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Notes on the Reversal of the Sodium Line

L. B. Spinney

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ture of the crystal. A greater number of crystals must be examined and compared.

The experimental method used is one described in Scientific Papers No. 471, U. S. Bureau of Standards, and consists essentially of an oscillator capable of various frequencies and a measuring circuit coupled to the oscillating circuit. The capacity as well as the resistance of the specimen is thus measured when the two circuits are in resonance with each other.

THERMOELECTRIC EFFECT IN SINGLE CRYSTAL ZINC WIRES

E. G. LINDER

(*ABSTRACT*)

The work reported is a continuation of measurements published in the Physical Review for October, 1925. The thermol e.m.f. of the zinc crystals against copper has been measured from -182°C to 480°C for crystals having orientations from about 10° to 90° . The relation between thermoelectric power and temperature is definitely not linear, but may be represented fairly well by a second degree equation.

The nature of the effect in the neighborhood of the melting point will be discussed.

STATE UNIVERSITY OF IOWA,
IOWA CITY, IOWA.

NOTE ON THE REVERSAL OF THE SODIUM LINE

L. B. SPINNEY

(*ABSTRACT*)

The reversal of the sodium line may be demonstrated without the use of a slit or a spectroscope. An incandescent lamp having either a carbon or tungsten filament is placed immediately behind a good sodium flame and viewed from a distance of fifteen or twenty inches through a diffraction grating. The first- and second-order spectra, right and left, will both be in view and in the orange-yellow region of each will appear a sharp dark-line image of the filament of the lamp. This image constitutes the dark-line spectrum of the sodium vapor.

A Meker burner on which a few crystals of fused salt have been

placed gives the most satisfactory sodium flame, although a five-eighths inch Bunsen will answer if properly supplied with salt. A convenient grating for this purpose is a Wallace replica having about 15000 lines to the inch. Gratings with no more than 3000 lines per inch will show the dark-line image but not very certainly, except with greater care. The image is sharp and fine, its width being determined by the actual thickness of the filament of the lamp and is much smaller than the apparent width of the filament which is affected by irradiation. A high temperature filament gives best results but is objectionable because of the intensity of the light which falls directly into the eye. When such a filament is used the eye may be protected by pasting a narrow strip of paper across the grating. By varying the voltage applied to the lamp the temperature of the filament may be changed and the effect of the relative temperatures of filament and flame may be observed.

A NEW TYPE OF ELECTROMAGNETIC WAVE METER

WINFIELD SALISBURY

(*ABSTRACT*)

A high degree of accuracy and sensitivity are obtained by using a combination of a two element vacuum tube and direct current galvanometer, which measures the voltage across the condenser in the resonant circuit instead of the current in the inductance as is the common practice. The small amount of energy necessary to operate this indicator makes possible a very sharp resonance peak. Its sensitivity allows it to be operated far enough from the source of the waves that it does not effect their length.

A new method of locating nodes on Lecher's wires makes possible whatever accuracy can be obtained in measurement of a length. The wavemeter is calibrated, with the aid of these wires, for wavelengths between three and one hundred meters.

THE MOULDING ACTION OF SURFACE TENSION ON A FREE SHEET OF WATER

L. B. SPINNEY

(*ABSTRACT*)

A smooth stream of water falling vertically is allowed to strike the center of a small circular plate placed horizontally. The water