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determined by spectral analysis were: iron ~ 0·01 %; traces of zinc and possibly magnesium and silicon. The specimen consisted of about 8 m of 36 B. and S. gauge wire insulated with Formel varnish. The grain size appeared to be about 10^{-2} mm. X-ray examination (for which we are indebted to Dr E. G. Eeles) showed that the grains had a marked preferred orientation.

Sample II

This was a specimen of commercial copper slightly purer than sample I, having a residual resistance ratio of $7·0 \times 10^{-3}$. The impurities determined by spectral analysis were: iron < 0·01 %; traces of zinc and possibly magnesium and silicon. This specimen was made from about 5 m of 34 B. and S. gauge wire, double-cotton covered. The grain size of this specimen was about 10^{-2} mm; X-ray examination showed a slightly less marked preferred orientation in this case.*

Sample III

This was a copper-iron alloy containing 0·056 at. % iron. It was prepared by Dr W. B. Pearson of these laboratories and had been used previously for measurements below 1° K. (For details of the preparation, see Pearson 1955.) The ratio of its resistance at the minimum (26·6° K) to that at the ice point was $2·3 \times 10^{-1}$.

It was chosen because the temperature of the minimum was sufficiently high that a *truly hydrostatic* pressure up to about 2500 atm could be applied at this temperature before the helium would solidify.

The dimensions of the specimen were as follows: length 27·4 cm; breadth 0·115 cm (average); thickness 0·0095 cm (average).

4. THE EXPERIMENTAL RESULTS

Table 1 shows a summary of the measurements made on the three copper samples; all the changes of resistance were linearly dependent on pressure within the experimental accuracy. Because reference is made in the discussion to both the temperature and pressure coefficients of resistance, both these quantities have been tabulated for those temperatures at which they were measured.

The pressure coefficient of residual resistance of sample I was measured in two ways. In the first, the pressure was applied by means of solid helium and the resistance at 4·5° K was determined. In the second, the measurements were made in the neighbourhood of 10° K making use of the fluid properties of helium which at this temperature are retained up to 500 atm pressure. At 10° K the thermal component of resistance in this specimen was still only a very small fraction of the total. Figure 1 shows a comparison between these two sets of measurements and figure 2 shows some of the measurements of the resistance of sample III in the neighbourhood of the minimum.

* Specimens I and II were subsequently annealed by heating in a helium atmosphere at ~530° C for 16 h. Their residual resistance ratios were then as follows: sample I, $2·8 \times 10^{-3}$; sample II, $4·3 \times 10^{-3}$. Unfortunately, it is not possible to be sure that these changes are due only to changes in physical defects. The large change in sample I might indicate that the annealing process had changed the chemical purity (see MacDonald & Pearson 1955) rather than the physical state of the metal.