The present scheme is to superpose the radiometer effect upon the radiomiaometer effect, by placing the whole in a vacuum and making the Bi-Sb or Cu-Te thermojunction the vane of a radiometer. The junction is in the form of a ⊥, part of the long side being the vane. The loop of copper wire lies in the same plane and joins two of the free ends. The magnet is taken from a Weston ammeter. In other respects the whole is similar to the Boys radiomicrometer, with the exception that the suspended system is in a vacuum, which is an added advantage since, as shown by Kurlbaum, the sensitiveness is increased in a rarified atmosphere.

On account of numerous delays and pressure of other work, it has not been possible to give the instrument a thorough test for sensitiveness. It might be added, however, that the aim is not so much to develop an instrument which is more sensitive than a radiometer, but to construct a device that for a given sensitiveness has a shorter period than obtains in an ordinary radiometer. In an ordinary radiometer the suspension weighs about 10 to 12 mg. In the present case the weight is 20 mg. The half period is only 5 sec. at present. Selecting a finer fiber would make it more sensitive.

In conclusion I might add that I hesitate to give the data for sensitiveness of the present suspension (junction of Cu-Te), because the radiometer effect is only about fifteen per cent. of the radiomicrometer while it is well known that at all times the radiometer is the more sensitive instrument. By making the suspension of lighter material the radiometer effect will be increased. The present suspension is about three times as sensitive as the radiomicrometer described by Boys.

For measuring small electric currents, *e. g.*, from telephone, etc., we obviously need not have such a large vane. The heating coil is to be placed between the vane and what corresponds to the inner window of the radiometer as it appeared in its original form. It would seem that such an instrument ought to be more sensitive than the modification of the Boys' radiomicrometer which is now being exploited under a patent.

On the Determination of Melting Points by Radiation Methods.[1]

By C. W. Waidner and G. K. Burgess.

THE methods used are based on the monochromatic and on the total radiation from platinum at different temperatures. Minute specimens of the metals to be studied are placed on a platinum ribbon whose temperature is slowly raised by an electric current flowing through it;

[1] Abstract of a paper presented at the meeting of the Physical Society held April 20–21, 1906.

the melting is observed through a microscope, and the corresponding "black body" temperature of the platinum ribbon is observed with an optical or radiation pyrometer. From the known departure of platinum radiation from black body radiation, the true temperatures are obtained.

The platinum ribbon is mounted within an enclosure with mica window thus permitting determinations to be carried out in any desired atmospheres (air, H, N). The method is particularly applicable to the oxidizable elements, and also to the rare elements as only a few milligrams are required. Experiments with different size particles of metals of known melting points give the small correction for the temperature difference between strip and specimen undergoing melt.

The method has been applied to a study of the metals of the iron group and to palladium, and is applicable within the range 600° to 1650° C., and higher with iridium or graphite strips.

CHELTENHAM MAGNETIC OBSERVATORY REGISTRATION OF EFFECTS FROM ELECTRIC CARS OVER TWELVE MILES DISTANT.[1]

BY L. A. BAUER.

A CLOSE inspection of the magnetograms obtained during the past year at the United States Coast and Geodetic Survey Magnetic Observatory situated at Cheltenham, Maryland, employing the sensitive Eschenhagen-Edler variometers has disclosed the interesting fact that magnetic effects are being photographically registered daily which are to be ascribed to an electric car line 12 to 14 miles distant. This line proceeding from Washington to Mt. Vernon, Virginia, is a "single trolley" line with defective bonding of the rails.

The magnetic element principally affected, viz., the vertical intensity, exhibits during the period of the day (5 A. M. to about one and one half hours after midnight), when the cars are running, a number of short, more or less periodic, waves of fluctuations superimposed upon the normal curve. The average deflection to be ascribed to the electric car effect is about $\frac{1}{75000}$ to $\frac{1}{150000}$ part of the vertical intensity.

The effects are being further investigated; a fuller publication will be found in the March issue of the journal "Terrestrial Magnetism and Atmospheric Electricity."

Up to this time it had been generally supposed that no electric car effects could be detected beyond five miles.

[1] Abstract of a paper presented at the meeting of the Physical Society held April 20–21, 1906.