the original photograph and from the observer's recollection of the occurrence, is the following:

During a thunderstorm the observer and his friend had set up a camera with open shutter in a window, in an attempt to photograph a lightning flash. During the exposure the ball lightning was seen to pass the window. Presumably the moving of the camera during exposure, which is clearly seen on the picture, was due to an involuntary movement of the observer whilst looking at the lightning. The movement of the ball was described as »slow». It was finally carried by a downdraught into the chimney (a cold chimney on a hot summer day) and finished by exploding in the fireplace of the central heating system.

The path of the ball, as traced on the picture, exhibits the type of movement which one would expect from the numerous statements on record to the effect that ball lightning is carried along quite passively by the airflow.

On the basis of the breadth of the trace on the negative (about ½ mm.) and with reasonable assumption as to the distance (10 m.) and the focal length of the lens (10 cm.) the approximate diameter of the ball is computed to be 5 cm.; this is in good accord with what is generally reported from visual observation.

Helge Petersen.

55.038.9(48)

»The Variation of the Compass Magnetic Declination 1950»

(Scale 1 : 2 milj.)

Prepared by the Hydrographic Office of Norway, the Royal Hydrographic Office of Sweden, the Meteorological Central Office of Finland, and the Danish Meteorological Institute.

Geophysicists from the countries of northern Europa held a meeting in Stockholm in 1950 and urged their countries to prepare a general chart of magnetic declination. A committee was formed from delegates representing the above-mentioned institutes to undertake this project, and Director Rolf Kjær of Norway was elected as chairman. To carry out this task, the committee held meetings in Sodankylä in August 1950,

and in Stockholm in March, 1952. The work was completed this year and the Hydrographic Office of Norway had printed in the summer of 1952, a map of magnetic declination showing the mean variation of the compass needle at the beginning of 1950 and the known regions of magnetic disturbance.

All magnetic data from the four countries were used in the preparation of this chart: ordinary geomagnetic surveys, and also special researches of anomaly regions in Scandinavia, in all 11,254 observation station. In each country the observation material was independently accumulated. Since the rocks of Northern Europe, excluding Denmark, contain many magnetically active elements and since there are uneven distributions in the composition of the earth's crust, a great many disturbances occur in the geomagnetic field. To illustrate this point, it may be stated that in Finland for the preparation of this chart, a network of 920 stations was used and of these 143 or 16% were disturbed, without taking into consideration the proper known anomalies. Since the purpose of the chart was to give a general picture of magnetic declination the committee decided to take mean values of »undisturbed» observations for each area measuring 1° longitude × ½° latitude. Using these values the declination lines of whole and half degrees were drawn by visually interpolating. For comparison the undersigned made a construction of mean declination lines the area of Finland on the basis of direct station values. These lines agreed well with those drawn using the first method. The map does not show local disturbances of small extension, but larger anomaly areas are shown by crosshatching.

The direction of the declination lines or isogonic lines is for the most part north-south, but there is still a high incidence of curvature especially north of 65 degrees latitude, in the southern part of the Bothnian Sea, in the south western archipelago, in the eastern region of southern Sweden, in Central Sweden in areas bounded by 60—64 degrees latitude and 12—15 degrees longitude, and in the greater part of Norway. Several feature of the isogonic lines may be mentioned.

Along the eastern border region of Finland passes the 7.5° E isogonic line. The decrease in the eastern declination is comparatively even throughout the greater part of the country. The isogonic line 2° E passes from Hanko to Pori, aeross the northly Quark into Sweden where it curves greatly, but at 22.5° longitude it returns to Finland passing over its most north-western section to Finnmarken in Norway. The 0° line of declination, the agonic line, begins in the central part of Gotland, rises approxim-

ately at the 19° meridian with comparatively little curvature to 65° latitude, but curving more in the north. The isogonic line 3° W passes evenly from Copenhagen to 60° latitude, curves slightly by a few degrees of longitude westward between 62—63° latitude, but finally returns at 65° to the southern meridian. The declination in the disturbance area of central Sweden is more to the west, from 3 to 4°. The isogonic line 5.5° W occurs along the western coast of Denmark, and very evenly travels north. Along the western coast of Norway the westerly declination is from 8 to 9°.

Regions of disturbance occur in Finland in the southern area and north to 68° latitude, in Sweden mostly north of 64° and along the west coast of the Baltic Sea, in Norway along the coast of Finnmarken, west of the Oslo Fjord, and also a large area in the southernmost part. In Denmark there is only one well-known anomaly area at Bornholm and its surrounding waters. The annual mean change in declination, the increase in easterly wariation, has been estimated according to the values of magnetic observationes in North Europe 7.8′ (0.13°), or approximately one degree in eight years.

This geomagnetic map prepared by the mutual collaboration of several countries is the first of its kind. It gives a clear picture of the general distribution of declination in the northern countries, and will certainly be of great benefit in all fields where the use of a compass is necessary, such as aviation, navigation, etc.

It has been decided at a meeting of northern geomagnetic scientists in Helsinki, in September 1952 that the same committee will also prepare general charts of the components of geomagnetic force, i.e. horizontal intensity, and vertical intensity.

J. Keränen.