

A VERTICAL SEISMOGRAPH OF SHORT PERIOD AND GREAT MAGNIFICATION

by

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The well known Kirnos seismograph may be converted into a great-magnification shortperiod instrument ($v = 200\ 000$, $T = 1$ sec) as follows:

The free period of our Kirnos seismograph was 12 sec, its magnification 700, its reduced pendulum length 105 cm (Fig. 1.). In spite of the great difference between the new requirements and the features of Kirnos pendulum, a suitable seismograph has been constructed in a short time by making use of parts of the Kirnos seismograph (Fig. 2.). In order to diminish the reduced pendulum length, the weights marked Fig. 1. (a), (b), (c) were removed and replaced by a new large weight as seen in Fig. 2. This weight of 26 kilograms consisted of a copper cylinder filled with lead.

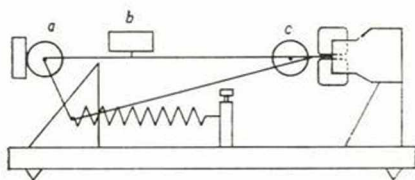


Fig. 1.

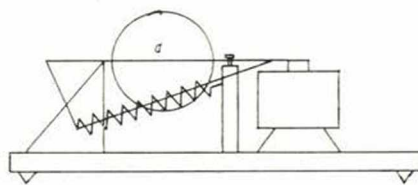


Fig. 2.

The electrodynamical constant of the pendulum was increased by placing the coils in the air-gap of a ring magnet rather than of a horseshoe magnet. The constants of the modified Kirnos pendulum are as follows:

- $T_p = 1,2$ sec Free period of the pendulum,
- $T_g = 0,08$ sec Free period of the galvanometer,
- $D_p = 0,43$ Damping of the pendulum,
- $D_g = 3,6$ Damping of the galvanometer,
- $\sigma^2 = 0,73$ Coupling factor,
- $V = 261.000$ Magnification of the equipment.

The response curve computed from the data listed above is shown in Fig. 3. A seismogram is shown as in Fig. 4.

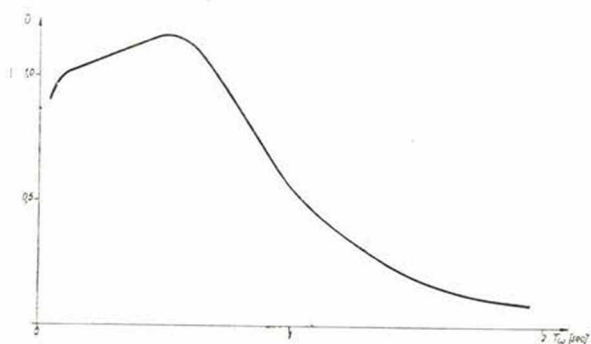


Fig. 3.

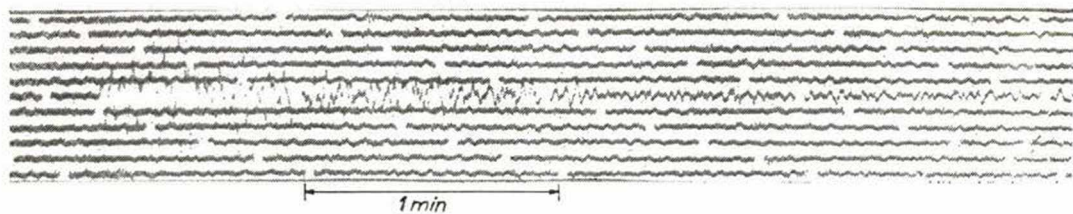


Fig. 4.