This increase in the permeability is also shown by the numbers for alloy No. IV*a*. Curve I., Fig. 17, shows the permeability of the alloy in different fields when freshly cast, and curve II. its permeability in the same fields after it had been repeatedly heated up to 100° C. and cooled to the temperature of liquid air.

The results obtained with alloy No IV*b* show the effect of raising the alloy to a red heat and then allowing it to cool slowly. This specimen in the initial tests showed the highest permeability of all the rings, but after being treated as described a very considerable decrease in the permeability ensued. Curves I. and II. represent respectively the initial and final tests with this specimen.

In the interval between which the results with alloy IV*a* recorded in Fig. 17 were obtained, this specimen was examined under a constant magnetizing force of 3.934 C.G.S. units for temperatures ranging from — 182° C. to 105° C. The temperatures were estimated from variations in the resistances of a platinum wire wound round the ring between the primary and secondary coils. The results of these measurements are given in Table XIII. and a curve representing them is given in Fig. 19.

TABLE XIII.

*Alloy No. IVa. H = 3.934 C.G.S. units.*

| Temperature. | *B* | $\mu$ | Temperature. | *B* | $\mu$ |
|---|---|---|---|---|---|
| −182 | 487 | 123.7 | 0 | 338.5 | 86 |
| −169 | 471.8 | 119.9 | 8.2 | 334.2 | 84.9 |
| −154 | 454.3 | 115.4 | 19.6 | 327.6 | 83.2 |
| −143.5 | 445.6 | 113.2 | 35.3 | 321.1 | 81.6 |
| −131 | 432.5 | 109.9 | 48 | 308.8 | 78.5 |
| −110.5 | 410.6 | 104.3 | 63.1 | 297 | 75.5 |
| −53 | 375.7 | 95.4 | 69 | 288.3 | 73.2 |
| −46 | 364.8 | 92.7 | 76.4 | 281.8 | 71.6 |
| −36 | 358.2 | 91 | 91.6 | 266.5 | 67.7 |
| −13.5 | 342.9 | 87.1 | 105 | 521.21 | 63.8 |

The permeability, it will be seen, showed a steady increase as the temperature was lowered.

The results of these various tests, it will be seen are in accordance with the observations of other investigators, who have found that the permeability of these alloys can be considerably increased by continued heating at moderate temperatures.