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## Secondary Emission of Electrons from Metals

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## SECONDARY EMISSION OF ELECTRONS FROM METALS

PAUL L. COPELAND

When electrons are incident upon a metal surface, it is observed that electrons also leave the surface. The amount of this "secondary emission" depends upon the velocity of the incident electrons, upon the metal used as a target, and upon the previous heat treatment of the metal. The results obtained in this investigation indicate that secondary emission is very low for incident electrons of low energy; that it increases rapidly as the energy of impact is raised; that it reaches a broad maximum at a position characteristic of the metal and then declines. Metals of low work function give the highest secondary emission. Heat treatment at first increases the secondary emission at all velocities for the incident electrons and then lowers it.

STATE UNIVERSITY OF IOWA,  
IOWA CITY, IOWA.

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## A CONCAVE ULTRASONIC DIFFRACTION GRATING

GEORGE E. THOMPSON

A new concave ultrasonic diffraction grating has been constructed and used in the measurement of wave-lengths between one and three millimeters. An oscillating quartz crystal is used as generator and receiver of the sound waves. Results are compared with those obtained by the Pierce interferometer and found to agree.

IOWA STATE COLLEGE,  
AMES, IOWA.

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## EFFECT OF AIR PRESSURE ON THE VIBRATION OF QUARTZ CRYSTALS

GEORGE E. THOMPSON

A quartz crystal which controls an oscillator is placed in a chamber which may be evacuated. The output of the oscillator increases as the air pressure is reduced.

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AMES, IOWA.