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Resistivities of Alloy Single Crystals

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A GENERAL OUTLINE OF A UNIVERSAL FREQUENCY METER

D. O. MCCOY AND G. W. FOX

Some of the considerations encountered in the design and construction of a universal frequency meter will be presented. The standard frequency is generated by the use of a 100,000 cycle AT cut quartz crystal plate. The method used in producing this plate will be described.

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THE HIGH-VACUUM TETRODE AS A THYRATRON

R. D. HUNTOON

A circuit is described wherein the ordinary tetrode or screen-grid vacuum tube when operated as a Dynatron exhibits the characteristics of a Thyatron or gas-filler triode.

The method of determining the circuit constants and details of operation are given. Several simple applications such as quiet automatic volume control for radio receivers, "scale" counters, and sweep circuits are outlined.

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RESISTIVITIES OF ALLOY SINGLE CRYSTALS

H. E. WAY

A somewhat systematic attempt is being made to study the effect on electrical resistivity of zinc of small amounts of dissolved metallic impurities. In order to do this sets of single crystals have been made, each set containing a known percentage of some one impurity. The resistivities and some temperature coefficients of resistivity have been measured. The resistivity results include at the present data on sets of crystals containing 0.125, 0.25, 0.50 per cent of copper, gold, or silver, and 0.005% and .01 per cent iron. In all cases the resistivity increases with increase of added

metal but not in a linear fashion. Iron has the most marked effect, .01 per cent iron producing as much increase as 0.5% copper. The temperature coefficient is lowered, depending on the added impurity. The ratio of principal resistivities, ρ_0/ρ_{90} , is about the same as for zinc crystals, i.e. with no added impurities.

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SOME OBSERVATIONS ON TEACHING BRIGHT STUDENTS

C. J. LAPP

During the summer of 1935 bright students who were finalists in the Iowa Academic meet in Iowa high school physics were given college physics throughout the first six weeks of the summer session. These bright boys were under intensive observation during this period. Many unusual reactions were observed.

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ON TEACHING THE VERNIER CALIPER

C. J. LAPP

Fifty students divided into twenty-five pairs were studied. Twenty-five of them were taught by the usual method in laboratory while twenty-five were given instruction on the vernier caliper in the library. The following week both groups were given an actual performance examination. The results are surprising.

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AN OPPORTUNISTIC LABORATORY

JOHN A. ELDRIDGE

A laboratory has a joint function (a) to create happy attitudes and (b) to teach subject matter practically and realistically. It