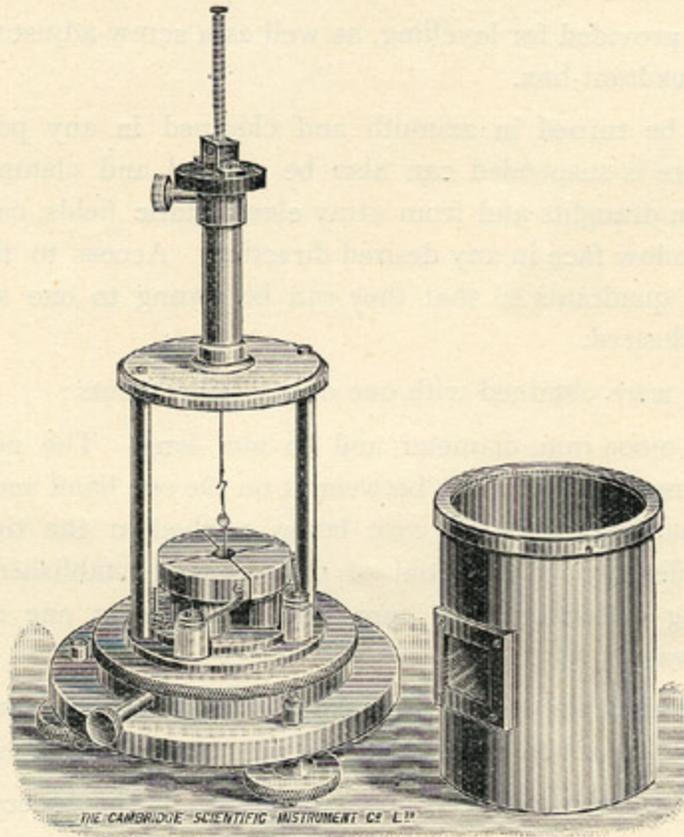


THE CAMBRIDGE
SCIENTIFIC INSTRUMENT COMPANY, LTD.,
CAMBRIDGE, ENGLAND.

THE DOLEZALEK ELECTROMETER.



This instrument, of the well-known "Quadrant" type, is made in accordance with the designs published by Dr. F. Dolezalek, which embody a number of new and desirable features.

The needle and quadrants are of small dimensions, so that the electrostatic capacity is correspondingly small. The quadrants are mounted upon ambroid, which affords very high insulation. The needle is of paper thinly coated with metal ("silver paper"), its form ensuring ample rigidity. It is suspended by a quartz fibre, its extreme lightness making it possible to use a very feeble controlling force without rendering the period unduly great. Thus great sensitiveness is secured. The resistance offered by the air to a needle of such light construction suffices to render the motion nearly dead beat, without any further damping devices being required. Through a wide range the deflections are proportional to the potential differences producing them.

The needle is charged to a potential of 50 to 200 volts, higher voltages not being recommended when a very fine fibre is used for the suspension. The necessary voltages may be obtained from a voltaic battery, from a dry pile or from a lighting circuit.

To facilitate the communication of the charge to the needle, the fibre and its attachments are rendered conductive by a thin film of solution of a hygroscopic salt, such as calcium chloride in 10 to 20 per cent. solution, the fibre and its attachments having been previously dipped for some minutes in 10 per cent. potash ley, and then well washed with distilled water.

Conducting suspensions of fine phosphor bronze strip are also supplied. The sensibility with these will be generally considerably less than with quartz fibres. They are, however, somewhat easier to handle than the quartz, and will be found very useful for a large range of work.

A convenient charging key is also fitted which enables the needle to be momentarily connected to a source of voltage and then insulated (in this case the fibre is *not* to be rendered conductive). The needle will thus maintain its charge without appreciable loss for some days, so that accurate quantitative work can be done even when the only available voltage is that of the electric light leads, or a statically charged rod, etc.

The lightness of the needle enables the instrument to be moved without fear of damaging the suspension, no arrestment being required.

The suspension is provided with a hook at each end, these hooks engaging with eyes upon the torsion head and the needle respectively, in such a way that no slip or backlash can be introduced.

Three screw-feet are provided for levelling, as well as a screw-adjustment for varying the height of the needle within the quadrant-box.

The instrument can be turned in azimuth and clamped in any position. The torsion head from which the quartz fibre is suspended can also be rotated and clamped, while the cover, which serves as a protection from draughts and from stray electrostatic fields, can be independently turned so as to make its glass window face in any desired direction. Access to the needle is rendered easy by mounting two adjacent quadrants so that they can be swung to one side and returned again to their working position as desired.

The following results were obtained with one of our instruments :

The quartz fibre was 0.004 mm. diameter and 60 mm. long. The needle was charged so that there was a potential difference of 100 volts between it on the one hand and the two pairs of quadrants on the other hand, the quadrants and the case being earthed at the time of charging. After the needle was isolated, a difference of potential of 0.1 volt was established between the two pairs of quadrants. The resulting deflection from zero was 170 mm. at one metre scale distance. The period of the instrument was 35 seconds.

By making the potential difference between the needle and the two pairs of quadrants 200 volts, deflections as high as 240 mm. at one metre scale distance have been obtained for 0.1 volt.

Phosphor-bronze suspensions will give about one-tenth of the deflections given by quartz fibres 0.004 mm. diameter.

The needle in the stock pattern instrument is fitted with a mirror of about 200 cms. radius so that the scale and lamp should each be placed about 200 cms. from the electrometer.

PRICES.

	£	s.	d.	\$	Code Word.
Complete Electrometer, with two spare quartz suspensions, diameters 0.004 to 0.009 mm.	7	10	0	36.50d.	Attune.
Spare Needle in box	0	10	0	2.50d.	Logman.
Three Quartz Fibre Suspensions, diameters about 0.004, 0.006, 0.009 mm., with hooks, in box... ..	0	10	0	2.50d.	Loheck.
Three Phosphor-bronze Strip Suspensions and hooks ...	0	15	0	3.70d.	Lollard.

Office and Works: Cambridge, England.

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