B·p. °C/mm Hg	M.p. °C	Structure	Previously given structure
79.5– 80.5/9	25.5–27.0	$CH_2BrCOCH_2Br$	$CH_2BrCOCH_2Br$ [5]
107–107.5/9	30.0–30.5	$CHBr_2COCH_2Br$	$CHBr_2COCH_2Br$ [5]
129–130/7	37 –38	$CHBr_2COCHBr_2$	CBr_3COCH_2Br [5]
79– 80/8	–	$CH_3CHBrCOCH_2Br$	$CH_3CBr_2COCH_3$ [6] $CH_3CHBrCOCH_2Br$ [7b]
100–102.5/9	–	$CH_3CBr_2COCH_2Br$ + $CH_3CHBrCOCHBr_2$	xxx-Tribromo [6]
–	52.5–53.5	$CH_3CBr_2COCHBr_2$	$CBr_3CH_2COCH_2Br$ [8] xxxx-Tetrabromo [9]
67–68/8	–	$CH_3CHBrCOCHBrCH_3$	$CH_3CBr_2COCH_2CH$ [2] $CH_3CHBrCOCHBrCH_3$ [1]
95–95.5/7	–	$CH_3CHBrCOCBr_2CH_3$	$CH_3CHBrCOCHBrCH_2Br$ [10]
88–89/10	–	$CH_3CH_2CHBrCOCH_2Br$	$CH_3CH_2CHBrCOCH_2Br$ [3]
119–119.5/10	–	$CH_3CH_2CBr_2COCH_2Br$ + $CH_3CH_2CHBrCOCHBr_2$	–
–	58–59.5	$CH_3CH_2CBr_2COCHBr_2$	$CH_3CHBrCH_2COCBr_3$ [10]

Mutual Arrangement of the Iodo-Cyano-Acetylene Molecules in the Solid

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In solid cyanogen iodide [1] and bromide [2] bonds are present between nitrogen and halogen atoms of neighbouring molecules and infinite linear chains of atoms result. All the chains are parallel and the packing of the chains is at least approximately that to be expected if the chains may be regarded as cylinders of infinite length. The structure of iodo-cyano-acetylene might be expected to be of a similar kind. As this substance had so far not been described in the literature we suggested to Dr. Else Kloster-Jensen to try to synthesize it. When the synthesis had been sucessfully carried out [3] we prepared rotation X-ray diagrams of crystals obtained by sublimation of the substance at temperatures well below 0°C. The crystals, fibre-like and poorly developed, turned out to have an identity period along their fibre axis of 8.60 Å, a value which corresponds to that estimated for chains of the kind we had expected. The mutual arrangement of the

Table 1.

Atomic coordinates

	x	*y*	*z*
I	0.0569	0.25	0.3255
C	0.864	0.25	0.112
C	0.702	0.25	0.969
C	0.546	0.25	0.805
N	0.400	0.25	0.667

Interatomic distances in the chain

N---I	2.93 Å	C–C	1.39 Å
I–C	1.79 Å	C≡N	1.20 Å
C≡C	1.27 Å		

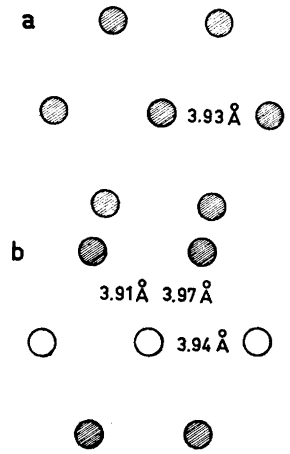

Fig. 1. Arrangement of chains in a) the low temperature form, b) the monoclinic form.

chains also appeared to conform to our expectations.

At room temperature the stable form of the crystals turned out to be monoclinic (space group P^2_1m) with two molecules in the unit cell. The parameters are:

$a = 4.43$ Å; $b = 6.72$ Å; $c = 7.65$ Å; $\beta = 93.9°$

It appeared probable that the chains in this modification would turn out to run parallel to the [101] direction, the period of which is 8.58 Å. The correctness of this assumption has been verified by the crystal structure determination which followed. From intensity data based on zero layer Weissenberg diagrams with rotation about [010], [100], and [001], Patterson and Fourier maps were computed followed by least squares refinements. The atomic parameters listed in Table 1 were obtained. This table also contains the interatomic distances within the chains.

The final R values were: $R_{h0l} = 0.05$; $R_{hk0} = 0.05$; $R_{0kl} = 0.08$. The B values arrived at show that the vibration amplitudes of iodine are larger perpendicular to the chains than along the chains.

In the low temperature form the distance between neighbouring chains (which are all running in the same direction) is 3.93 Å. In the monoclinic form stable at room temperature the chains are situated in the planes $y = \frac{1}{4}$ and $y = \frac{3}{4}$, the chain direction being the same within a particular layer but changing 180° from layer to layer. The situation is visualized schematically in Fig. 1 a (low temperature form) and 1 b (monoclinic form). It is worth mentioning that the distances between neighbouring chains in the monoclinic form, 3.91, 3.94, and 3.97 Å has a mean value 3.94 closely corresponding to that observed in the low temperature modification (3.93 Å) and that the packing is very much the same in both cases. Corresponding observations have been made in the case of the cyanogen halides [2]. In the orthorhombic cyanogen bromide, however, the two different values found for the distances between neighbouring chains differ more than in the monoclinic iodo-cyano-acetylene.

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Received December 5, 1962.

Note on Ascorbigen as a Source of Vitamin C

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Recently Kiesvaara and Virtanen (K. and V.) published a paper in this journal [1] (see also Ref.[2]), in which they state, in accordance with older work by Sumtsov [3], that ascorbigen possesses "vitamin C effect". We have also studied the question of the antiscorbutic activity of ascorbigen but arrived at essentially the opposite conclusions [4,5].

K. and V. found [2] that a 15 mg dose of ascorbic acid per guinea pig of 250–300 g body weight per day had the same effect on the weight increase of animals fed on a scorbutogenic diet as 26 mg of their preparation of synthetic ascorbigen.

On the other hand we have found [5] that a 10 mg dose of ascorbigen per guinea pig of 120–150 g body weight per day (corresponding to 20 mg of ascorbigen for older guinea pigs as used by K. and V.) did not show any curative effect on animals kept on a scorbutogenic diet, whereas even 0.5 mg of ascorbic acid had a full curative effect. The same effect was obtained by a 1 mg dose of hydrolysed ascorbigen [4]. Scurvy was diagnosed in our experiments on younger animals, which are more sensitive to vitamin C, not only by the weight decrease of the animals or their external appearance, but also by the more sensitive and reliable odontoblast test [6].

The following facts emerge in a comparison of the two sets of results: The curative dose of ascorbic acid per animal (250–300 g) per day is 1 mg. However, in their control experiment K. and V. administered 15 times this amount to scorbutic animals, thus invalidating their results for quantitative purposes. Only a qualitative conclusion can be drawn from their experiments, *i.e.* that a very high dose of their preparation can, under their experimental conditions, prevent the experimentally induced scurvy. However, even the results of Feldheim [4] (which are