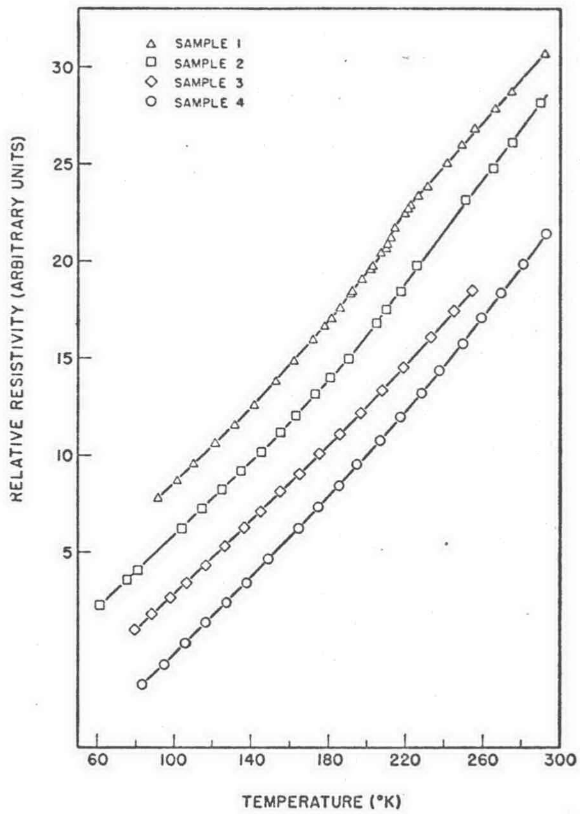

FIG. 2. The relative resistance of four rubidium samples as a function of temperature at low pressures (approximately 100 atm.). The resistances have been normalized to agree at 150° K. and then separated by intervals of 2 units to avoid overlapping.

MacDonald (1952) found an anomaly in the resistance of rubidium at about 180° K. and the present samples (except number 3) show this anomaly in various forms. In samples 1 and 2, the effect is quite evident, but in sample 4 the anomalous behavior takes the form of a gradual deviation from linearity with temperature which begins to be evident at about 150° K. Samples 1 and 2 showed marked thermal hysteresis in the neighborhood of the anomaly (cf. MacDonald 1952), the resistance measured with falling temperature being above that measured with rising temperature. To simplify the diagram only the falling temperature curves are shown here.

Sample number 3, which was heavily oxidized, shows little sign of the anomaly. (Its behavior is not shown above 260° K. since at this temperature premelting begins in this oxidized specimen and the resistance increases rapidly.) Other experiments in this laboratory (Hedgcock 1956) confirm that in highly oxidized rubidium the anomaly seems to be suppressed.

In addition to the work already referred to, Kelly and Pearson (1955) have investigated the anomaly in detail but at present its origin is still obscure.

The isothermal change
neighborhood of room temp
with such a fine capillary
pressure was appreciably l
the resistivity change at 25
from Bridgman's measur
(Bridgman's measurements
sample and have to be tra
pressibility.) This differenc
specimens melted into capi
to demonstrate that the ge
qualitative picture of the
low temperatures.

In describing these result
as follows:

(1) measurements b
(2) measurements b
(3) measurement of

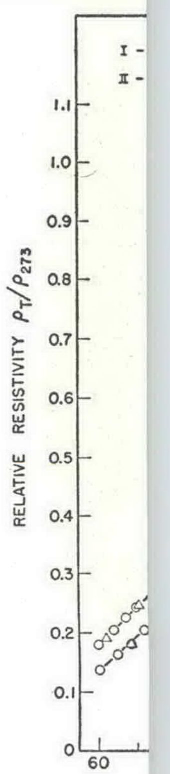

FIG. 3. The resistivity of a
temperature range.