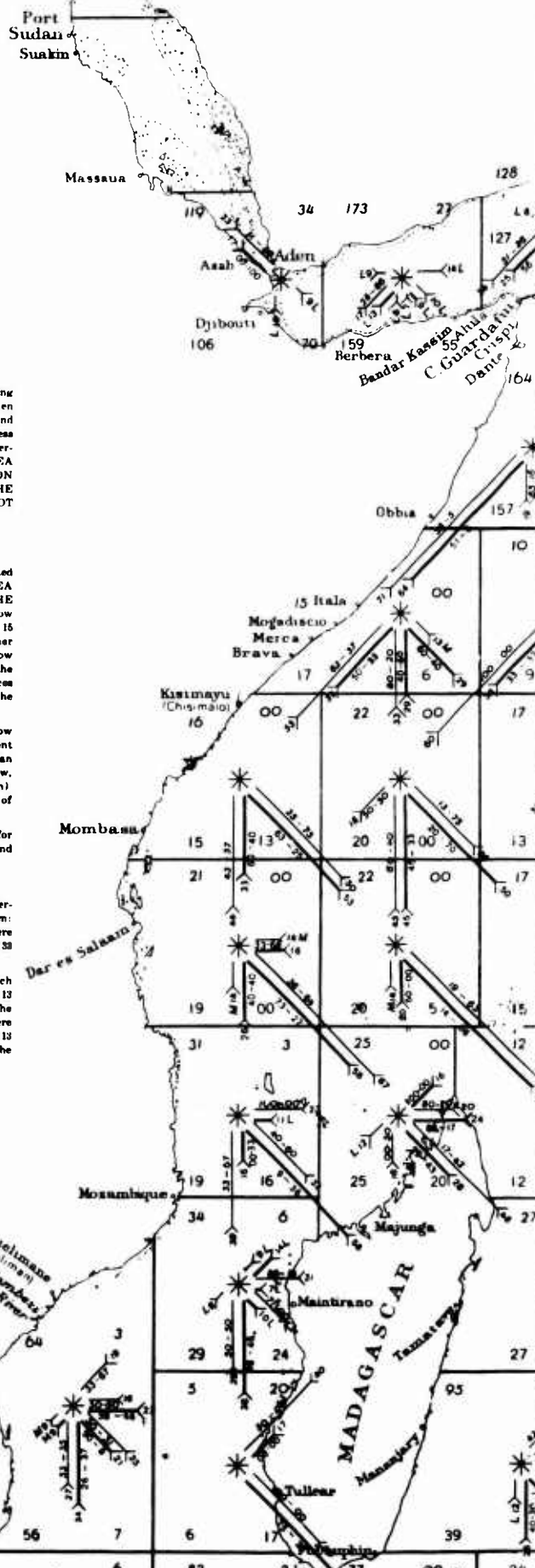
Swell calculations (heavy line arrow) were based on 117 observations of which 8 percent were calms, 7 percent were from the east and predominately medium; 13 percent were from the southeast and predominately low; 26 percent were from the south of which 33 percent were low and 67 percent were medium;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



A F R I C A



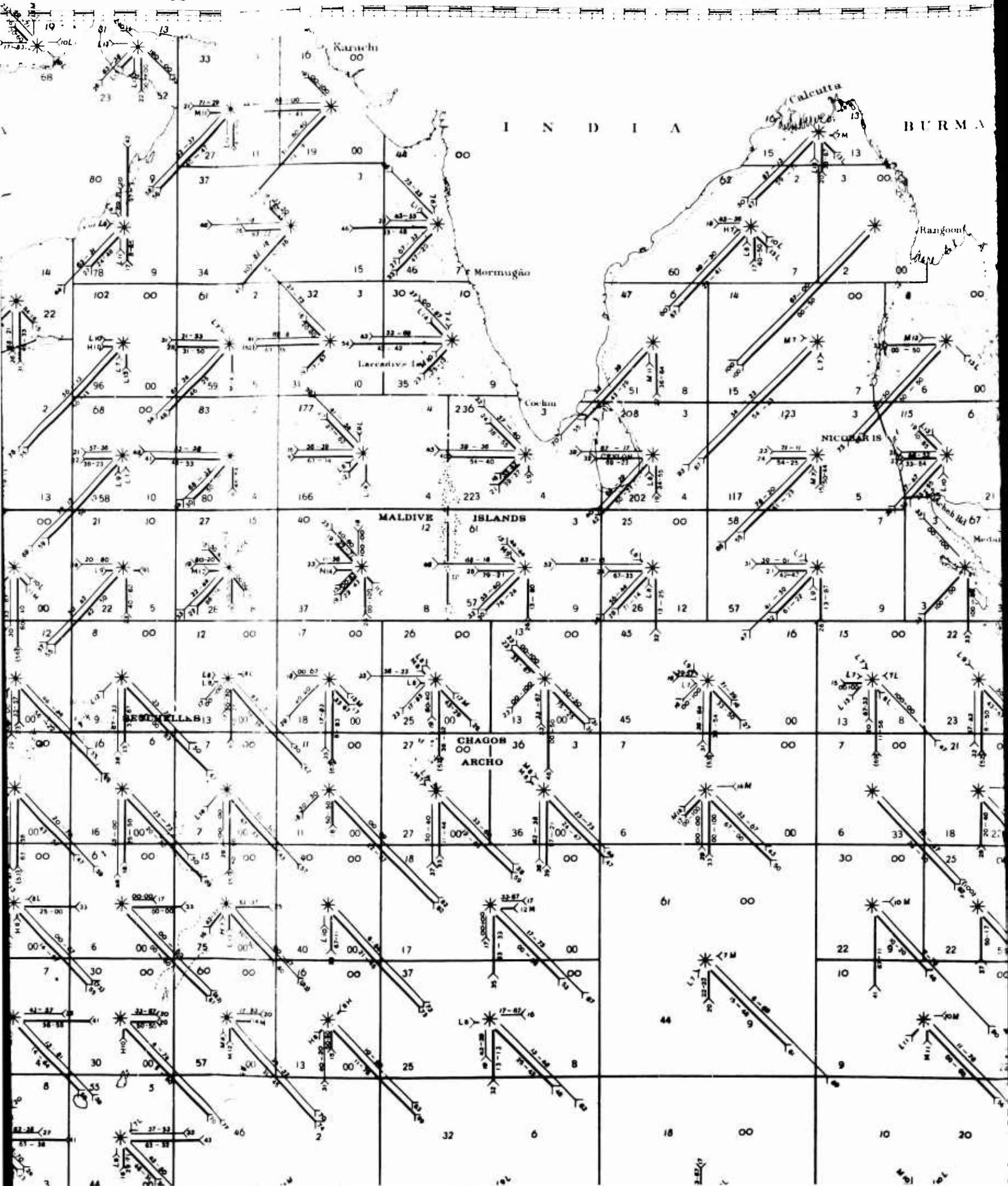
Lourenco 150 6 82 2 77 00 24

60°

70°

80°

90°



100°

110°

120°

130°

CHINA

BURMA

FRENCH INDOCHINA

THAILAND

Bangkok

Saigon

MALAY PENINSULA

SUMATRA

Benkoelen

S. Bandoeng

BORNEO

Balik Papan

ELEPHANT

Wyntham

Broome

P. Hedland

Roebourne

Amoy 76

Macao

TAINAN

LUZON

MINDANAO

Samarang

Manila

Santa Cruz

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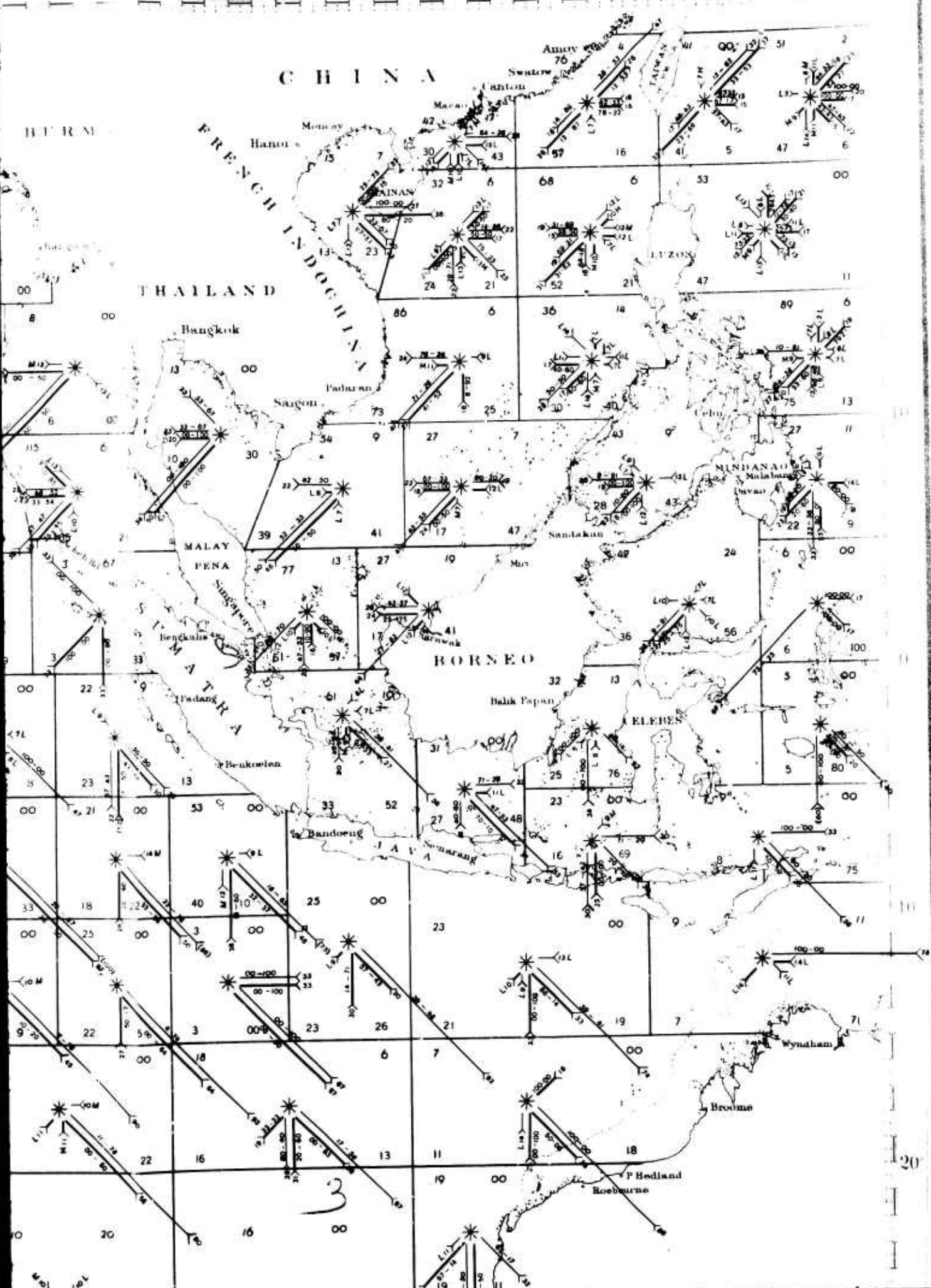
Manila

Manila

Manila

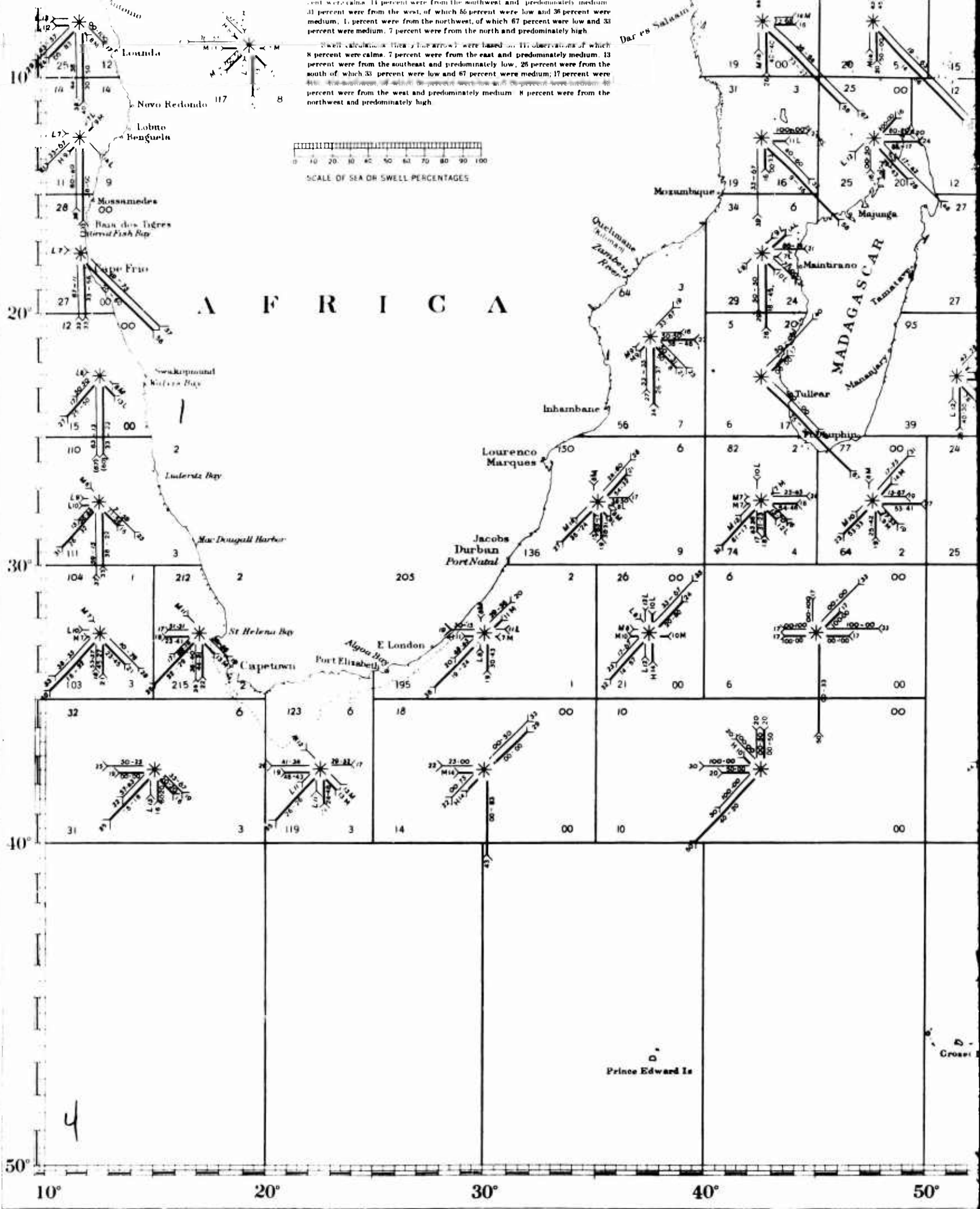
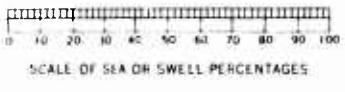
3

20



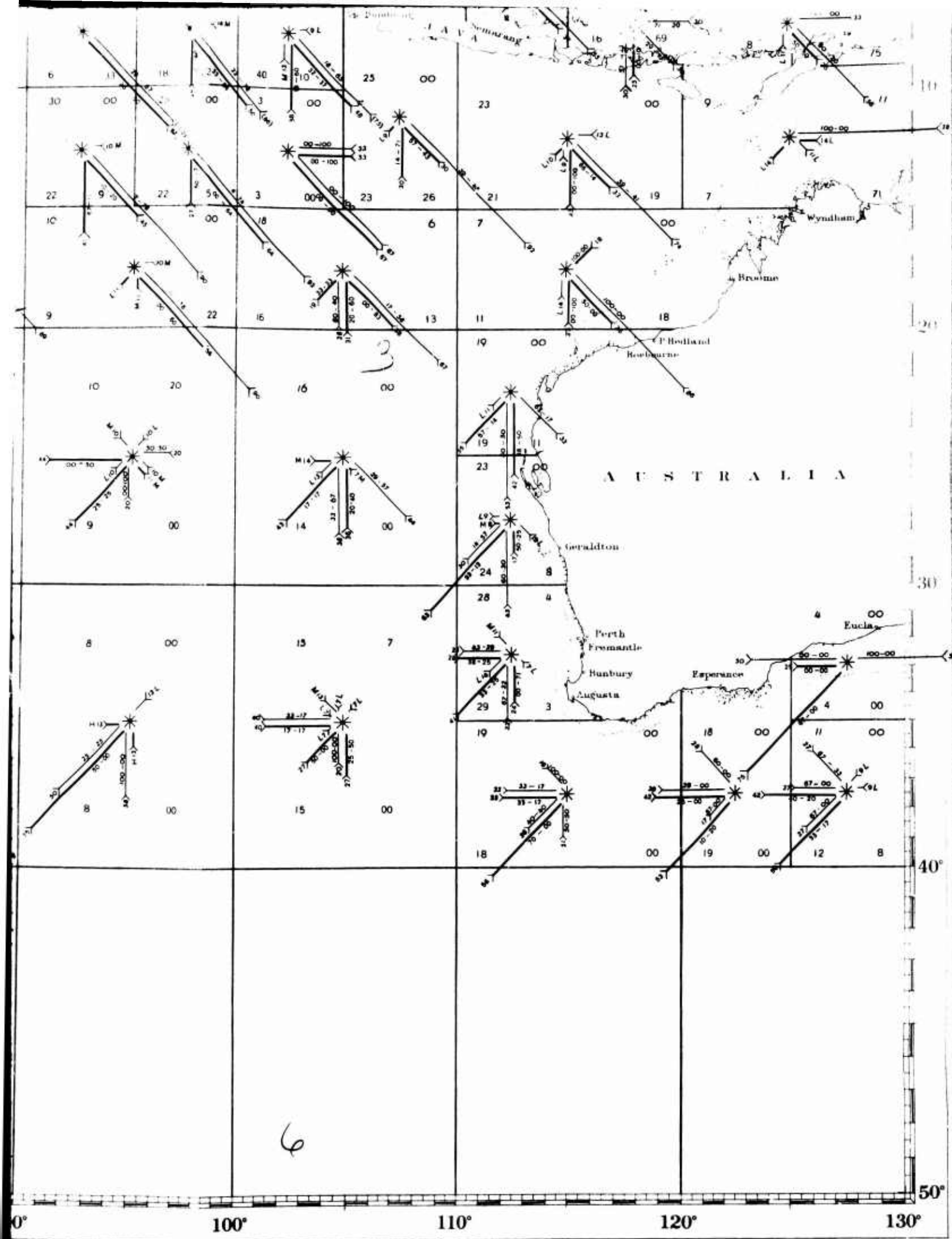
... 11 percent were from the west, of which 56 percent were low and 36 percent were medium, 1 percent were from the northwest, of which 67 percent were low and 33 percent were medium, 7 percent were from the north and predominately high.

... 8 percent were calm, 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 west and predominately medium, 8 percent were from the northwest and predominately high.



4

Prince Edward Is



10° 20° 30° 40° 50°



INDIAN 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 Hydrographic Office and including the year 1948, the majority of the observations having been taken during the years 1932 to 1940 inclusive. The Hydrographic 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.

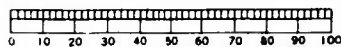
When the percent of direction is 15 or over, the conditions within the direction are shown along the shaft of the arrow in percentage of low and medium seas or swells, the first figure from the center is always the percent of low. The percent of high seas or swells within the direction is the remainder of the percentage. When the percent of direction is less than 15 but more than 4, 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 (l.v., 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.

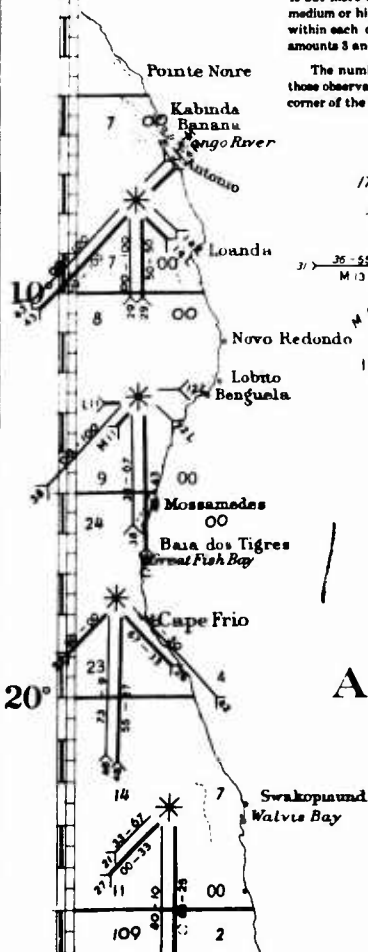
For example—The attached rose should be read as follows:

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 87 percent were low and 28 percent were medium; 7 percent were from the north and predominately high.

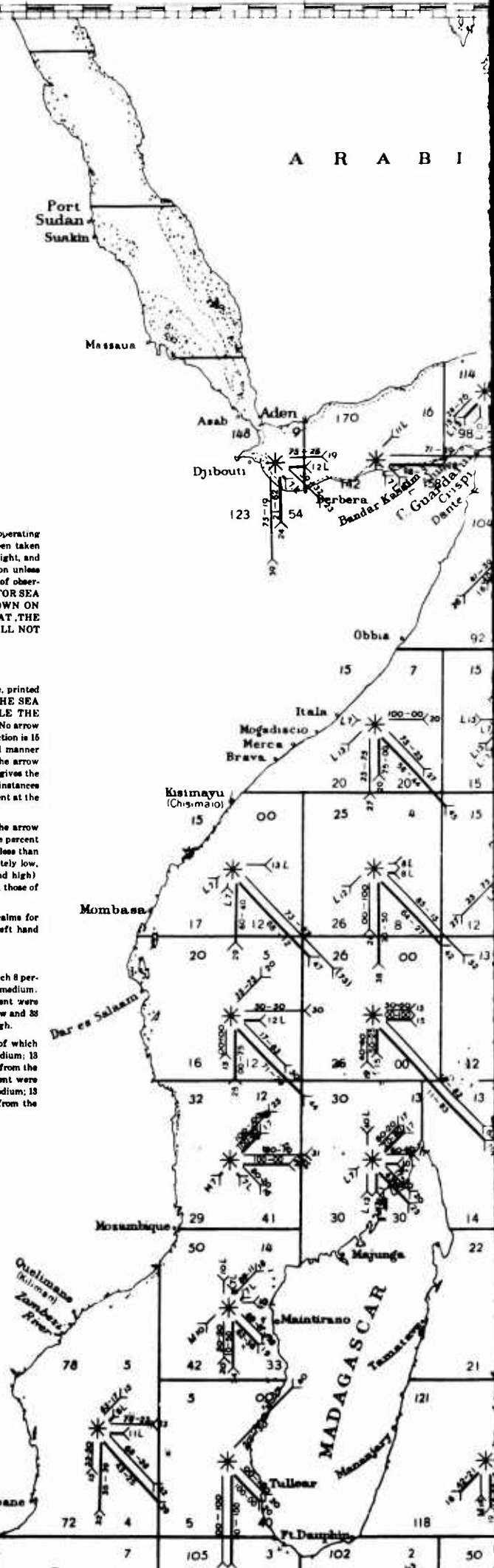
Swell calculations (heavy line arrow) were based on 117 observations of which 8 percent were calms; 7 percent were from the east and predominately medium; 18 percent were from the southeast and predominately low; 26 percent were from the south of which 23 percent were low and 67 percent were medium; 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

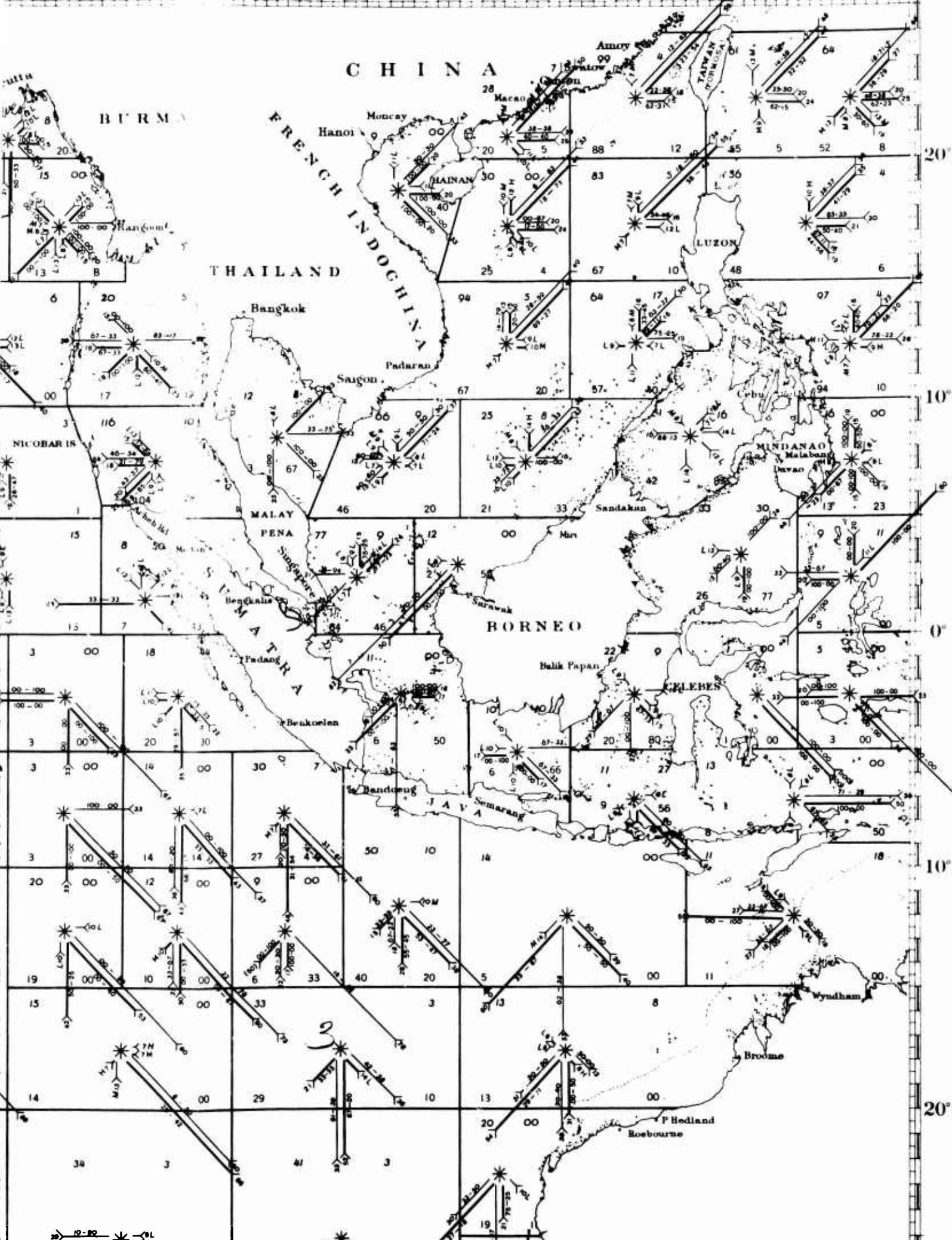


A F R I C A



A R A B I

90° 100° 110° 120° 130°

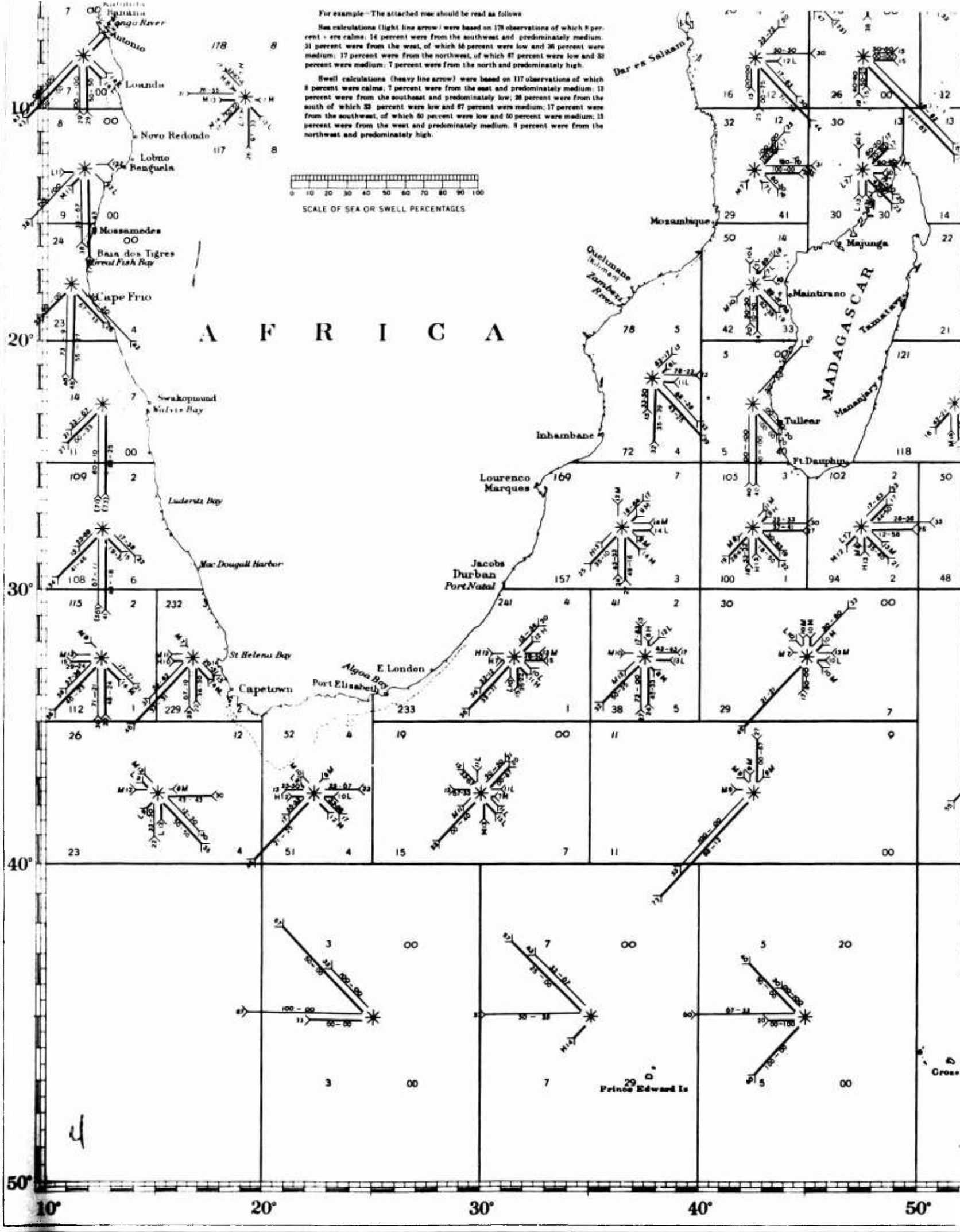
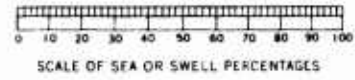


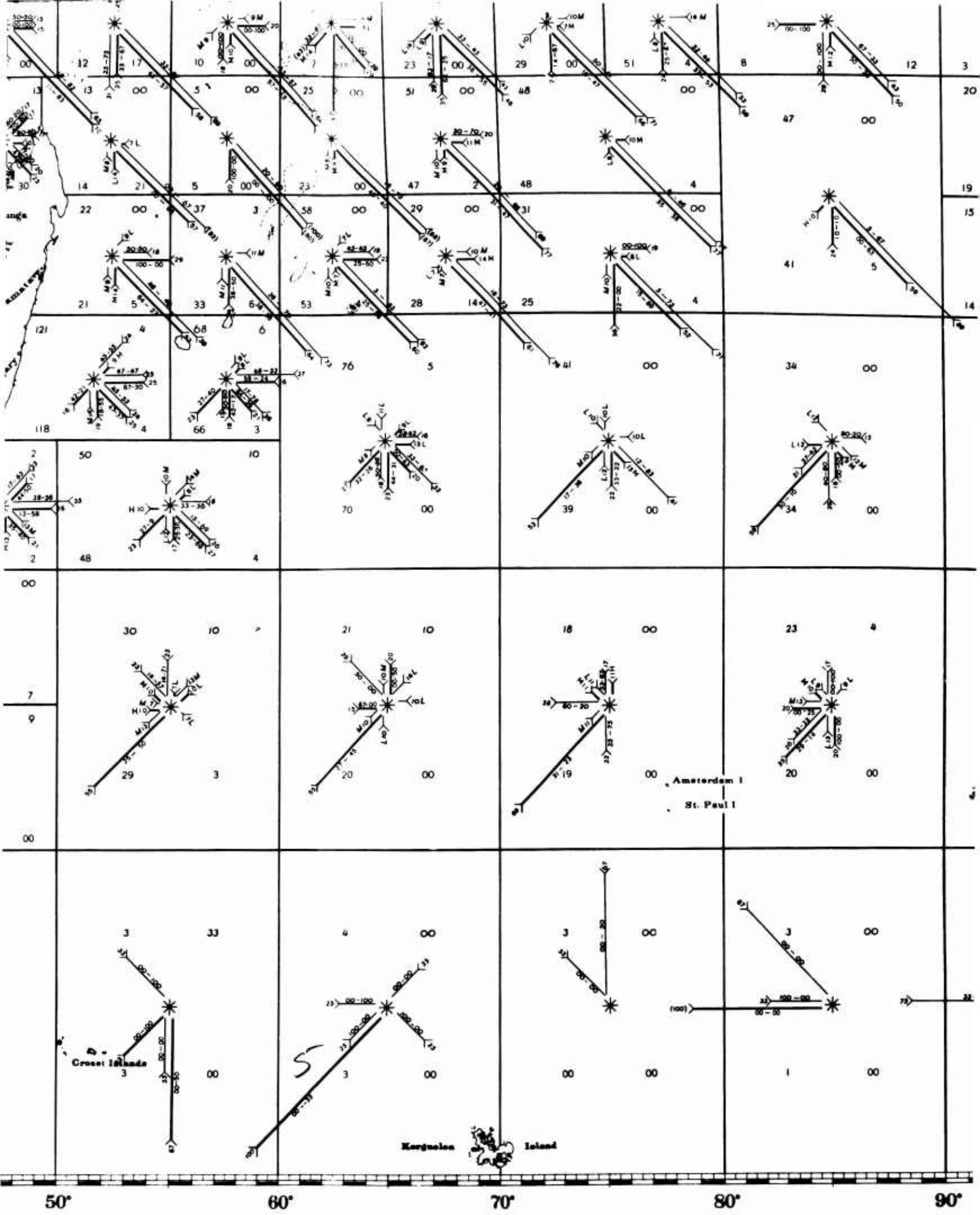
A U S T R A L I A

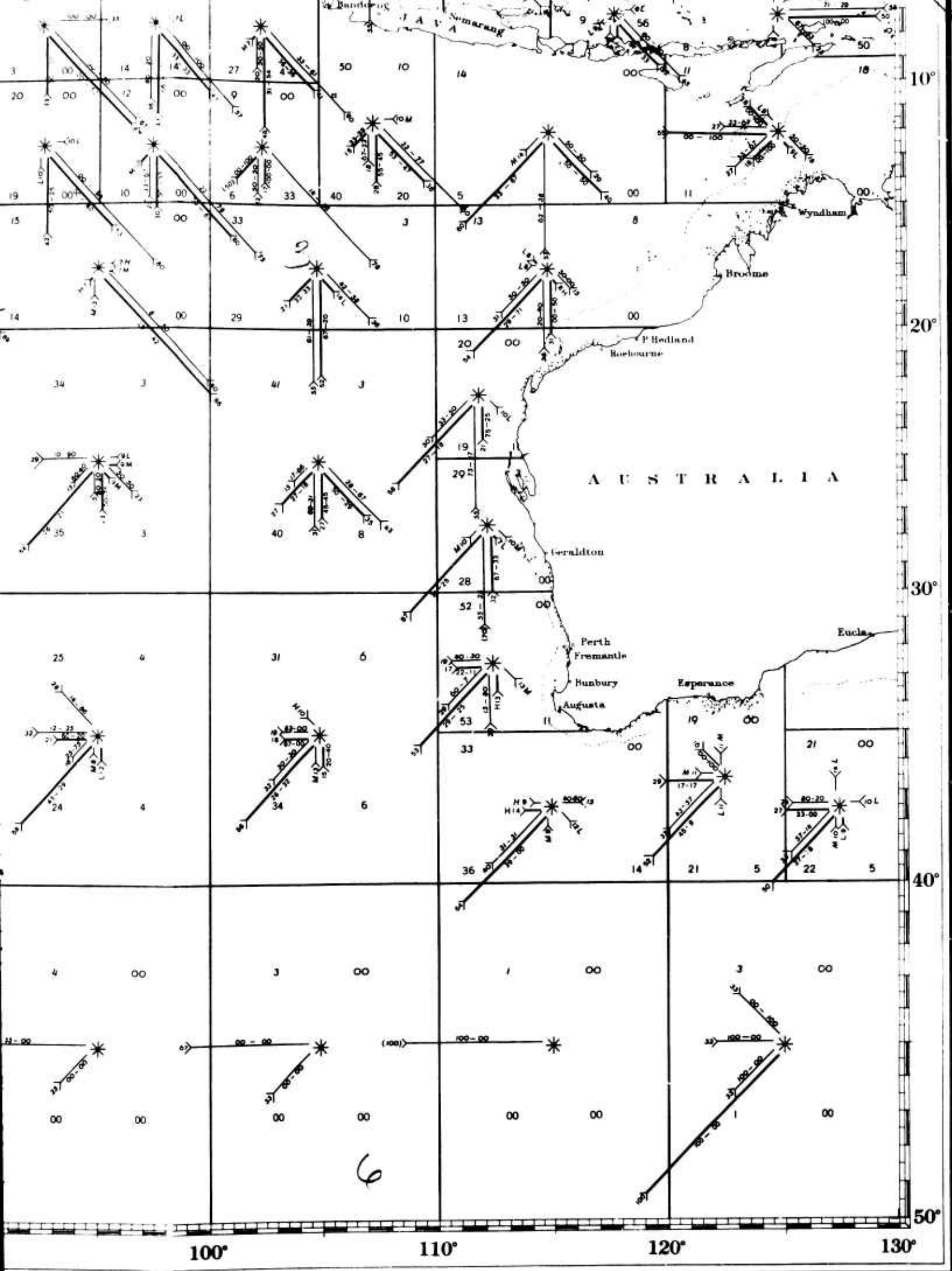
For example—The attached rose should be read as follows

Sea calculations (light line arrow) were based on 178 observations of which 8 percent are calms, 34 percent were from the southwest and predominately medium; 31 percent were from the west, of which 56 percent were low and 26 percent were medium; 17 percent were from the northwest, of which 87 percent were low and 53 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; 28 percent were from the south of which 33 percent were low and 87 percent were medium; 17 percent were from the southwest, of which 80 percent were low and 80 percent were medium; 13 percent were from the west and predominately medium; 8 percent were from the northwest and predominately high.







10° 20° 30° 40° 50°



INDIAN OCEAN SEA AND SWELL CHART

NOVEMBER

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 Hydrographic Office to and including the year 1942, the majority of the observations having been taken during the years 1932 to 1940 inclusive. The Hydrographic 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.

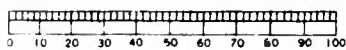
When the percent of direction is 15 or over, the conditions within the direction are shown along the shaft of the arrow in percentage of low and medium seas or swells, the first figure from the center is always the percent of low. The percent of high seas or swells within the direction is the remainder 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.

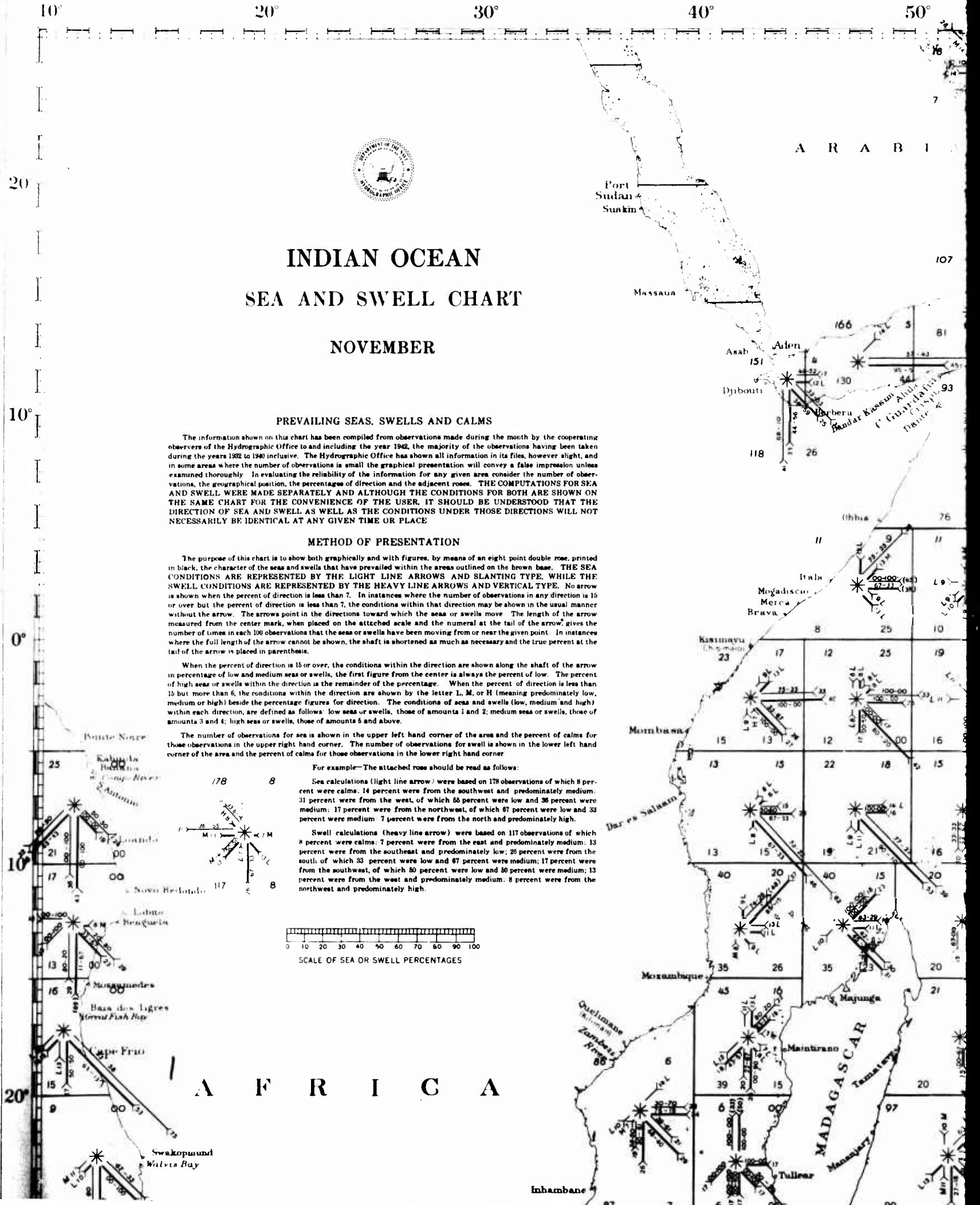
For example—The attached rose should be read as follows:

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 87 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



A F R I C A

A R A B I A

MADAGASCAR

60°

70°

80°

90°

I N D I A

B U R M A

MALDIVE ISLANDS

CHAGOS ARCHIPELAGO

SICOBAR ISLANDS

CEYLOON

SEYCHELLES

Calcutta

Madras

Bombay

Rangoon

100-00

100-00

100-00

100-00

100-00

100-00

100-00

100-00

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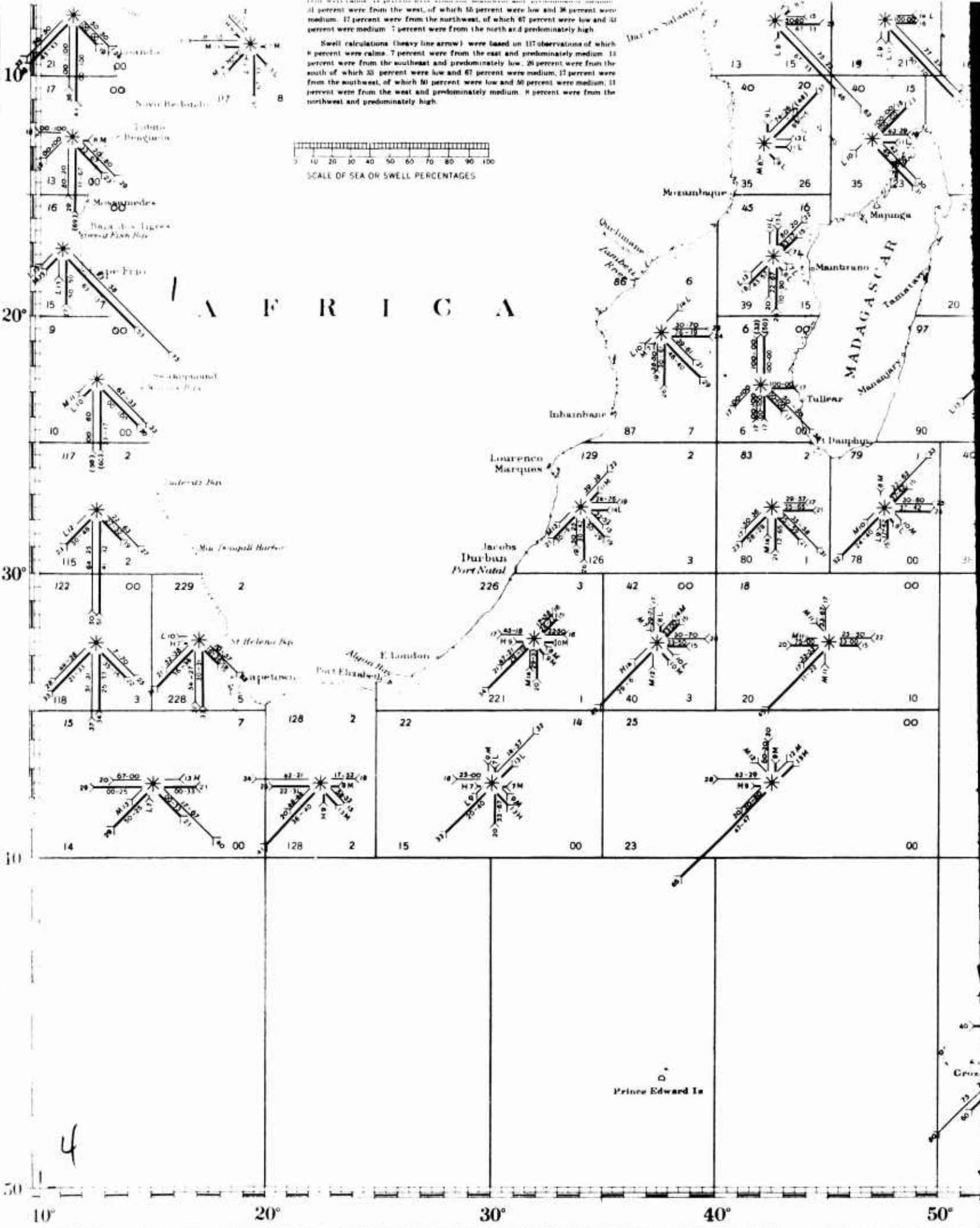
100-00

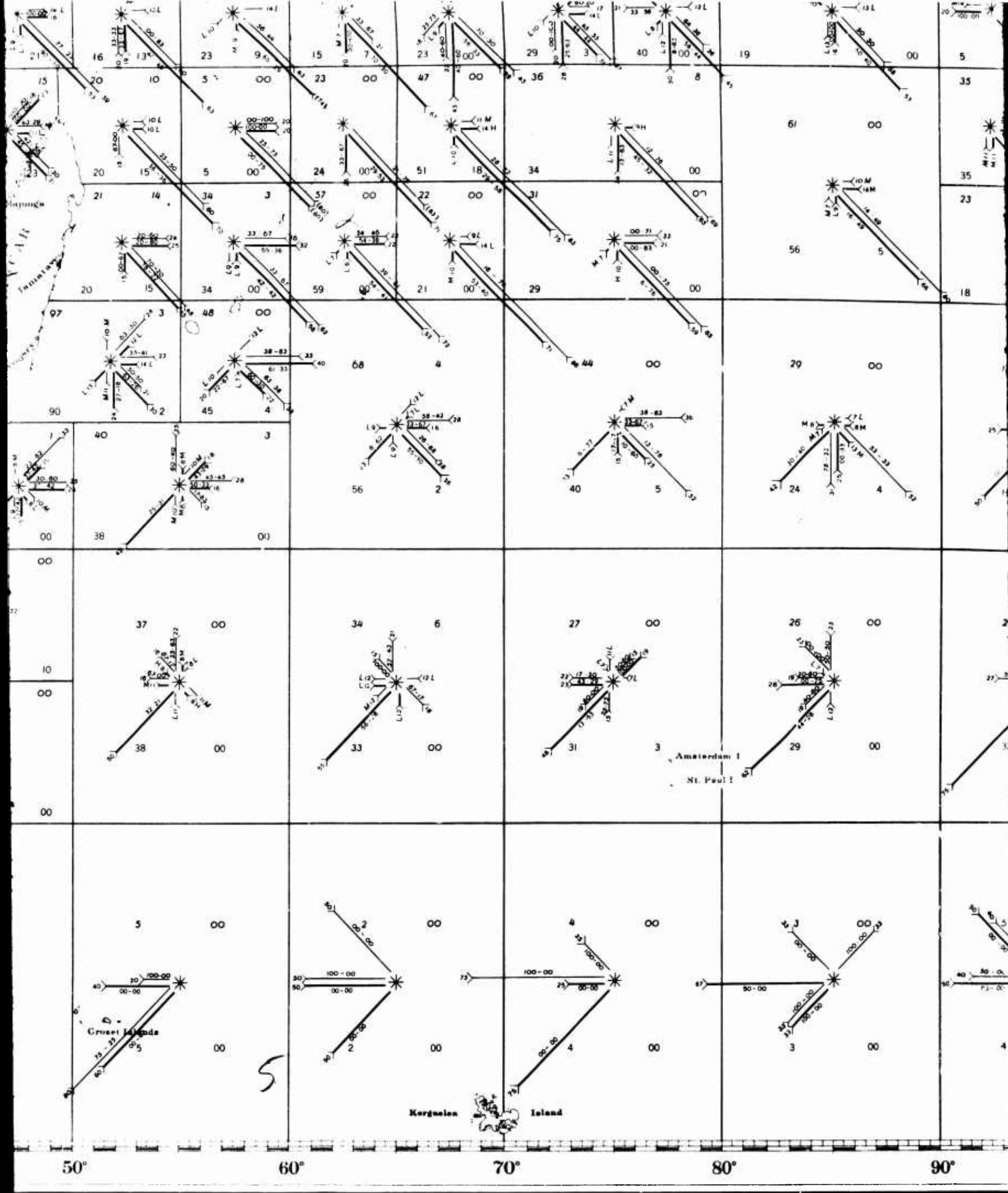
100-00

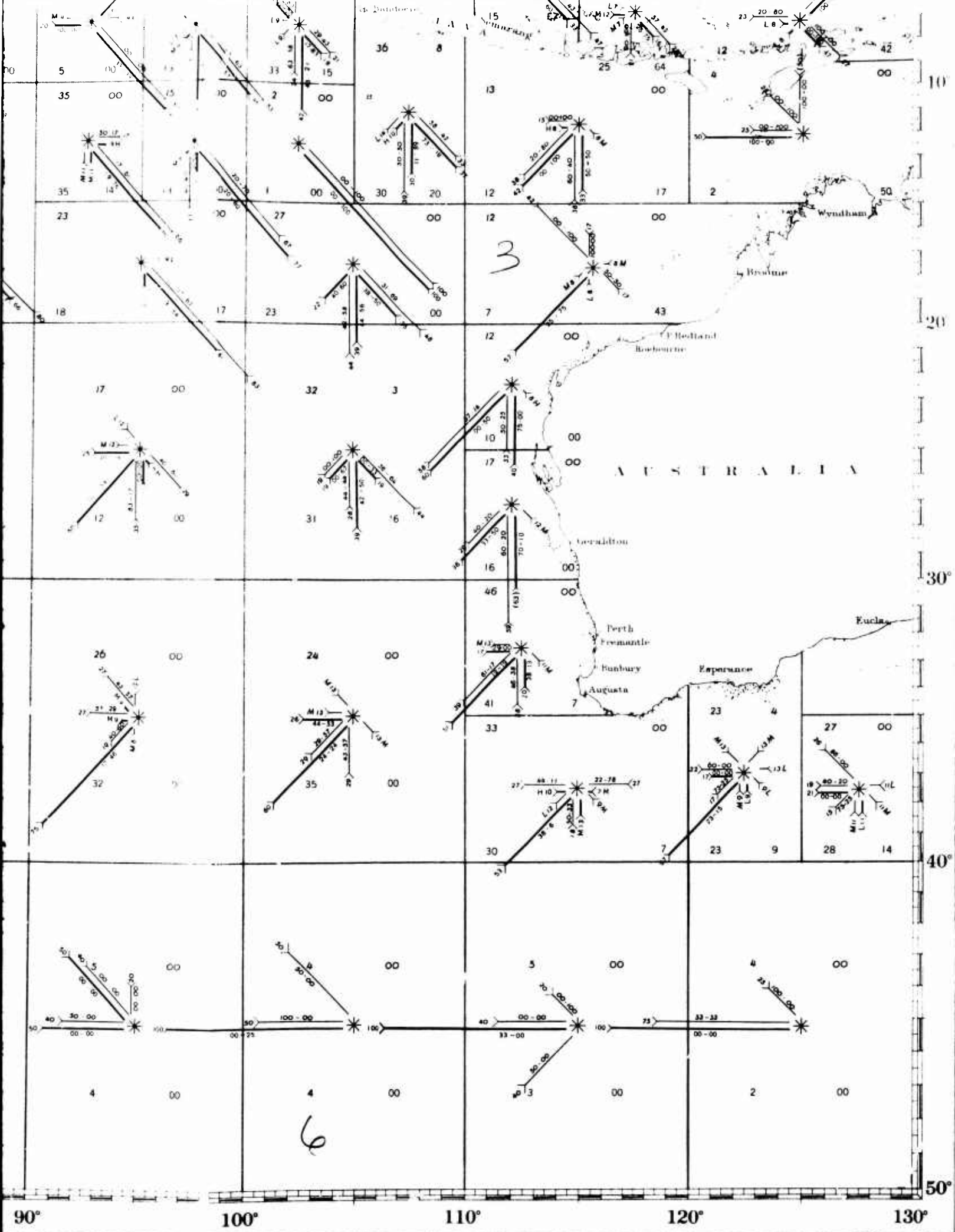
100-00

21 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 11 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. 12 percent were from the southwest, of which 50 percent were low and 50 percent were medium. 11 percent were from the west and predominately medium. 8 percent were from the northwest and predominately high.







10° 20° 30° 40° 50°



INDIAN 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 Hydrographic Office to and including the year 1942, the majority of the observations having been taken during the years 1932 to 1940 inclusive. The Hydrographic 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 seas. 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.

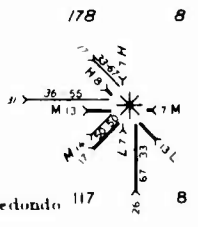
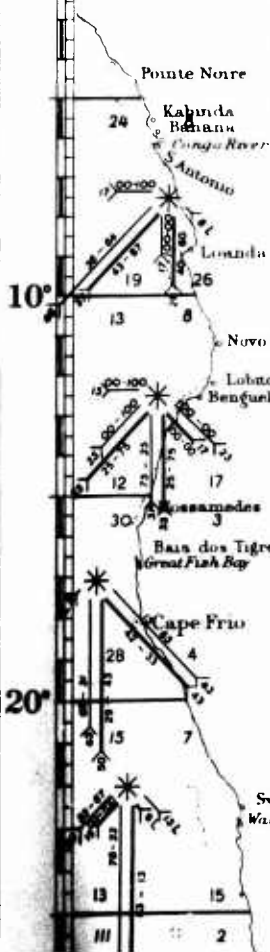
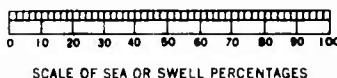
When the percent of direction is 15 or over, the conditions within the direction are shown along the shaft of the arrow in percentage of low and medium seas or swells, the first figure from the center is always the percent of low. The percent of high seas or swells within the direction is the remainder of the percentage. When the percent of direction is less than 15 but more than 6, the conditions within that 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.

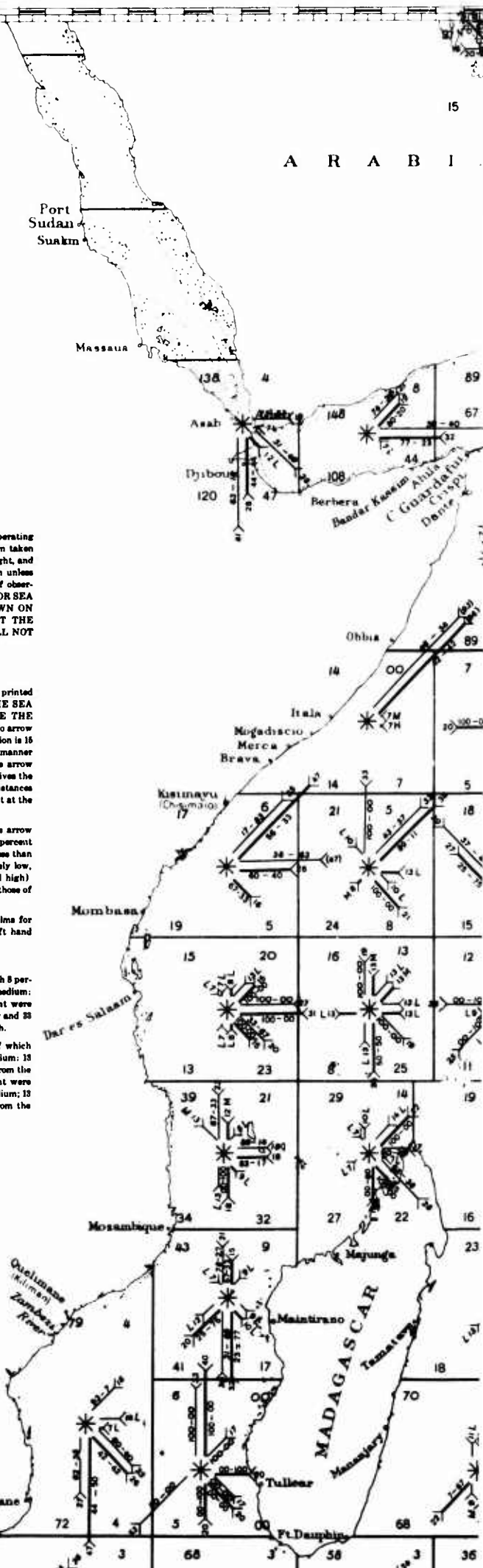
For example—The attached rose should be read as follows:

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; 36 percent were from the south of which 33 percent were low and 67 percent were medium; 17 percent were from the southwest, of which 80 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.



A F R I C A



A R A B I A

20°
10°
0°
10°
20°

15

89

67

44

108

120

47

14

00

7

10

5

18

15

12

19

11

19

16

23

18

18

70

18

36

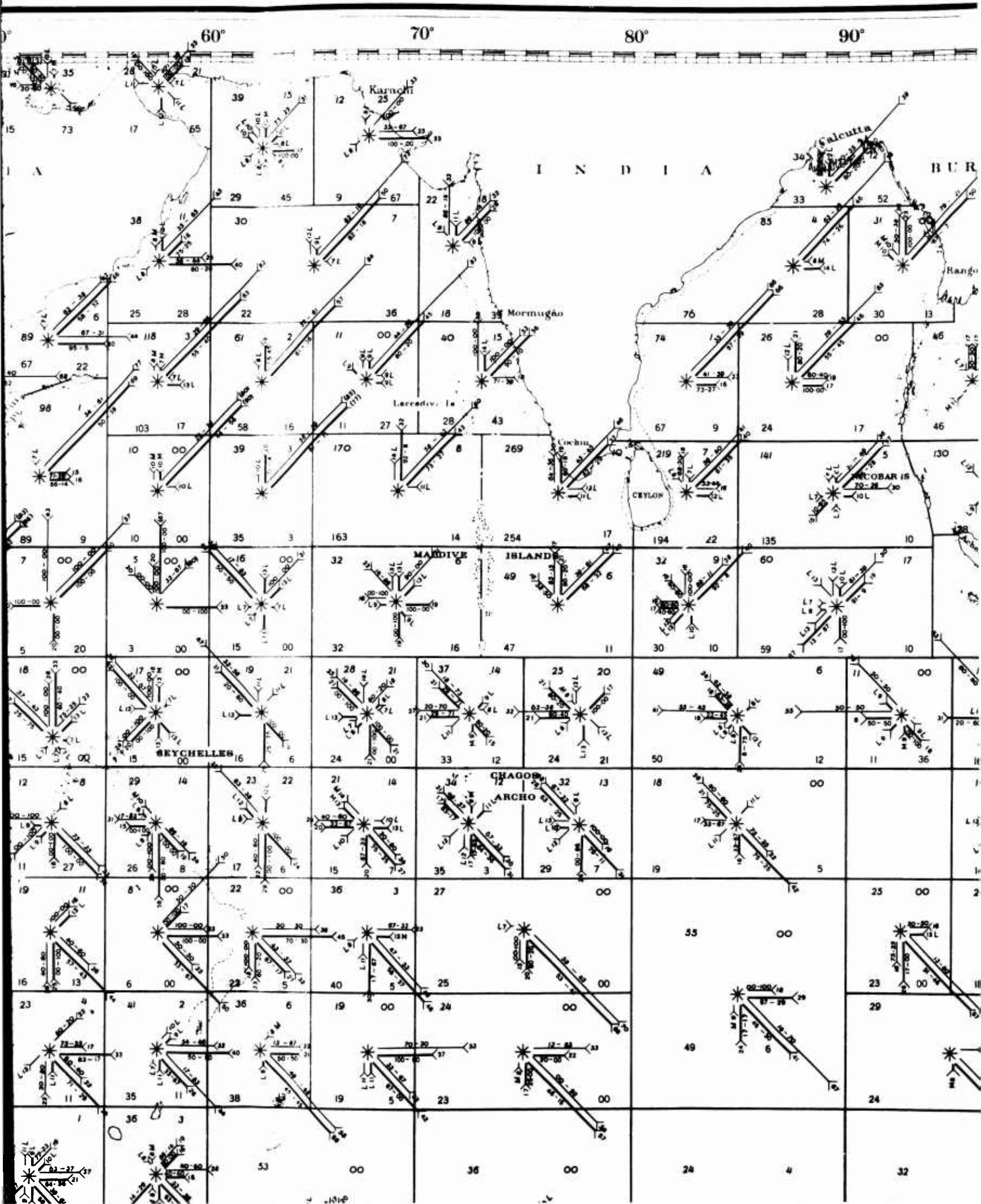
58

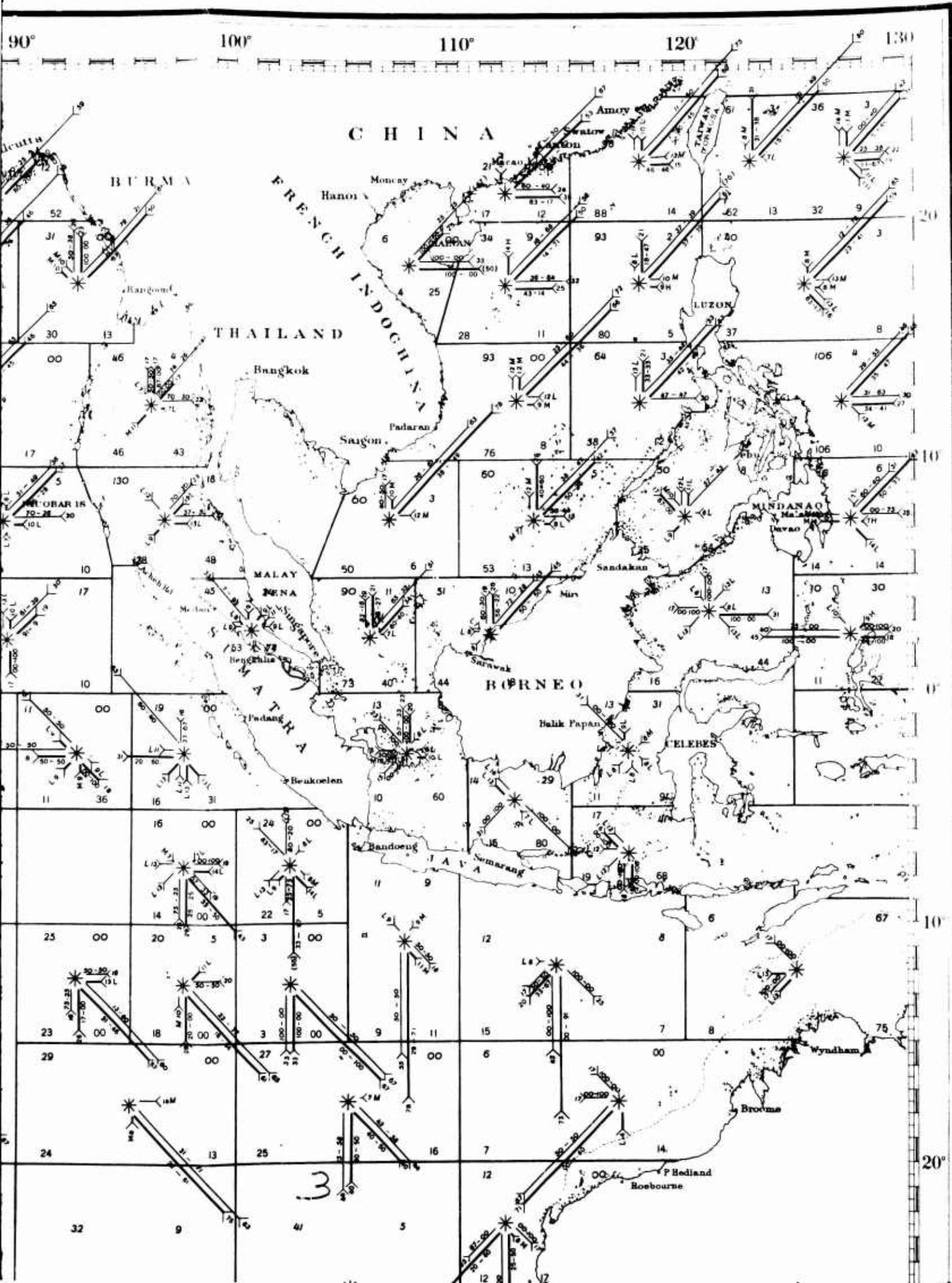
68

3

3

36





90° 100° 110° 120° 130°

CHINA

BURMA

FRENCH INDOCHINA

THAILAND

LUZON

MINDANAO

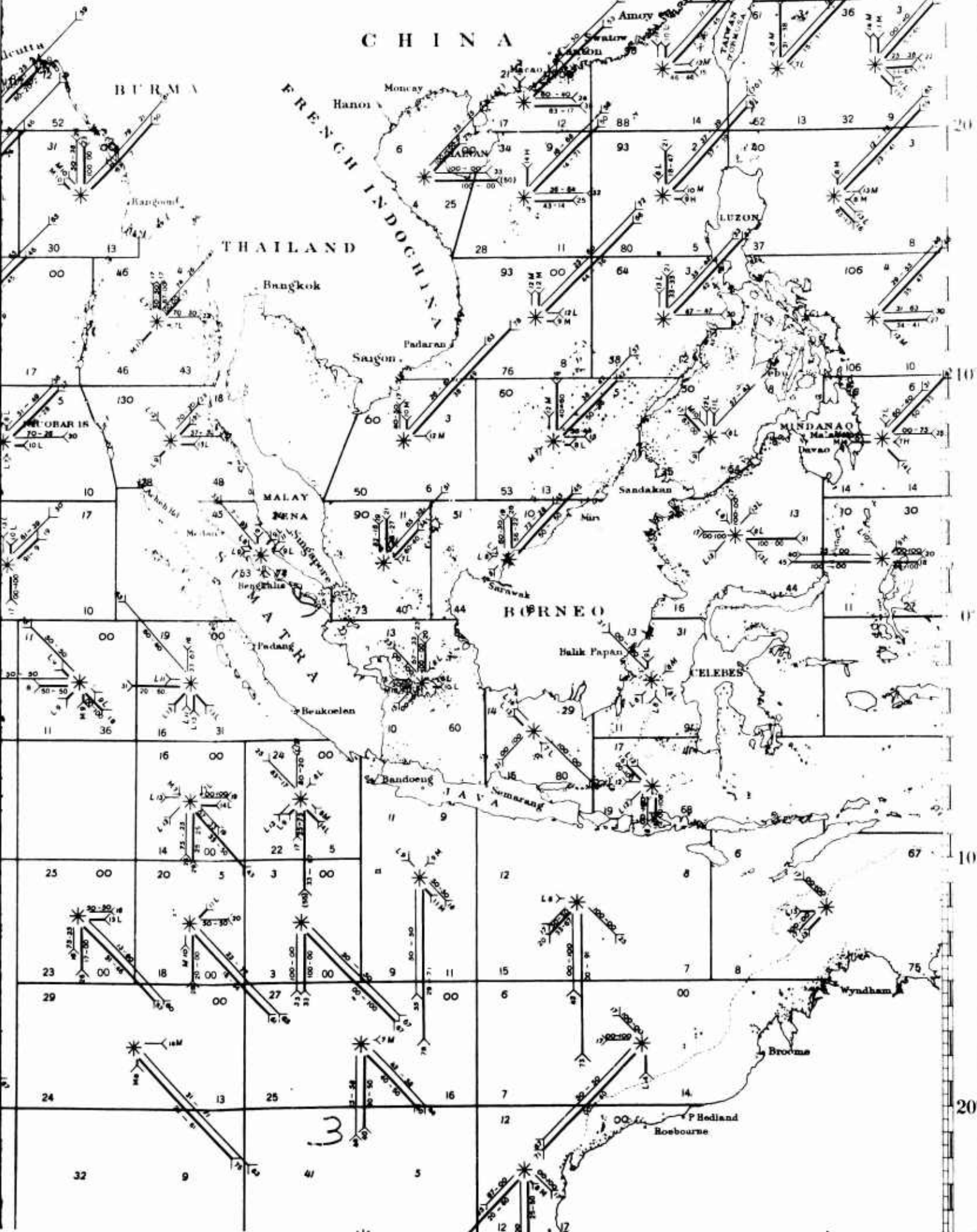
BORNEO

CELEBES

MALAYA

Sumatra

Java

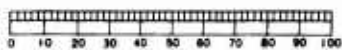


3

20°

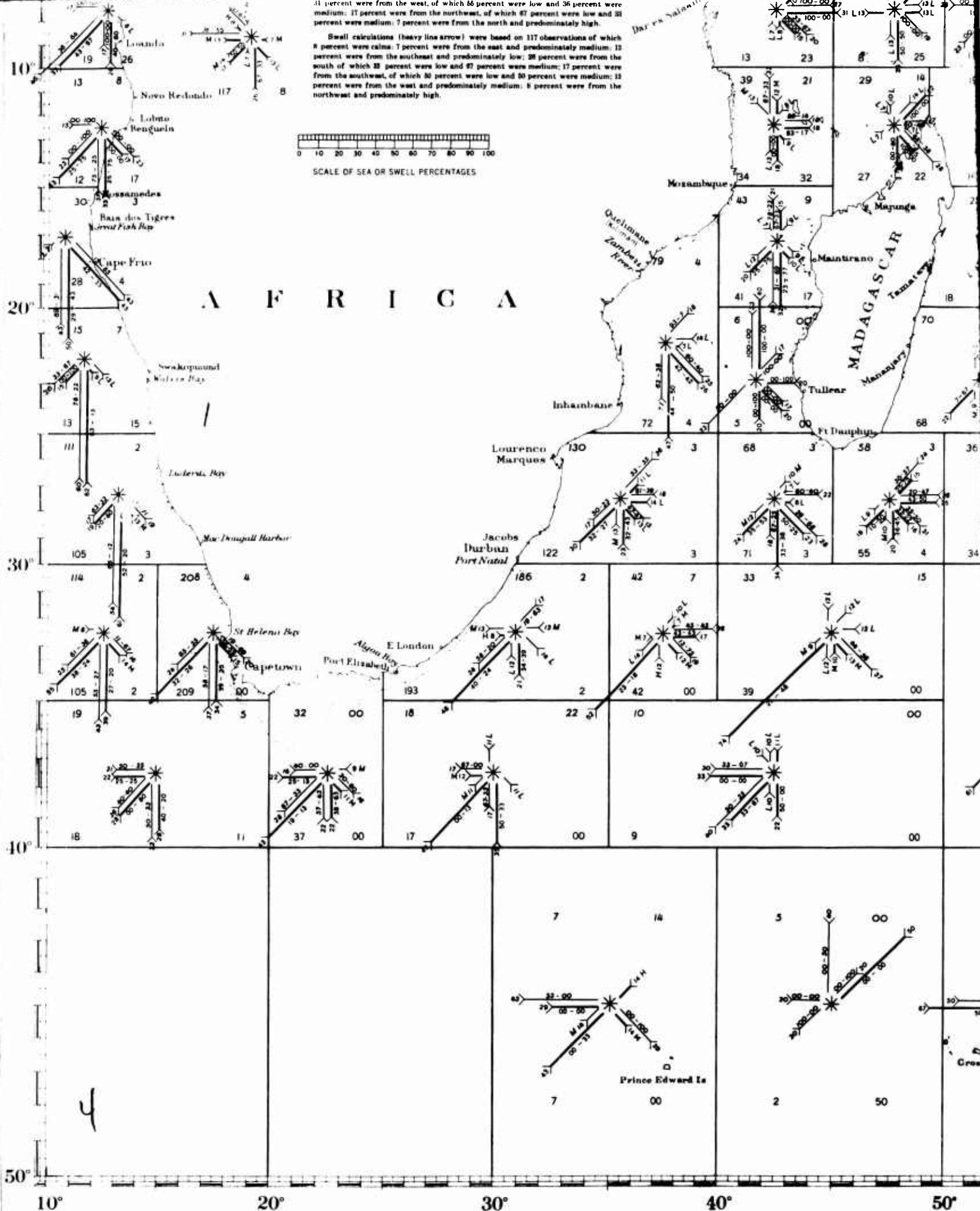
... were calm; 13 percent were from the southwest and predominately medium; 31 percent were from the west, of which 66 percent were low and 36 percent were medium; 17 percent were from the northwest, of which 67 percent were low and 33 percent were medium; 7 percent were from the north and predominately high.

Swallow calculations (heavy line arrow) were based on 117 observations of which 8 percent were calm; 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

A F R I C A



4

50

