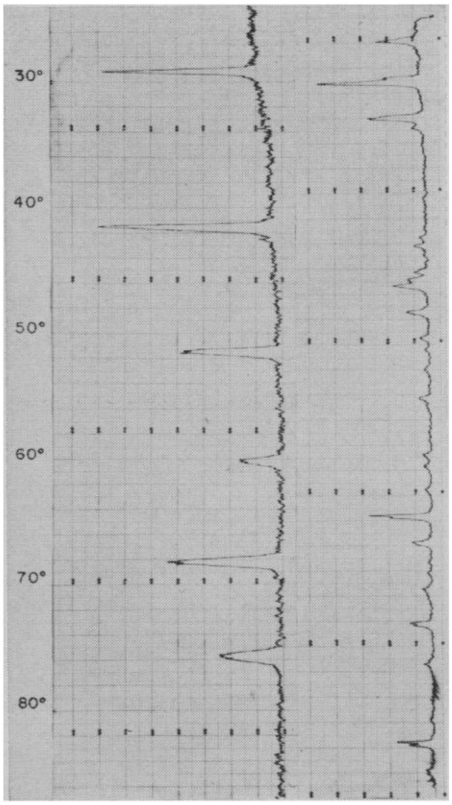

Fig. 1. X-ray diffraction patterns for allotropes of InTe; ordinate, degrees (2Θ); abscissa, relative intensity. Left trace: InTe(II), cubic form; right trace: InTe(I), tetragonal form.

taken at 25°C, Fig. 1, exhibits no diffraction lines corresponding to In, Te, or InTe(I) thus indicating that the conversion was essentially complete.

The cubic structure with six nearest neighbors causes an insufficiency in the valence electrons for covalent bonding, which we believe leads to a condition of resonance equivalent to the metallic state (*4*).

The physical properties are interesting. Whereas the InSb metal is very hard, nearly as hard as steel, the InTe metal is very soft and friable. It is readily scratched by glass. Our preparations have consisted of crystals of mean dimensions of 2000 Å as judged from the width of the x-ray lines.

The most remarkable of the obvious physical properties is the beautiful light blue color which the new metal shows on all its crystalline faces. This light blue metallic luster changes to a darker blue when the metal is cooled to −197°C.

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5. Supported by the Air Force Office of Scientific Research, contract AF 49 (538)-901 and grant AF-AFOSR-245-63. A. J. Darnell expresses gratitude to North American Aviation Inc. for a fellowship. We thank Prof. G. C. Kennedy for calling our attention to Dr. M. D. Banus's phase diagram and for very valuable advice about the high-pressure techniques used, and S. Howard and C. Bayer for assistance with the experiments.

31 July 1963

Superconductivity of Metallic Indium Telluride

Abstract. *Metallic indium telluride is a superconductor with a transition temperature of 2.18°K. The critical magnetic field is about 800 gauss.*

Superconductivity in metallic InTe prepared and stabilized at atmospheric pressure in the way described by Darnell, Libby, and Yencha (*1*) has been observed by the same method as previously reported for the measurement of metallic InSb (*2*). In order to obtain a good filling factor for the measurement coil, seven specimens about 5 mm in diameter with lengths ranging from 1 mm to 12 mm were measured simultaneously. The total length was about 25 mm. The specimens were presumably polycrystalline.

The zero-field transition temperature T_0 appeared to be at 2.18°K and showed, contrary to InSb, a relatively sharp transition width of about 0.01°K. The sharpness of the transition might indicate that the specimens were not highly strained. Measurements in magnetic fields showed, as might be expected from the non-ideal geometry, that the intermediate state extended over a fairly wide range.

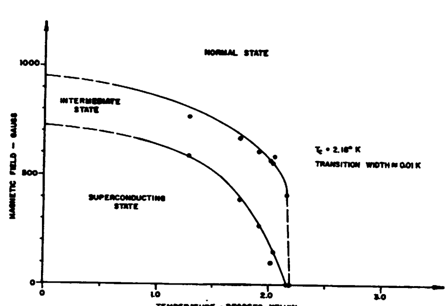

Fig. 1. The critical magnetic field as a function of temperature for InTe (II) (metallic indium tellurium).

The results are shown in Fig. 1. The lower curve represents the magnetic field at which normal conductivity started to appear at a given temperature. The upper curve represents the field at which the transition to the normal state was completed for the same temperature. Extrapolation of the curves to zero degrees would indicate a critical field $H_c(0)$ of about 800 gauss.

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Cholinergic Substance in the Caudal Neurosecretory Storage Organ of Fish

Abstract. *Cholinergic substance exists in homogenates of caudal neurosecretory storage organs of fish. The caudal organs of fresh-water fish contain about 10 times the amount found in caudal organs of marine fish. The substance in the caudal organ of the carp is more than 100 times as concentrated as that in the brain.*

Several investigators have suggested that acetylcholine may play an important role in the mechanism releasing neurohormones from neurosecretory storage organs, such as the neurohypophysis, into capillaries (*1*, *2*). This hypothesis is supported by the discoveries that the neurosecretory axon endings in the neurosecretory storage organs contain synaptic vesicles (*3*) which are thought to be the carriers of acetylcholine (*4*); that the synaptic vesicles change in size or number when neurohormones are released from the neurohypophysis into capillaries (*2*); and that acetylcholinesterase is present in the neurohypophysis of the cat (*1*). Until now, no study to detect acetylcholine or cholinergic substances in