With two molecules per unit cell the density should be $1 \cdot 163$, observed density $1 \cdot 16_3$. The most probable space group is C_{2h}^5 ($P_{21/c}$).

As C_{2h}^5 has four equivalent sets of two-fold positions, the centres of symmetry of the two molecules may be put at 000 and 0½½. By the method of trial and error the following details were found. The long axes of the molecules form angles of 42°, 38° and 78° with the *a*, *b* and *c* axes respectively. Within the limits of error the molecules are flat with straight carbon chains; the planes of the phenyl rings of the two sets of molecules are not parallel with each other or with one of the basal planes. The lengths of the primary bonds are in accordance with experience. The smallest distance between carbon atoms of two different molecules is 3·45–3·65 A.; it occurs between carbon atoms of the phenyl groups. It thus seems that the forces of cohesion are acting mainly between these.

A Fourier synthesis is in progress with the aim of specifying the shape of the carbon chain, especially the length of the 'single' bond in the middle of the molecule. It will be interesting to compare the complete structure with the results of Robertson and Woodward's investigation[1] of the structure of tolane (C_6H_5–C≡C–C_6H_5).

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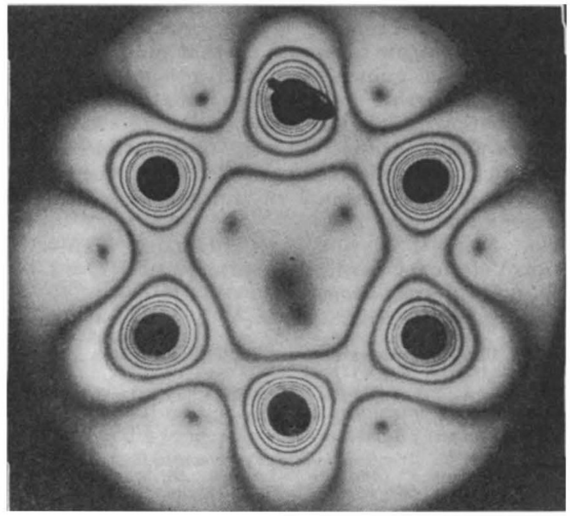
[1] Robertson and Woodward, *Proc. Roy. Soc.*, A, **164**, 436–446 (1938).

Centrifugal Stresses in Rotating Disks

In recent experiments at this laboratory, the photo-elastic method has been successfully applied to the determination of centrifugal stresses in rotating disks. The new technique depends upon the double structure of Bakelite BT-61-893[1]. Bakelite consists of two phases, one of which (the *A* phase) fuses at relatively low temperatures. If a sample is heated, the viscosity of the *A* phase is rapidly lowered until it becomes virtually negligible at about 115° C., whereas the *C* phase is little affected. At this temperature the modulus of elasticity is reduced to 1/640 of its value at room temperature and the stress-optical coefficient is increased twenty-five times. If the specimen is subjected to external load at this temperature, and allowed to cool slowly to room temperature while still under load, the deformation and photo-elastic optical effect are 'frozen in'. This is brought about by the solidification of the liquid *A* phase within the space lattice formed by the *C* phase. Subsequent removal of load leaves the deformation and optical pattern virtually unaltered.

Use is made of these properties by spinning (at constant speed) a Bakelite model of the rotor to be studied, raising its temperature to about 110–115° C., and slowly cooling to room temperature. The specimen may then be removed from its mounting and studied while at rest. This technique eliminates the tremendous handicaps of the stroboscopic method, which has the disadvantage of requiring high speeds, high intensity of illumination, and extremely accurate synchronization. A stroboscopic study also requires the construction of a mounting which permits the viewing of the central portion of the disk during rotation—a great hindrance because the axis of rotation and the axis of the polariscope must be practically coincident. The increased optical sensitivity at an elevated temperature makes possible the use of relatively low speeds and small models (the accompanying photograph was made of a model 5½ in. in diameter and 1 in. thick; speed, 1,800 r.p.m.). The technique is applicable to all problems of centrifugally induced stress distributions where the speed of the rotor is constant.



A more detailed account of these investigations will be published upon completion of the current experiments.

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[1] For a complete account, see Hetenyi, M., "The Fundamentals of Three-Dimensional Photoelasticity", *J. App. Mech.* (Dec. 1938).

Does the Rabbit Chew the Cud?

Some years ago my attention was directed to a paper by Morot (1882)[1] (carefully abstracted by A. V. Wille[2]). It seems to have been overlooked in physiological literature. Since his results seemed strange, I carried out some experiments to test them.

Morot stated that rabbits produce two sorts of fæces, the first during the night—soft, mucous; the second during the day—of the familiar appearance. The night fæces are taken directly from the anus, and without being chewed, swallowed like pills. These pills, which are regularly met with in the stomach (a well-known fact), are only seen free when the animals are prevented from getting at their anus.

That Morot's claims were correct was shown in two ways. I provided a rabbit with a wooden collar, which allowed it to jump around a little. In a cage with wire mesh floor two sorts of fæces immediately appeared in a day – night rhythm. Nine rabbits were fed simultaneously with fig seeds and killed intermittently. It appeared that the food in about twenty-four hours had passed through the intestines twice. An especially convincing case was presented by a rabbit, which was killed at 3 o'clock in the morning.