(Nature, Mar. 2, 1929) found that the assumption of $O^{16}-O^{18}$ and $O^{16}-O^{16}$ as the two molecules concerned, led to a calculated isotope splitting, in the $O-O$ band, which averaged 0·05 cm.$^{-1}$ greater than the observed splitting. (From their original data I find that the average is 0·053 cm.$^{-1}$, for the 25 lines used.) The change in the vibrational constants just given lowers the calculated splitting by just 0·067 cm.$^{-1}$, making the discrepancy now only 0·014 cm.$^{-1}$ in the opposite direction.

More recently, Giauque and Johnston (Nature, June 1, 1929) have interpreted faint lines in the $O-O$ band, newly found by H. D. Babcock (*Proc. Nat. Acad. Sci.*, in press), as due to an $O^{16}-O^{17}$ molecule. The calculated isotope splitting is again too large, in this case by an average of 0·03 cm.$^{-1}$, although the faintness of the new lines makes the probable error much larger than in the previous case. The change in vibrational constants lowers the calculated splitting 0·036 cm.$^{-1}$, and so practically cancels the discrepancy. One can accordingly conclude that there is now perfect agreement with the theory, on the basis of 16, 17, and 18 for the atomic weights, and half-integers (on the *old* quantum theory) for the vibrational quantum numbers.

Babcock's measurements of relative intensity (Nature, May 18, 1929) indicate that $O^{16}$ has an abundance at least 1250 times that of $O^{18}$ (see Giauque and Johnston, Nature, June 1, 1929). The $O^{17}$ atom, according to Babcock's work, is much less abundant than $O^{18}$. On the basis of these figures, Aston's determinations of atomic weights, made with his mass spectrograph, should be not more than one part in 10,000 greater than the chemical values.

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University of California, June 1.

## An Intermetallic Compound having a Simple Cubic Lattice.

Antimony tin alloys [1] containing 43, 50, and 55 per cent of antimony were annealed respectively at temperatures of 240°, 270°, 290°, in a closed glass tube for 200 hours, then slowly cooled to 240° and kept

Fig. 1.

25 hours at this temperature, and by slow cooling brought to room temperature. These samples showed the X-ray spectrum lines belonging to a simple cubic lattice, as shown in the accompanying photogram (Fig. 1). The table below indicates the result of the X-ray analysis.

Film-Diameter = 5·525 cm., Radiation from Iron.

| Indices. | 43 per Cent Antimony (Rod). | | 55 per Cent Antimony (Rod). | | 50 per Cent Antimony (Powder). | |
|---|---|---|---|---|---|---|
| | Reflected Angle. | Lattice Constant. | Reflected Angle. | Lattice Constant. | Reflected Angle. | Lattice Constant. |
| (100) | 18·29° | 3·052 A. | 18·40° | 3·065 A. | 18·39° | 3·068 A. |
| (110) | 26·67 | 3·049 | 26·65 | 3·051 | 26·50 | 3·066 |
| (111) | 33·34 | 3·050 | 33·34 | 3·050 | 33·12 | 2·067 |
| (200) | 39·39 | 3·050 | 39·39 | 3·050 | 39·31 | 3·054 |
| (210) | 45·16 | 3·051 | 45·11 | 3·053 | 44·91 | 3·064 |
| (220) | 63·69 | 3·053 | 63·46 | 3·059 | 63·69 | 3·053 |
| {(221) (300)} | 71·86 | 3·054 | 71·89 | 3·054 | 71·95 | 3·053 |
| | Mean . | 3·052 A. | Mean . | 3·054 A. | Mean . | 3·061 A. |

[1] The equilibrium diagram of this system studied by Prof. K. Iwasé and N. Aoki will appear in *Science Reports* of Tôhoku Imperial University, Sendai.

The densities observed for 43, 50, and 55 per cent antimony are respectively 6·9084, 6·9100, 6·9109. The number of atoms contained in a unit cell is calculated to be 0·9918, 0·9993, and 0·9908, being very nearly equal to 1. This fact and the spectral indices confirm that the crystal structure of these alloys is a simple cubic lattice. From the result of the X-ray analysis it is concluded that the range lying between 43 and 55 per cent of antimony is a solid solution of this compound and one of the components. It is only very rarely that a metallic compound has a simple cubic lattice.

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## Heterogonic Growth in the Appendages of Crustacea.

Prof. J. S. Huxley and Miss Tazelaar find (Nature June 15, p. 910) that the appendages behind the enlarged male chela in *Inachus* and *Palæmon carcinus* show a slight acceleration of growth, while those anterior to it show a slight retardation. They express this as " an influence on the growth gradient by the axial relations of the whole animal ". I presume that this is merely a way of expressing a purely empirical correlation, and therefore I do not understand what is meant by suggestions bearing on the mechanism of this influence. What is the mechanism of the influence which produces the original heterogonic growth centre near the tip of the large chela ?

Empirically the heterogonic growth of the large chela is correlated with greater muscular activity on the part of this chela in the male as compared with the female. It seems to me the important question is whether the acceleration of growth in appendages posterior to the chela is correlated with greater activity of those appendages as compared with those anterior to the chela. As for ' mechanism ', it is generally agreed that the heterogonic growth in the individual crustacean is due to some endocrine effect associated with the male gonad or with the sex-chromosomes. Surely whatever the mechanism may be which causes the heterogonic growth of the large chela, that of the appendages posterior to it is due to the same mechanism. I see no reason for assuming that the accelerated growth of the latter is a secondary effect of that of the large chela.

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## Hermaphrodite Oysters.

The interesting question of hermaphrodite oysters was raised in Nature of June 8 by Mr. I. Amemiya.

On this subject it is appropriate to make the following remarks :

1. In 1854, Lacaze-Duthiers (*Ann. Sci. nat. Zool.*, ser. 4, ii., p. 217) pointed out the hermaphroditism of the small *Ostrea stentina* Payr., synonymous with *O. plicatula* Gmel. and *O. plicata* Chemn., for malacologists generally.
2. In 1911 an undeterminable *Ostrea* (*O. sp.*) from Saleh Bay (Sumbawa) was quoted as hermaphroditic (" Siboga Expedit.", Part 53 *a*, pp. 27 and 102).
3. In 1926, Gutsel (*Science*, **44**, p. 450) described the hermaphroditism of *Ostrea equestris*.
4. With *O. edulis*, *O. angasi*, *O. lurida* and *O. denselamellosa*, there are, so far, only seven hermaphroditic species in the great genus *Ostrea*, or a very small number in comparison with the dioïc forms in the same genus. The latter are very numerous indeed : namely, all the species of the ' subgenera ' *Alectryonia* and *Gryphœa*, and also some others which are not related to these two groups.

Paul Pelseneer.