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A METHOD TO STUDY THE INFLUENCE OF LIGHT ON THE PRODUCTION OF AUXIN BY TIPS OF AVENA COLEOPTILES

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Growing, cutting, and handling *Avena* coleoptiles in total darkness is a prerequisite for studies on the influence of small quantities of light on the production of auxin by isolated coleoptile tips. A technique is described for putting coleoptile tips on agar without exposing them to any light before and during handling.

The plants are selected in darkness by touch, their coleoptiles are isolated and the primary leaves removed, both also by touch. Then the coleoptiles are put in a cutting apparatus as described by VAN DER WEIJ (1932) with the improvements made by HUISINGA (1964) (*fig. 1*). The centres of the holes through which the coleoptiles are passed are at a distance of 2 mm. The coleoptiles are fixed with their tips aligned with the foreplate and subsequently advanced 1 mm by turning the screw once (depending on the speed of the screw). Tips of one mm

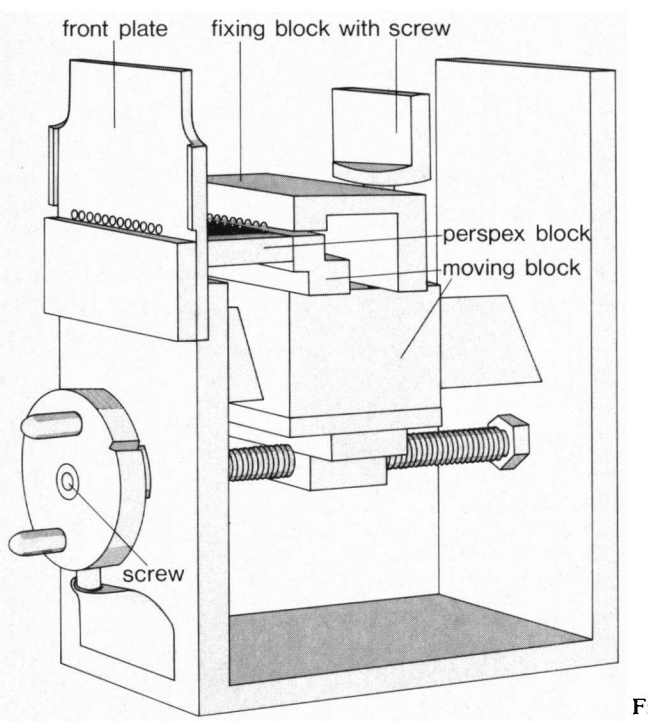

Fig. 1. Cutting apparatus.

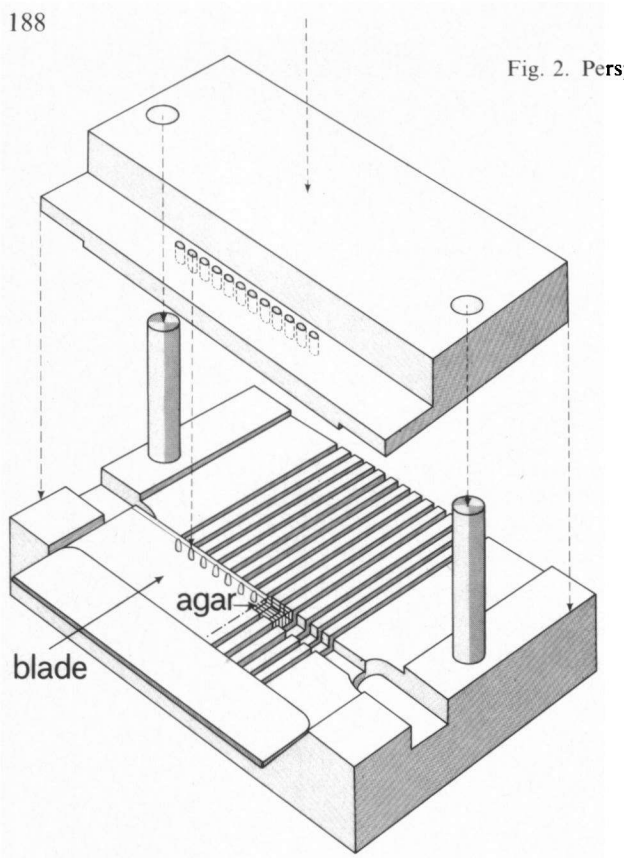

Fig. 2. Perspex block for agar with tips.

can now be cut off by sliding a razor-blade with thickened back over the foreplate. By advancing the blade between two ledges the tips come onto the blade always in the same position.

The blade with the tips, again between ledges, is now pushed onto a perspex block with a groove 2 mm wide and 1 mm deep in which a strip of agar has

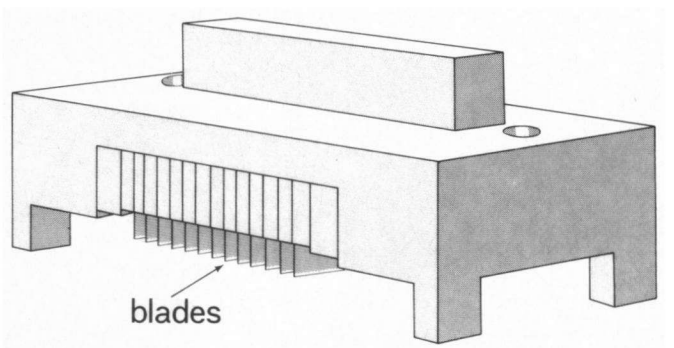

Fig. 3. Block with knives to cut agar blocks.

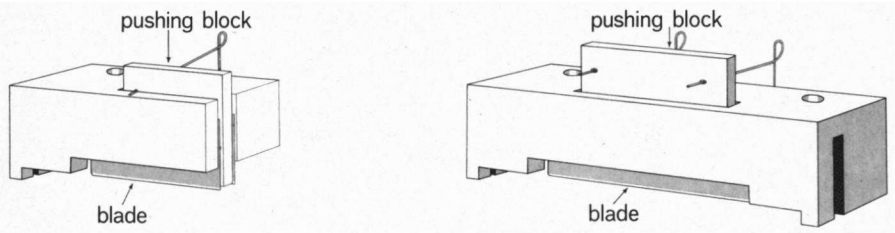

Fig. 4. Apparatus to punch and apply agar strips.

been put with dimensions 25–30 × 2 × 1 mm (*fig. 2*). The groove with agar is on such a distance from the edge of the block that when the thickened back of the blade strikes the edge of the block the cutting edge of the blade protrudes so far over the agar that the tips are exactly halfway over the agar. Now a plate with holes is brought over the tips along two guiding pins (*fig. 2*) and the blade is retracted from between the block and the plate. The plate with the holes pushes the tips onto the agar, provided the tips are not too long. Otherwise they may stick in the holes. The tips may then be pressed onto the agar with another plate, remaining at a distance of 1 mm from the agar. The above procedures can be done in total darkness.

The strip of agar can be cut to blocks of 2 × 2 × 1 mm with the apparatus of *fig. 3* with a row of blades 2 mm apart fitting into narrow grooves in the perspex block.

An apparatus with which the strip of agar can be punched from a plate of agar and put onto the perspex block is depicted in *fig. 4*.

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