or doped germanium.

The work of Dr. Plumb, Edlow and Cataland indicated that after appreciable thermal cycling carbon resistors were not satisfactory as secondary precision thermometers. However germanium resistance thermometers were very stable and could be used as secondary precision thermometers. The disadvantages of the germanium thermometers are that they require individual point by point calibration and they exhibit a large anisotropic magneto resistance. Aside from these shortcomings germanium thermometers are suitable for use as accurate reproducible reference thermometers in the range of 1 to 35°K. These results were confirmed in the papers presented by Dr. Kunzler (Bell Laboratories), by Mr. M.H. Edlow (N.B.S.) and by Dr. P. Lindenfeld (Rutgers University). (Currently two industrial concerns are selling germanium thermometers for low temperature measurements.)

In addition to the three aforementioned resistance thermometers thermistors were also the subject of some discussion. Advantages of these elements are their large negative temperature coefficient, small volume which implies fast response and they exhibit no magnetoresistive effects. However, for low temperature work these units are still only in the developmental stages.

Of the many methods for measuring resistance either a bridge method or a potentiometric method is being used for precision work. Evans (N.B.S.) described the details of his refinements on a Mueller resistance bridge described by Stimson in his 1954 Symposium paper.

A novel potentiometric circuit was described by Dr. Dauphinee. A capacitor is switched periodically between the known and unknown resistor which are in series. A null indication on a galvanometer in another branch (which is also in series with one of the positions of the capacitor) indicates when the two resistors are equal. A d.p.d.t. electromechanical chopper is used to switch the capacitor. Thus a direct comparison of the two resistors may be made using only a single balance. The chief advantages of the potentiometric methods are retained. (These are insensitivity to magnitude and variation of lead resistances and ability to cover wide range of resistances without loss of significant figures.) Several variations of the basic idea were presented including a direct dial reading unit (in °C) for the range of -50° to 700°C to .001°C for the standard 25.5 ohm platinum resistance thermometer.

In the range from 0.3° to 4.2°K vapor pressure measurements are being used for calibration and for precision measurements. He^4 is used for 2 to 4.2°K and He^3 may be used in the range 0.3 to 3.2°K. For very precise measurements it was recommended that a separate thermometer bulb be used and the section of the