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The Use of the Triode Valve in Maintaining the Vibration of a Tuning Fork. By Prof. W. H. ECCLES.

A TUNING FORK was exhibited sustained in vibration by means of a triode valve instead of by means of contacts. In the form described, two electromagnets act upon the prongs, and the windings of one magnet are in the grid circuit; those of the other magnet are in the plate circuit of the tube. When the fork is in motion the E.M.F. induced in the grid magnet controls the current flowing in the plate circuit and its magnet, with the result that the motion is sustained.

By increasing the distances between the poles of each magnet and the prong confronting it, the apparatus may be adjusted so that the fork is just not maintained in oscillation. In this condition the arrival of a train of sound waves of exactly the right frequency to produce resonance causes the fork to start into vibration. The instrument is then a tuned relay. A large fraction of a minute is required in some adjustments to provoke the full response.

DISCUSSION.

Mr. F. E. SMITH said he had at one time been working on somewhat similar lines to Dr. Eccles, with a rather different object—viz., the accurate measurement of a very small time interval. He used first a purely electrical arrangement, and found that a very constant frequency (about 1,000 per second) could be obtained if the electrical conditions were right. For certain reasons, however, it was thought desirable to employ a tuning fork, and one of those had been borrowed from Prof. Eccles. He had found it essential to put a condenser across the inductance of one of the magnets to get approximate tuning in the electrical circuit, otherwise the fork would not respond readily. In his arrangement the currents induced by the vibration of the fork produced oscillations of the filament of an Einthoven galvanometer, the deflections of which were photographically recorded.