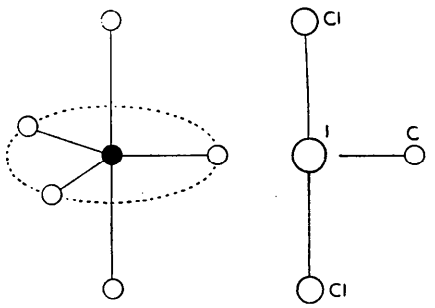

Fig. 3. (*a*) Trigonal bipyramid. (*b*) $ClCl_2$ structure.

are considerably greater than their distances of closest approach, 4·30 and 3·60 Å. The I–C distance of 4·08 Å between molecules II and IV compares well with the distance of closest approach, 4·05 Å.

The C_5–Cl_1 distance of 3·77 Å between molecules II and III and the C_3–C_3 distance of 3·55 Å between molecules I and II agree well with the distances of closest approach, 3·65 and 3·7 Å respectively. In fact, a CH–CH distance between different molecules as low as 3·4 Å has been recorded by Iball (1934) in chrysene. From the *a c* projection the angle Cl_2–I–C_1 appears to be 86°(±1°) and not 90°. The latter angle would have given a C_5–Cl_1 distance of 3·51 Å, which is rather short.

The packing of the molecules accounts for the existence of the cleavage plane parallel to (001).

In conclusion the authors wish to thank Prof. R. W. James for his constant interest and help throughout the course of this work. We also wish to thank Dr W. S. Rapson and Dr M. Lamchen for preparing the material, and Dr R. H. Stoy, H. M. Astronomer at the Cape of Good Hope, for the use of the micro-photometer.

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Short Communications

Contributions intended for publication under this heading should be expressly so marked; they should not exceed about 500 words; they should be forwarded in the usual way to the appropriate Co-editor; they will be published as speedily as possible; and proofs will not generally be submitted to authors. Publication will be quicker if the contributions are without illustrations.

Acta Cryst. (1953). **6**, 92

Space-group of *Andrographis*. By B. S. BASAK and D. R. DASGUPTA, *Indian Association for the Cultivation of Science, Calcutta* 32, *India*

(*Received* 28 *July* 1952)

Andrographis, a crystalline bitter principle extracted from *Andrographis paniculata* (kalomegh), has the molecular formula $C_{20}H_{30}O_5$. The crystal is found to be monoclinic on morphological study. Goniometric study, together with rotation photographs, gave

$$a = 6{\cdot}530,\ b = 8{\cdot}036,\ c = 19{\cdot}530\ \text{Å};\ \beta = 97°\ 10'.$$

The density of the crystal was measured to be $1{\cdot}21 \pm 0{\cdot}01$ g.cm.$^{-3}$ by the flotation method, whence Z, the number of molecules per unit cell, is 2.

Weissenberg photographs about the three crystallographic axes showed that the absence of the odd orders of (0*k*0) were the only extinctions observed. The space group was therefore either C_2^2–$P2_1$ or C_{2h}^2–$P2_1/m$. Since there are only two molecules in the unit cell, the latter space group requires that there should be either a molecular centre of symmetry or a molecular plane of symmetry.

The complete structural formula of this substance is not yet known but certain features have been discovered by Sarkar & Moktadar (1935). They found the presence of only one double bond, together with one methylenedioxy group, so the molecule cannot have a centre of symmetry. If it has to possess a plane of symmetry, all the atoms of the molecules have to lie on that plane. This is quite improbable for such a complex molecule. Thus the possibility of the space group C_{2h}^2–$P2_1/m$ is excluded and the crystal is found to belong to the space group C_2^2–$P2_1$. A more detailed paper on the subject will be published shortly.

Thanks are due to Prof. K. Banerjee for his interest in the work and to Dr H. G. Biswas for kindly presenting us with the substance.

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