

1951/19B

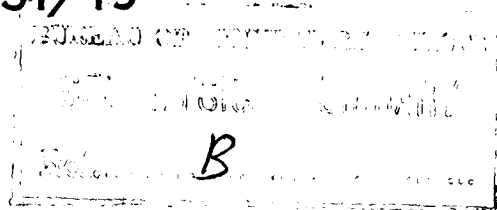
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MAGNETIC INVESTIGATIONS OF  
COMPASS SWINGING SITES AT  
THE R.A.A.F. AERODROME,  
LAVERTON, VICTORIA

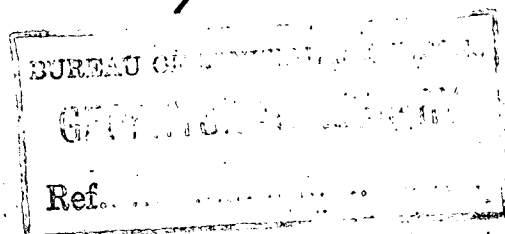
by

R.E. ERVIN

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MAGNETIC INVESTIGATIONS OF  
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LAVERTON, VICTORIA

*by*

*R.E. ERVIN*

MAGNETIC INVESTIGATION OF COMPASS  
SWINGING SITES AT THE R.A.A.F. AERODROME, LAVERTON, VIC.

INTRODUCTION

The purpose of the investigation was to determine the degree of uniformity of the earth's magnetic field over the existing and the alternate compass swinging sites for ground swinging of aircraft.

Field work was carried out on 30/1/51 and 5/2/51. Instruments used were:-

- (1) Vertical Force Variometer used for accurate and rapid measurement of differences in the vertical component.
- (2) Wingfield Compass used for relatively rapid measurement of differences in magnetic declination (or variation) with an accuracy of about  $\pm 5$  minutes of arc.

-DETAILS and RESULTS of SURVEY-

(a) Existing Compass Swinging Site.

Observation points in the form of a grid were pegged out covering the area normally used when swinging an aircraft and a survey was made of this area with a Vertical Force Variometer. Plate No.1 shows in profile the relative values of the vertical component at these observation points expressed in gammas (1 gamma =  $10^{-5}$  gauss) and representing the differences between the values of the vertical component at the Base Station (IN/OE) and at the observation points, e.g. the vertical component at IN/OE is 1037 gammas less than at IN/OE. This information thus indicates the degree and extent of disturbances or anomalies in the vertical component over the area.

It will be noted that marked anomalies occur at numerous points over the whole area. (maximum range for the area was 1450 gammas). It is reasonable to expect considerable anomalies in declination (or variation) to exist in an area where large anomalies occur in the vertical component.

(b) Alternate Compass Swinging Site.

Observation points were marked out in the form of a grid and the area was surveyed with a Vertical Force Variometer and a Wingfield Compass. Plate No.2 shows in profile form the values of the vertical component relative to Base Station OS/OW. These differences indicate the presence of anomalies over this area (maximum range for the area was 975 gammas).

The results of the survey with the Wingfield Compass are given in Plate No.3 which shows in profile form the magnetic declination (or variation) differences at the various observation points expressed in minutes of arc and representing the differences between the declination (or variation) at the Base Station (OS/OW) and at the observation points, e.g. the declination at GS/OW is 24 minutes of arc greater than OS/OW. It will be seen that there are large differences in declination (over one degree in some cases) over this area.

CONCLUSIONS

The aerodrome is located in a basalt area and it is usual to find anomalies in the magnetic field in such an area. Pieces of rock from the area were tested and showed strong magnetic properties. The irregularities in the vertical component and declination (or variation) do not appear to follow any regular pattern and it is likely that these irregularities are due to the magnetisation of the basalt.

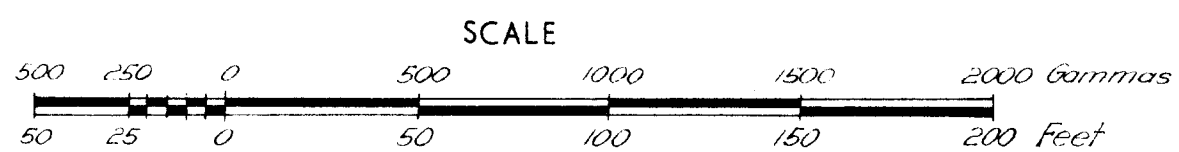
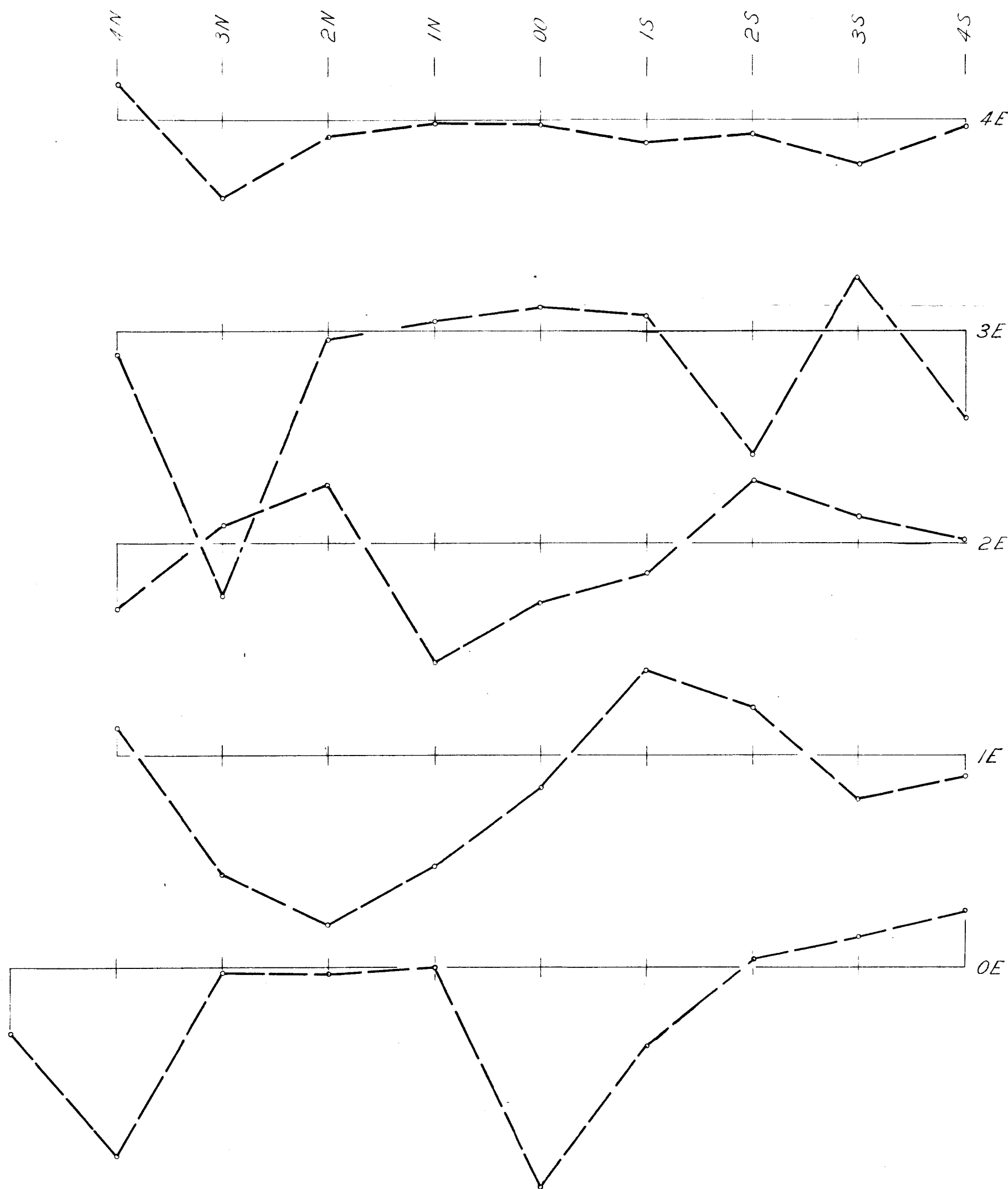
Of the two areas surveyed, the alternate compass swinging site appears to have the more uniform magnetic field. However, the magnitude of the differences in declination (or variation) existing in this area raises a doubt as to the wisdom of adopting it as the regular compass swinging site without first exploring other possible sites.

*Rex E. Ervin*  
(Rex E. Ervin.)

16 MAR 1957

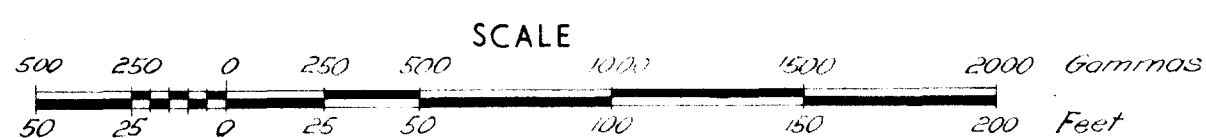
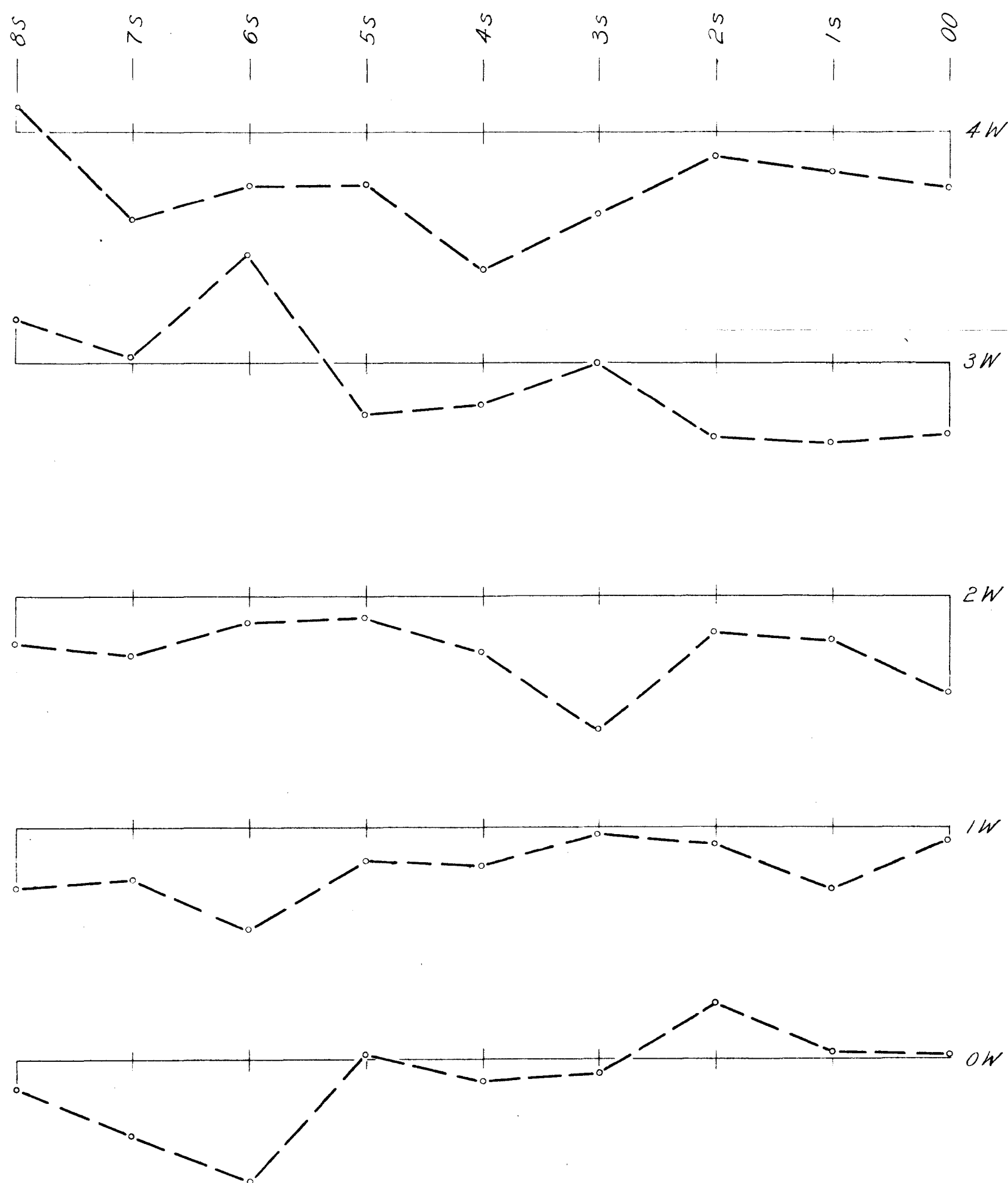
*Melbourne*

# PLATE 1



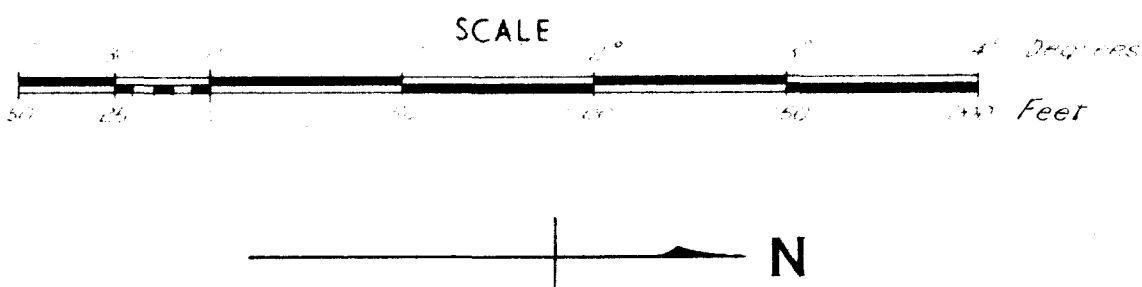
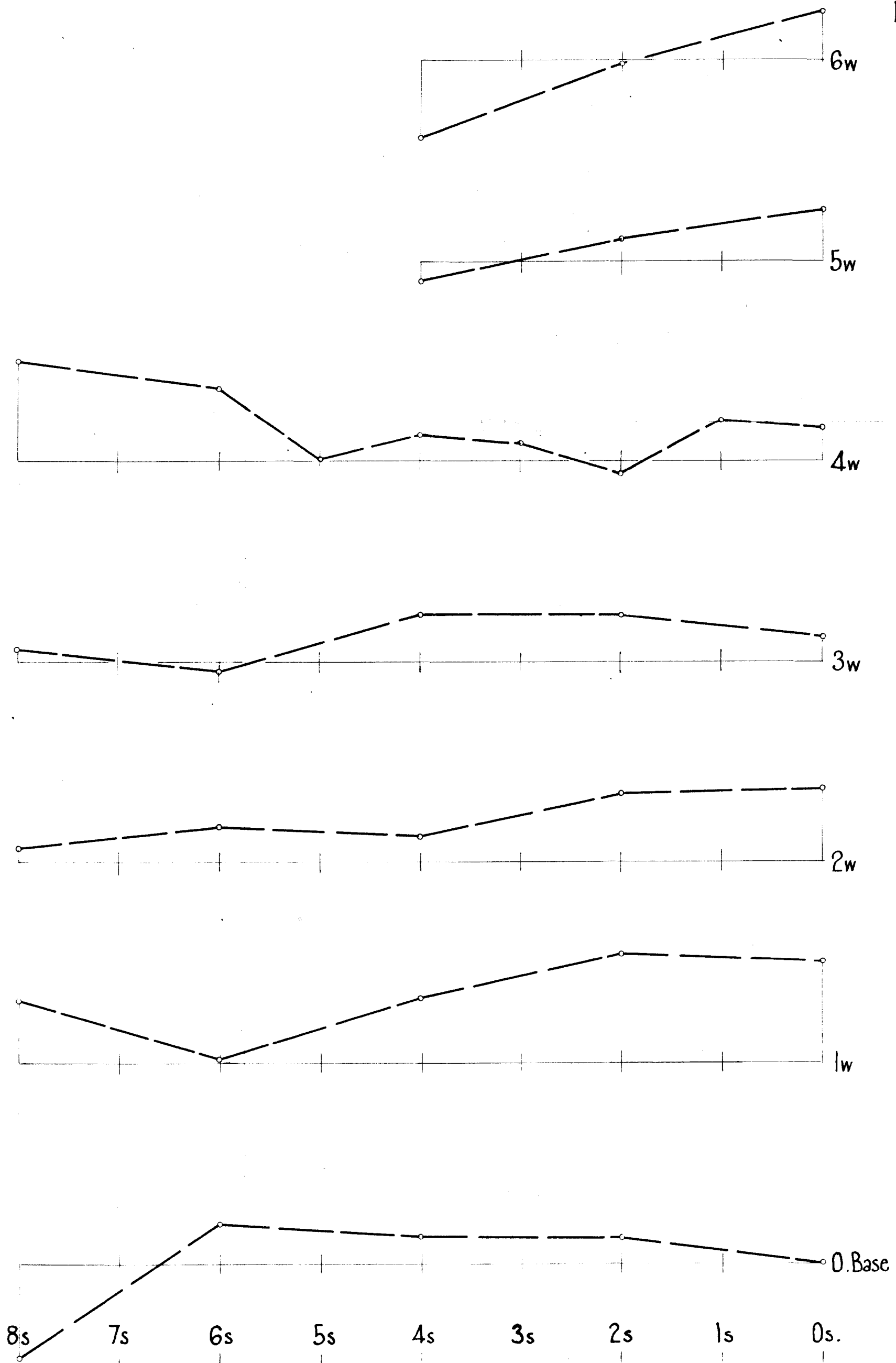
GEOPHYSICAL SURVEY AT LAVERTON, VIC.

**PROFILES SHOWING THE  
DIFFERENCES IN THE VERTICAL  
COMPONENT EXISTING OVER  
THE COMPASS SWINGING SITE  
30-1-51**



GEOPHYSICAL SURVEY AT LAVERTON, VIC.

PROFILES SHOWING THE  
DIFFERENCES IN THE VERTICAL  
COMPONENT EXISTING OVER  
THE ALTERNATE COMPASS  
SWINGING SITE 5-2-51



GEOPHYSICAL SURVEY AT LAVERTON VIC  
 PROFILES SHOWING THE  
 DIFFERENCES IN MAGNETIC  
 DECLINATION (OR VARIATION)  
 EXISTING OVER THE ALTERNATE  
 COMPASS SWINGING SITE 5-2-51