TRANSITS FOR TESTING COMPASSES.

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When on a steamer voyage from Stockholm in the summer of 1923, the Chief Officer told me that, some years ago when under way in the Stockholm skärgård, he had noticed that the deviation of the steering compass had assumed different values from those found when approaching the port of Stockholm. The cause of this difference was very probably that the steamer had loaded a considerable amount of old iron rails in Stockholm.

When steaming seaward through the Stockholm skärgård the captain had occasion to observe this altered deviation, and with aid of the standard compass and the chart it proved possible to get a satisfactory correction of the deviation for the long courses the ship was to steer after leaving the skärgård.

This led to some trials, on the part of the Hydrographic Service, to establish leading lines in the main channels of the Stockholm skärgård in order to facilitate an efficient check on the compass courses of the vessels using these channels. A commencement was made in 1924 in the most frequented channel and during the summer of 1925 the work was extended to the other channels. The lines of transit are marked by provisional marks which will eventually be replaced by permanently erected marks when sufficient experience has been obtained as to the number of lines required and the best positions for the marks. The check on the compasses obtained by means of these lines cannot of course in any way replace the regular compensation and swinging for deviation of the compasses, but is designed to furnish means for an efficient and continued control over the compasses in the intervals between the regular tests.

A. *DIRECTIONS FOR ESTABLISHING THE LINES IN THE STOCKHOLM SKARGARD.*

1. The leading lines should, as far as possible, coincide with the fairways thus making it possible for the mariner, while under way there, to test his compasses on several different courses without using the pelorus.

2. Special attention should be drawn to the possibility of the testing of compasses for those courses, which are to be used when a ship, leaving the skärgård, puts to sea.

3. The transits should be arranged only in straight and easily navigable channels.

4. The transit-marks should be chosen in such a way that a vessel sailing in the main direction of a channel gets a marked transit right ahead or right astern and in this latter case, if possible, a steering mark ahead.

B. *MAGNETIC BEARINGS OF THE LINES OF TRANSIT.*

These bearings have been determined by aid of a Bamberg declinator both on one or both lines of transit and at several points on land, distributed if possible along and close to the leading lines.

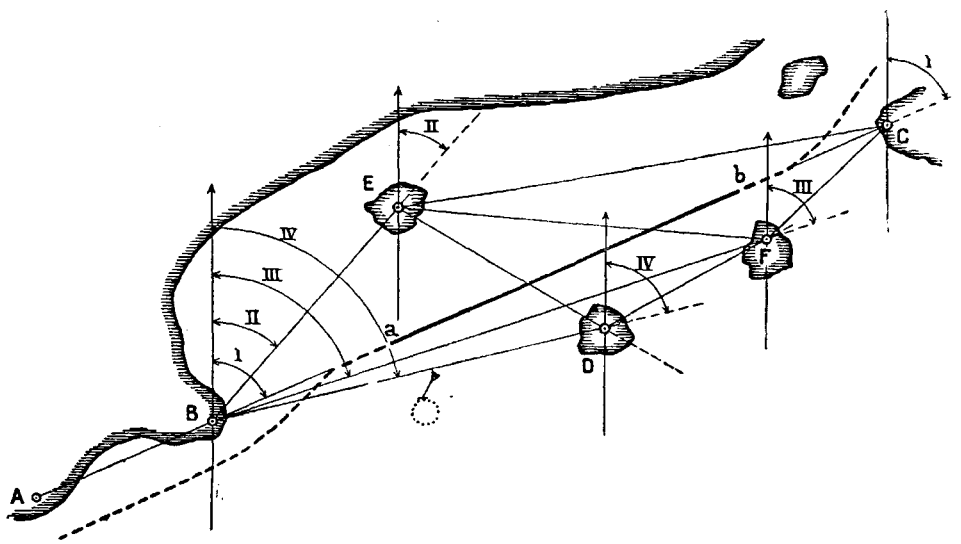
An example may elucidate the procedure followed.

In the figure below,

A and *B* are marks of transit for the line of control, of which the range to be used is marked by the continuous line *a*————————*b*.

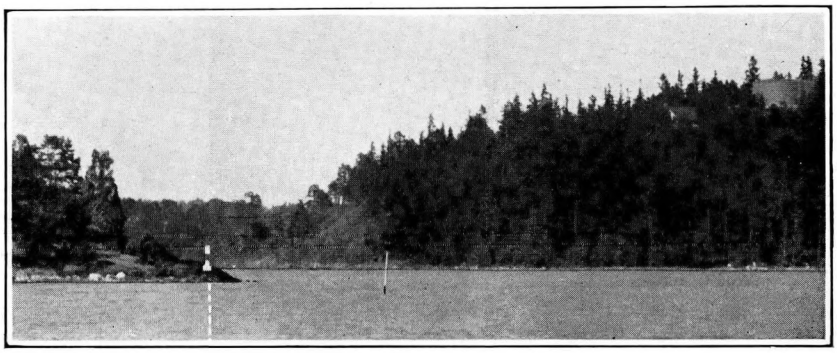
B, *C*, *D*, *E* and *F*, observation stations.

The arrows at *B*, *C*, *D*, *E* and *F* give the direction of the magnetic meridian.

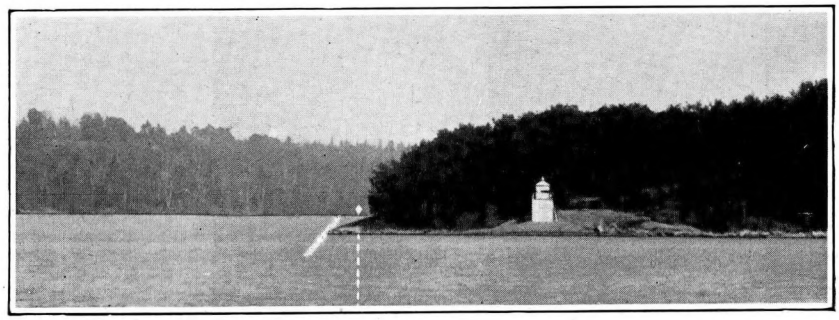


From each of the points *B*, *D*, *E*, *F* and *C* the horizontal angles to the other points of observation were observed, as well as the angle between the magnetic meridian and one of these directions. If the angles *II* at *B* and at *E*, *e.g.*, are identical, when corrected for the daily variation in declination, it is assumed that no magnetic anomaly occurs at these points. The same assumption is justified regarding points *B*, *D* and *F* if the angles *B-IV* and *D-IV* as well as *B-III* and *F-III* are identical.

When all land observations are completed and calculated it can be ascertained whether any magnetic anomaly exists at the land stations. This however does not guarantee that the useful range of the line of control is free from disturbance,



View No 1



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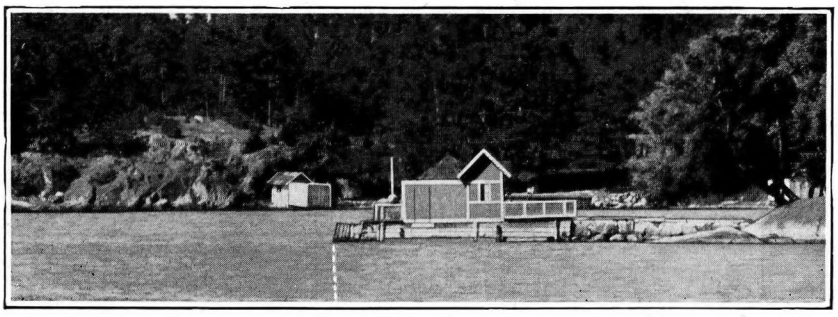

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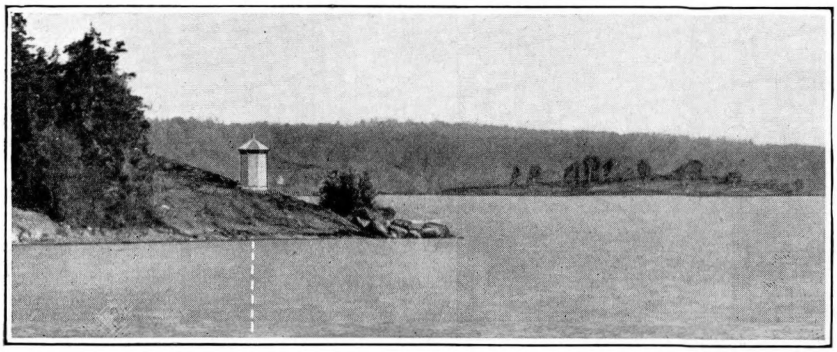

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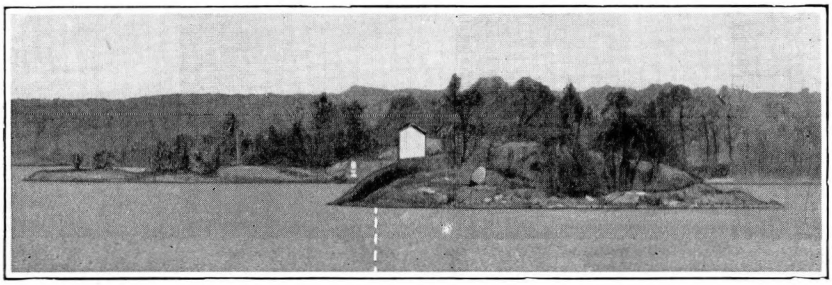

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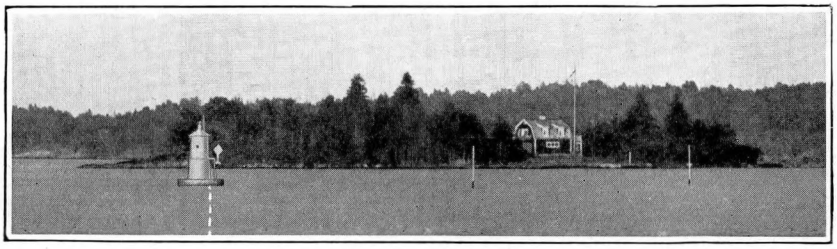
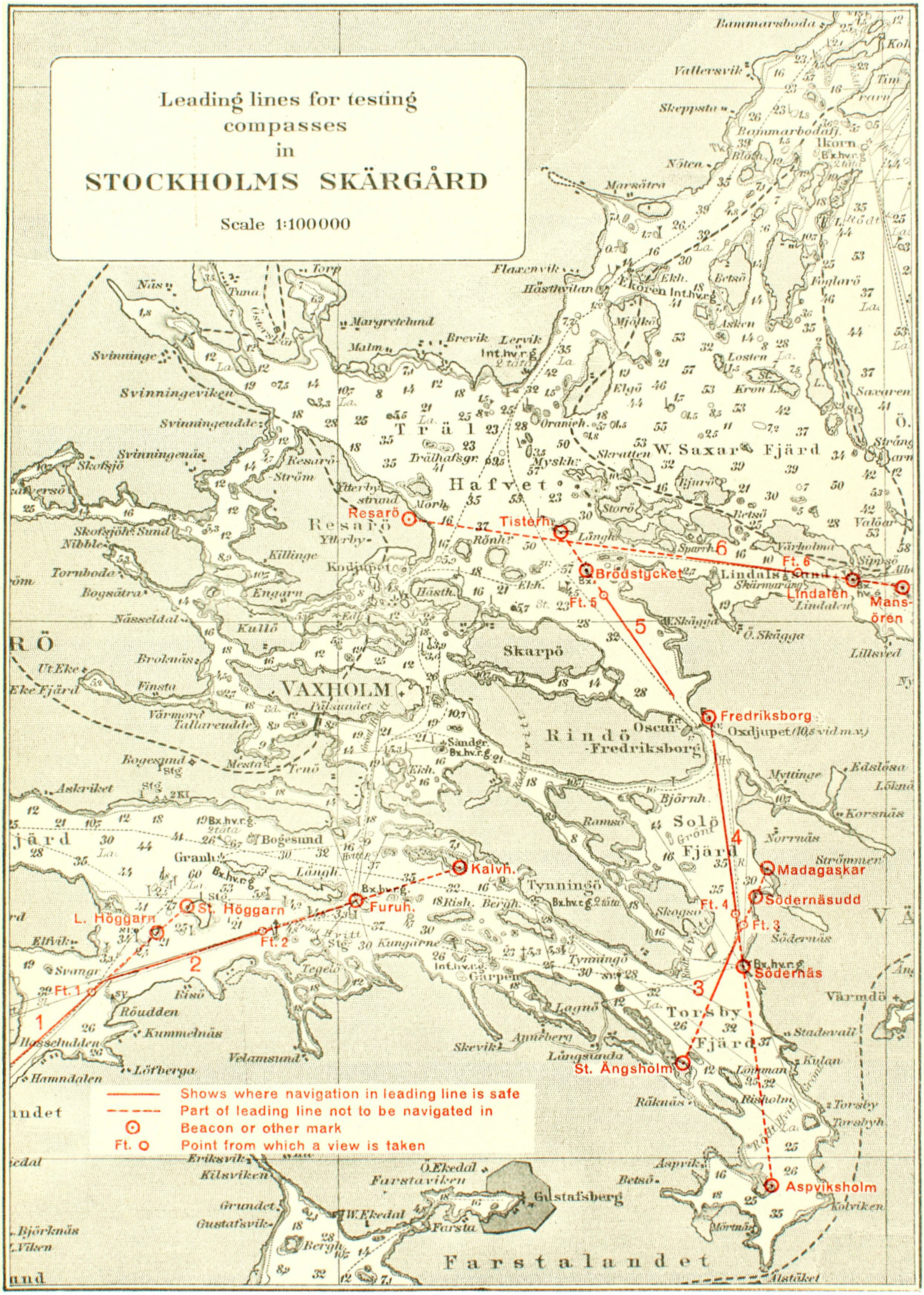


View No 6


Leading lines for testing
compasses
in
STOCKHOLMS SKÄRGÅRD
Scale 1:100000
Resarö
Tistern
Brodstycket
Ft. 5
Ft. 6
Lindalen
Mans-
ören
Fredriksborg
Madagaskar
Södernäsudd
Ft. 4
Ft. 3
Södernäs
St. Ängsholm
Aspviksholm
Kalvh.
Furuh.
St. Höggarn
L. Höggarn
Ft. 1
Ft. 2
1
2
3
4
5
6
Shows where navigation in leading line is safe
Part of leading line not to be navigated in
Beacon or other mark
Ft.
Point from which a view is taken
VAXHOLM
Träl Hafvet
W. Saxar Fjärd
Rindö
Solö Fjärd
Torsby Fjärd
Farstalandet
Skarpö
Gustafsberg

To obtain such guarantee it has been considered necessary to follow the transit line closely by a vessel while continuously reading the standard compass of the vessel, in order to ascertain whether magnetic anomalies exist within the useful part of the control line. It stands to reason that the standard compass of the vessel must satisfy very strict demands regarding sensitiveness, position on board and compensation.

In order to exemplify the form in which the results are published, an extract is given below with views from the publication " Beskrivning over kompasskontrollinjer Stockholms skärgård (Description of leading lines for testing compasses in the Stockholm skärgård) ".

STOCKHOLM TO SANDHAMM
(*See* Chartlet)
NAVIGATION

Coming from *Stockholm,* take, in *Halvkakssundet,*

1. *Stora Höggarn cairn with horizontal stripe in line with Lilla Höggarn cairn with patch,* 50,9° *magn.* (*) (N 50,9° *E*) and keep on this mark (View N° 1).

When Roudden is abeam (approximately), take a starboard sheer and get,

2. *Kalvholmspar beacon just between Furuholm western point and the sharp and dark edge of the wood on the same point* 75,2° *magn.* (*N* 75,2° *E*) and keep on this mark until the black beacon on the rock awash, about 0,2 naut. miles north of *Tegelö* western point comes abeam. (View N° 2).

When the *rock awash* about 0,5 naut. miles *WSW* of *Tynningö SE* point and marked by a black ball-perch, is well passed, one may steer down toward Torsbyfjärd, and, swinging to port, get

3. *the westernmost bathing-cabin at Madagaskar, on Norrnäslandet, tangent to the pier at the yellow bathing-cabin on Södernäsudd,* 23,1° magn. (N 23,1° E) and keep on this mark (View N° 3). A vertical white *stripe* on *Stora Ängsholm* will then be *right astern.*

When *Aspviksholm beacon with stripe* approaches Södernäs light, swing to port and get

4. *Aspviksholm beacon with stripe in line with Södernäs light right astern, when the top of the Fredriksborg dungeon on Värmdö will be right ahead* 355,2° *magn.* (*N* 4,8° *W*), and keep on this mark (of view N° 4). The mark may be kept till *Rindö S.* point is approximately abeam.

Tisterholm cairn just between Brödstycket light and Brödstycket W. point, 327,9° *magn.* (*N* 32,1° *W*) and keep on this mark (View N° 5). This mark may be kept until about 0.3 naut. miles distant from Brödstycket.

After entering *Lindalssundet,* and when *Sparrholm SE* point is approximately abeam, get

Mansoren beacon in line with S. margin of Lindalen light, 100° *magn.* (*S* 80° *E*), and keep on this mark (View N° 6). *The southernmost house in the wood on Resarö (with white gable) will then be astern.* This mark may be kept until Smärmaräng pier on Värmdö is approximately abeam.

(*) The courses given are magnetic and referred to 1 July 1929.