Sound & Science: Digital Histories

Miller, Dayton Clarence. “Photographic Registration of Sounds.“ The Physical Review 28: 151.

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Photographic Registration of Sounds.[1]

By Dayton C. Miller.

FOR making large scale records, showing the details accurately, of complex sound waves having frequencies ranging from 500 to 10,000, the phonograph and oscillograph methods seem unsuitable. The following direct mechanical method has given satisfactory results.

A small steel cylinder, 1 mm. in diameter, is arranged to receive angular motion, with a minimum of reaction effects, which is proportional to the displacement of a sensitive diaphragm. A minute mirror, with its plane in the axis of the cylinder, reflects light to a special camera, and at a distance of 30 cm. gives waves 15 cm. wide which show great detail. Results were exhibited.

Note on Thermoluminescence.[1]

By Elizabeth R. Laird.

THEORY suggests that in the case of thermoluminescent salts the change producing luminescence goes on very slowly at ordinary temperatures and is merely accelerated by raising the temperature. An additive method for obtaining the effect of thermoluminescence should therefore show its existence at room temperatures.

This was tested by wrapping up photographic plates for different periods of time with the sensitive film towards some thermoluminescent salt and developing later, at the same time heating the salt to observe the remaining thermoluminescence.

The salts used were a solid salt solution of calcium sulphate and manganese sulphate, the same with an undetermined admixture due to which the thermoluminescence was brighter in patches and was restored in these patches after heating by exposure to light, and calcium sulphide which had been kept in the dark some time after all visible luminescence had ceased.

The results showed that in each case the photographic plate was affected, that where the thermoluminescence was strong as was the case with the second and third salts used if they had been exposed in strong daylight, the effect was obtained in less than two weeks or even in a few days, that when the thermoluminescence was faint as when calcium sulphide was exposed only to dim light a period of two months was required for a marked effect, and that this was also the case with the first named salt solution. Where the effect was uneven the greater effect corresponded to the portions showing brighter thermoluminescence.

[1] Abstract of a paper presented at the Baltimore meeting of the Physical Society, December 28–31, 1908.