Magnetómetro de Torsión Askania

Nº inventario UCM 2019119
Museo Físicas 2355 Fis/009

Datos del equipo:
Continental Elektroindustrie AG
Askania Berlin
Nr. 700349
Made in Germany
Etiqueta en papel Torsionsmagnetometer G.F. 2 ,M
Bobina de calibración Nr. 5116522
Fecha 1950-60

Descripción del instrumento en la revista: Geophysical Prospecting. Vol. IV. Número 4 Diciembre 1956 (Páginas 424-441)
A TORSION-MAGNETOMETER FOR MEASURING THE VERTICAL COMPONENT OF THE EARTH'S MAGNETIC FIELD
F. HAALCK

A TORSION-MAGNETOMETER FOR MEASURING THE VERTICAL COMPONENT OF THE EARTH'S MAGNETIC FIELD *

BY

F. HAALCK **)

ABSTRACT

The paper describes a vertical component magnetometer for field work whose magnet system is provided with a torsion axis and in which torsion serves as a standard of measurement. When a measurement is taken the magnetic axis of the system is brought back into the horizontal position by altering the angle of twist (null-method). The angle of twist is thus a direct measure of the vertical intensity. The instrument is within wide limits independent of the magnetic north-south direction and may therefore be set up in practically any position. The magnet system is temperature compensated, well damped and provided with an automatic clamping device. With a scale value of 25 gammas per scale division the range of the instrument for direct measurements is 65000 gammas. A tripod of special design enables a measurement to be taken in about one minute. The weight of the torsion magnetometer inclusive of tripod is only 2.9 kg (6.4 lb).

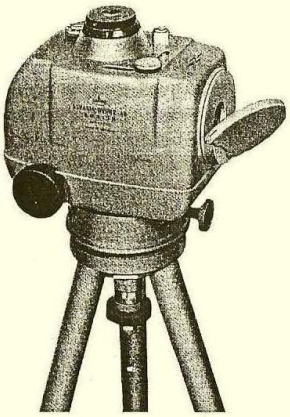
Magnetic balances suitable for field work were first developed and used by Adolf Schmidt (1915). They quickly became very popular as soon as the Askania-Werke about 1920 succeeded in producing these delicate instruments in numbers. Since then magnetic balances of the Schmidt type have stood the test throughout the world. No other type has ever attained the same degree of accuracy and dependability.

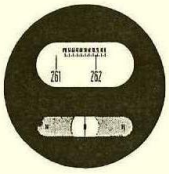
Naturally, attempts to develop magnetic balances for field work based upon other principles of construction have not been lacking. Attempts were made by several investigators (Koenigsberger, 1925, Angenheister, 1926, Fanselau, 1948) to substitute a fibre for the knife edge as a mechanical axis of the system in order to be able to control the tilt of the magnet system from outside by applying a torque to the fibre. These investigators, especially Fanselau, indicate that it may be possible to use torsion not only for controlling the system,

applying a torque to the fibre. These investigators, especially Fanselau, indicate that it may be possible to use torsion not only for controlling the system, but also as a standard for the measurement itself. This would be the simplest procedure and might appear obvious. However, no suitable solution to this problem has, as yet, been published. In all instruments, variations in the vertical component of the earth's magnetic field are still measured by reading

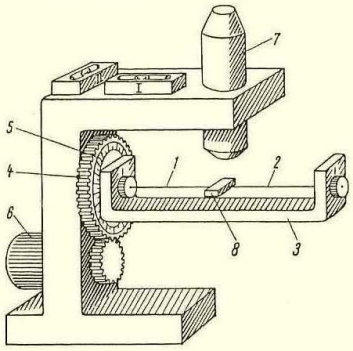
*) Presented at the Tenth Meeting of the European Association of Exploration Geophisicists, held in Hamburg, 16/18 May 1956.
**) Askania-Werke AG, Berlin-Friedenau.

Magnetómetro de Torsión





1 and 2 torsion fibres
3 U-shaped system carrier
4 torsion circle
5 graduated circle
6 adjusting knob
7 autocollimation telescope
8 magnet system



Torsion magnetometer for measuring relative values of the vertical component of the earth's magnetic field intensity. (Photograph courtesy of Askania Werke.) The small test magnet is maintained in a horizontal orientation by twisting the fiber to which it is attached.

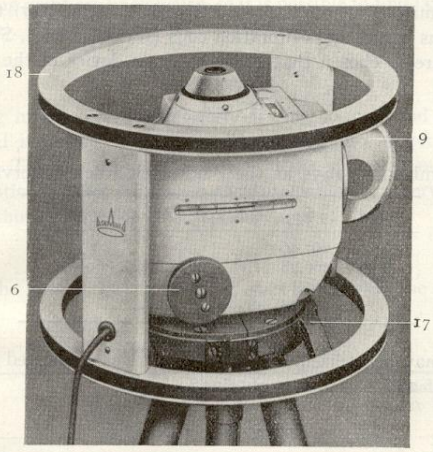


Fig. 8. Torsion magnetometer with attached calibrating coil.
16 Setting knob; 9 Illumination mirror; 17 Holder for calibrating coil; 18 Calibrating coil

http://de.wikipedia.org/wiki/Askania (Historia de la Empresa Askania)
http://www.askania-uhren.de/museum.php (Página web actual de Askania)