





FIG. -1  
THE MOLECULAR STRUCTURE  
OF BROMOLONGIBORNANE DIONE

diffraction were orthorhombic and belonged to space group  $P2_12_12_1$ . The unit cell parameters are  $a = 20.07(2)$ ,  $b = 10.05(2)$ ,  $c = 7.31(1)$  Å and calculated density indicated four molecules per unit cell. A three dimensional Patterson synthesis computed for the observed data (1038 reflections) using  $\text{CuK}\alpha$  radiation ( $1.5418\text{Å}$ ) gave the position of the heavy atom and led to structure (IV, Fig. 1).<sup>4</sup>

The reaction of (IV) with Zn dust in IMF (14 hr at  $150^\circ$ ) led to the expected fragmentation reaction and resulted in the isolation (silica-gel) of *cis*-diketone (III) in 57% yield. The structure of this product is fully supported by its spectral parameters:  $\nu^{\text{C=O}}$   $1715\text{ cm}^{-1}$ ,  $\nu^{\text{C=CH}_2}$   $885$ ,  $1645$  and  $3130\text{ cm}^{-1}$ ,  $\delta$   $0.98$  (6H, s, *gem*-dimethyl),  $1.02$  (3H, d,  $\text{CH}_3\text{-C}^1\text{-H}$ ),  $4.83$  (2H, broad,  $\text{H}_2\text{C}=\text{C}^1\text{-}$ ). The results of the Lewis acid catalysed cyclization of the enol acetate<sup>5</sup> of (III) will be reported elsewhere.

#### REFERENCES

1. For a recent review on sesquiterpenes, see, G. Rucker, *Angew. Chem. Int. Ed.*, **12**, 793 (1973).
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3. G. Mehta and S. K. Kapoor, *Tetrahedron Letters*, 715 (1972).
4. There are several interesting and noteworthy features of this X-ray crystal study. They will be detailed elsewhere.
5. G. L. Hodgson, D. F. MacSweeney and T. Money, *Chem. Comm.*, 766 (1971).