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area can be expected in the elastic and inelastic scatterings, as $v = 4.36 \times 10^7$ cm/sec for 5 MeV proton and ^{70}Ge . The details of this work will be published elsewhere.

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THE ELECTRONIC SPECIFIC HEAT OF THE HIGH PRESSURE PHASE OF GALLIUM

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We have measured the critical magnetic field curve of the high pressure phase of superconducting Ga. For a pressure of about 20 katm, the critical field at $T = 0$, H_0 , is found to be 620 Oe and the critical temperature T_c is 6.24°K.

It is well known from experiments by Bridgman [1] that gallium undergoes a phase transition at pressures between 15 katm and 30 katm according to temperature. Buckel and Gey [2] found that the high pressure modification of gallium, which is generally referred to as GaII, is a superconductor with a transition temperature, T_c , of 6.3°K. We have measured the critical field, H_c , as a function of temperature in this high pressure phase. The results are shown in fig. 1. The experimental method employed and the cryostat will be described elsewhere [3].

From a knowledge of T_c and H_0 , the critical field at $T = 0$, the electronic specific heat constant γ can be calculated from the well known relation:

$$\gamma = \frac{1}{4} \pi V f''(0) H_0^2 / T_c^2 \quad (1)$$

where V is the molar volume and $f''(0)$ is the second derivative of the reduced critical field function $f(t) = H_c/H_0$ at $T = 0$. For GaII we find γ to be 1.63 m joule/°K²mol. This value is larger by a factor 2.3 than the abnormally low value for GaI. This result can be understood, at least qualitatively, since the orthorhombic GaI, with a c/a ratio of 1.7 transforms into the tetragonal structure which is practically the same as that of indium [4]. Thus one expects a simpler Fermi surface because the total number of con-

duction bands is reduced. In fact, the measured value of γ lies close to the values of In and Al. On the basis of the free electron model one would expect a value for γ for 0.92 mJ/K²mol. This indicates that GaII has a nearly free electron Fermi surface similar to those of its neighbours aluminium and indium. The values for γ given in table

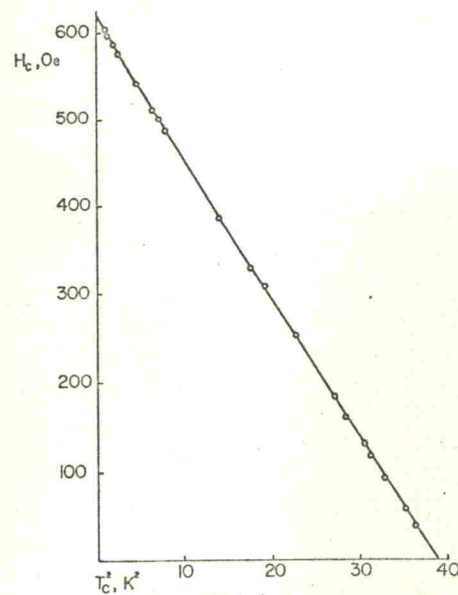


Fig. 1.