

In the list of publications cited appear those of more than thirty of his Filipino colleagues and students. By such institutional activity the task depicted in Dean Baker's foreword has been carried on.

E. B. COPELAND

Emile Berliner, The Maker of the Microphone. By FREDERICK WILLIAM WILE. New York, N. Y. Bobbs Merrill Co., 1926.

FREDERICK WILLIAM WILE has been known to the American public as a newspaper correspondent and radio broadcaster, but in this book he will make himself known as the interpreter of the difficult and abstruse technical aspects of certain features of our civilization. He has done for Emile Berliner, "The Maker of the Microphone," what Michael Pupin did for himself in "From Immigrant to Inventor," and in some ways it is better.

The book is full of the romance of science, weaving as it does the conditions of the times that influenced the inventor. In particular the story of his work with the Bell Telephone Company is most readable. The story of how Bell was rewarded with success in the use of the electro-magnetic coil in making the first telephone is probably new to nearly every American. If the contact point on the coil had not welded so that it did not operate as intended, Bell might never have been known as the author of "the telephone, America's greatest invention." While Bell made use of induced electricity he did not use an "induction coil," as such is known and often termed "transformer."

Likewise Berliner by almost an accident learned that a variable contact would produce an undulating current, and from this was able to produce an undulating current corresponding to the sound pressures developed in a telephone transmitter.

The history of the telephone is fascinating, not only because of the personalities involved, but also because it shows how so many masters of many arts are involved in a great invention.

The story of the gramophone as it evolved by and about Berliner is almost as interesting as that of the telephone. The public generally does not know that the common disc record in use to-day is the invention of Berliner.

This book is commended to those who like to read a good biography, to those who like to learn how important inventions are made, and to those who like to learn once again that America is a land of opportunity.

The introduction by Herbert Hoover is a gem to be prized in any library.

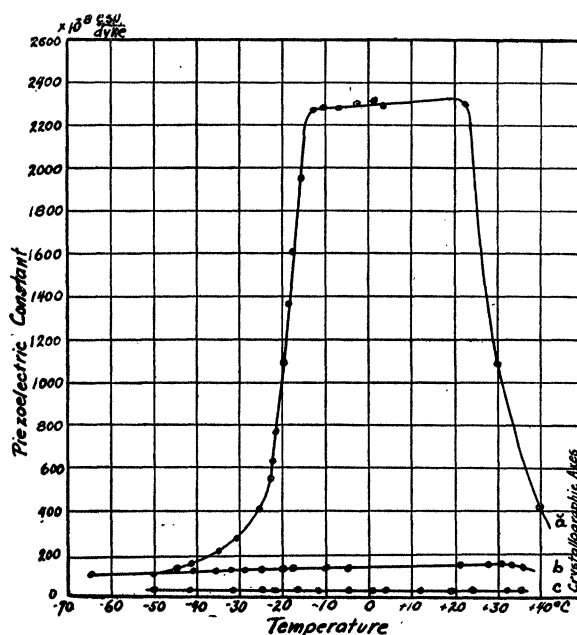
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BUREAU OF STANDARDS

SPECIAL ARTICLES

NOTE ON THE PIEZO-ELECTRIC EFFECT IN ROCHELLE SALT CRYSTALS

ALTHOUGH the piezo-electric effect in Rochelle salt crystals cut normal to the *a* crystallographic axis has been studied,¹ the only work on plates normal to the *b* and *c* axes consists of some old measurements by Pockels at room temperature. Because of the characteristic changes in piezo-electric activity at -20° C. and at 25° C. observed in plates cut normal to the *a* axis, it was thought to be of interest to obtain corresponding observations on crystal plates of other orientations. Plates were cut from a large crystal perpendicular to each of the three crystallographic axes. Electrodes of tinfoil were attached by means of Canada balsam and the pressure was applied at 45° to the axes in the plane of the faces on which the charges produced were measured. The results of these measurements are shown in Fig. 1. The charges were measured by means of an electrometer null method, except for the last three points on the curve for the *a* direction, which were obtained by



means of a ballistic galvanometer. This change was necessitated by the rapidly increasing conductivity at these temperatures.² The piezo-electric constants are in electrostatic units per square centimeter of electrode per unit shearing stress in dynes per square centimeter. Their values for the *a*, *b* and *c* crystallographic directions are, respectively, 2300×10^{-8} ,

¹ Valasek, *Phys. Rev.*, 17, 475 (1921) and 19, 478 (1922).

² Valasek, *Phys. Rev.*, 20, 653 (1922).