of saturation, the value of H within the tube is practically unaffected by the material of the tube. The results also show that the self-demagnetizing effect of the ends of each tube is negligibly small.

These test data support the view formulated in a previous[2] note, namely, that the magnetization of a material is initiated at the surface and proceeds inwards by a kind of 'chain effect', so that the flux density near the surface is a maximum and becomes progressively less as the distance from the surface increases.

A comprehensive account of these investigations is now being prepared and will be published shortly.

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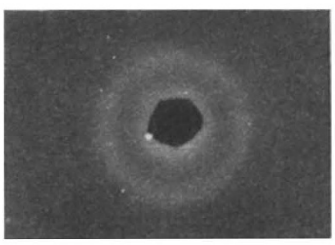
[1] NATURE, 141, 1039 (1938).
[2] NATURE, 142, 875 (1938).

X-Ray Diffraction by Supercooled Liquid Sulphur

IT has been observed that sulphur may be kept, with a little care, in the supercooled liquid state at the ordinary room temperatures (25°–30° C.) in the form of small globules on clean glass surfaces. In some cases it has been possible to keep one and the same globule in the supercooled state for more than three days, even under X-ray exposures. Supercooled liquid sulphur may be prepared also on metal surfaces, for example, brass, aluminium, etc., but in those cases it becomes unstable and solidifies easily, probably due to the crystallizing forces exerted by the metal surfaces. Again, under given physical conditions, the stability is found to be a function of the size or the diameter of the drops. The greater the diameter, the less is the stability. This is probably due to larger surfaces or volumes being more liable to get disturbed. The drops in the supercooled state are found to retain the colour they had at higher temperatures before cooling. Hence it is supposed that the drops maintain exactly the same physical state as they had at the higher temperatures.

X-ray diffraction photographs of supercooled liquid drops have been taken by the transmission method. Taking the factors of high absorption by sulphur of the copper $K\alpha$ radiation used in the experiment and also the stability of the supercooled drops into consideration, small globules (0·3–0·5 mm. in diameter) of liquid were prepared on an extremely thin glass film. One of the globules was then placed before the slit (0·4 mm.) being mounted on the carrier of a special collimating system[1]. The pattern obtained with yellow drops supercooled from a temperature just above the melting point of sulphur is reproduced herewith. The single band recorded in the photograph corresponds to a Bragg-spacing which agrees well with those observed by Blatchford[2] and by Das[1] in the case of liquid sulphur maintained at higher temperatures above the melting point. The accompanying table brings together all the results.



X-RAY DIFFRACTION PHOTOGRAPH OF SUPERCOOLED SULPHUR.

BRAGG-SPACING OF LIQUID SULPHUR.

Author	Temperature	Spacing ($\times 10^8$ cm.)
Blatchford[2]	130° C.	3·68 ± 0·01
Das[1]	128° C.	3·76 ± 0·02*
Das and Das Gupta	27° C. (supercooled)	3·68 ± 0·02

* This new value of the spacing is yet unpublished. According to Das, it is more accurate than that reported by him previously[1] and than that of Blatchford[2].

It is interesting to note that the spacing at 128° C. is larger than that at 27° C. This is evidently due to the thermal expansion of the liquid with rise of temperature.

The study of a liquid in the supercooled state by X-ray diffraction has not, hitherto, been reported. The results of further investigations, now in progress, by X-ray and other methods will be published elsewhere; they may be expected to throw much light on the supercooled liquid state of matter in relation to the ordinary liquid and the solid states.

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[1] Das, *Ind. J. Phys.*, **12**, 163 (1938).
[2] Blatchford, *Proc. Phys. Soc.*, **45**, 493 (1933).

Structure of the $SnCl_4^{--}$ Group

IN a letter in NATURE[1], Cox, Shorter and Wardlaw examined the stereochemistry of bivalent tin and lead and arrived at conclusions which are not in agreement with some of our results.

The compound $K_2SnCl_4.2H_2O$, which is described as being orthorhombic with $a = 12·02$, $b = 9·11$ and $c = 8·23$ A., and the space-group *Pnma*, has been studied quite recently in our laboratories and the results so far obtained, although they lead to the same unit cell and space-group, do not suggest that the $SnCl_4^{--}$ group is co-planar.

The actual formula of potassium chlorostannite is worth consideration. Rammelsberg[2] and others[3,4] found only one water molecule of hydration, while Richardson[5] later obtained two water molecules. A thorough study of the dehydration of hydrated potassium chlorostannite gave strong evidence for the existence of only one water molecule in the compound, in agreement with Rammelsberg's results. Moreover, the calculation of the number of molecules contained in the unit cell (density[6], 2·514) leads to 3·88 of $K_2SnCl_4.H_2O$ and to only 3·68 of $K_2SnCl_4.2H_2O$, the difference between this number and 4 being due partly to the over-evaluated amount of water.

A Fourier-Patterson-Harker and a Fourier-Bragg diagram suggested a structure which is almost identical with that found by MacGillavry, de Wilde and Bijvoet[7] for $K_2HgCl_4.H_2O$. Thus the $SnCl_4^{--}$ groups are obtained from octahedral $SnCl_6$ groups sharing edges parallel to the (010) plane and forming columns of so-called 'rutile octahedra' in the direction of the b axis.