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[3] Miller and Connor, *Proc. Soc. Exp. Med. Biol.*, 1933, **30**, 630.

[4] Abderhalden and Wertheimer, *fluger's Arch.*, 1925, **207**, 215; **209**, 611.

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The Principal Magnetic Susceptibilities of Tellurium Crystal

MCLENAN AND COHEN[1] studied the magnetic properties of single crystals of tellurium and found that the diamagnetic susceptibilities along and normal to the trigonal axis had the same value. A study of the crystal structure of tellurium by Bradley[2] led him to emphasise the uniqueness of the trigonal axis in the crystal.

In this investigation, tellurium crystals were produced by the method of slow cooling. The principal magnetic susceptibilities were determined by the Guoy method.[3]

The principal susceptibilities are found to be $-0{\cdot}329$ parallel to the trigonal axis and $-0{\cdot}296$ perpendicular to the trigonal axis.[4] This leads to a value of 1·11 for the magnetic anisotropy of the crystal. The susceptibility of well-annealed polycrystalline tellurium is found to be $-0{\cdot}307$. This value agrees favourably with those obtained by previous investigators.

When a tellurium crystal is heated, the susceptibility parallel to the trigonal axis decreases, while the other principal susceptibility remains constant. At about 220° C., the two principal values become equal. When the solid melts at 450° C., the volume susceptibility decreases from $-1{\cdot}7$ to $-0{\cdot}3$.

The influence of small admixtures of tin, cadmium, bismuth and lead on the magnetic properties of tellurium single crystal was also investigated. In all the cases, both the principal diamagnetic susceptibilities show a decrease in value. The magnetic anisotropy tends to unity. The diamagnetic susceptibility in the polycrystalline state also shows a decrease. This decrease is found to be larger, the greater the atomic radius of the element introduced. The number of valence electrons in the atom of the added element does not seem to have any influence on the decrease in the mean susceptibility of tellurium.

The atomic susceptibility of polycrystalline tellurium is found to be $-39{\cdot}2$ while according to Kido,[5] the susceptibility of a gram ion of tellurium (Te^{+6}) is $-4{\cdot}5$. The contribution to the total atomic susceptibility of the element by the six valence electrons is $-34{\cdot}7$. This indicates that probably the linkages of the six electrons are not metallic. Tellurium behaves like a nonmetal from the magnetic point of view. This conclusion is substantiated by the large electrical resistance of the element.

Full details will be published elsewhere.

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[4] Susceptibility values are given in 10^{-6} units.

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Determination of Dipole Moment in Solution

THE apparent electric moment of ortho-, meta- and para-nitrotoluene is measured in a number of solvents. When polarization at infinite dilution is determined using P_2—f_2 curves, it is found that wherever P_2 changes rapidly with