Fig. 1. *Acrochaetium* sp. Morphologie des thalles soumis pendant 5 jours à un éclairement de 600 ergs $cm^{-2}s^{-1}$ (l'angle des ramifications et de l'axe égal 45–90 °C), puis soumis pendant 3 jours à un éclairement de 4000 ergs $cm^{-2}s^{-1}$ (l'angle des ramifications et de l'axe est nul). ×35.

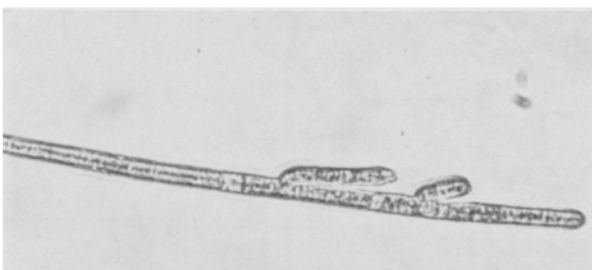

Fig. 2. *Acrochaetium* sp. Orientation parallèle des filaments soumis à un éclairement de 4000 ergs $cm^{-2}s^{-1}$.

3. Les faibles énergies ne permettent pas aux filaments principaux de se ramifier. Au contraire, le pouvoir de ramification augmente avec l'énergie de l'éclairement. Ces résultats concordent avec ceux obtenus chez le *Draparnaldia mutabilis* (Roth.) Cederg[6].

4. Les ramifications latérales même lorsqu'elles restent inhibées avec une vitesse de croissance lente, ne sont pas soumises à un système de corrélation de type dominance apicale comparable à celui défini chez les plantes supérieures, le protonéma des Bryales ou le mycélium des champignons.

5. Le résultat le plus intéressant est obtenu sur l'angle que font entre eux l'axe principal et les ramifications latérales. Cet angle est égal à 45°–90° et en moyenne atteint 45–60° pour des énergies d'éclairement égalant 600 ergs $cm^{-2}s^{-1}$ environ (Figures 1).

Au contraire si l'énergie d'éclairement dépasse 2000 ergs $cm^{-2}s^{-1}$ jusqu'à 4000 ergs cm^{-2}, l'angle devient nul; dès qu'elles sont constituées de 2 cellules, les jeunes ébauches s'accolent très rapidement à l'axe principal (Figure 2). Aux fortes intensités les filaments du thalle restent agrégés conduisant même à la limite à une lame. Ce comportement n'est pas sans rappeler la croissance agrégée de certains thalles de champignons[7].

Le mécanisme de cette croissance reste à être expliqué. Peut-on imaginer que les éclairements dont l'énergie est élevée peuvent modifier l'orientation du faisceau mitotique ? C'est peu probable puisque dans les systèmes ramifiés la naissance d'une ramification est en général indépendante de la division nucléaire. Comment expliquer alors la croissance inégale qui applique la jeune ébauche contre l'axe principal ? Après avoir précisé le spectre d'action de ce phénomène, il sera peut-être possible de remarquer que les chloroplastes se déplacent en fonction du type d'éclairement[8]. Ces mouvements pourraient modifier la structure du cytoplasme pariétal et changer donc l'orientation de croissance. De toute manière, ce phénomène intéressant permet d'aborder l'étude du mécanisme de l'agrégation et de la cortication chez les algues[9].

Summary. If the energy of a white illumination is above 2000 ergs $cm^{-2}s^{-1}$ the angle of the thallus ramification is cancelled. This result poses the problem of the aggregation and the cortication of ramified systems in algae.

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An Artificial Diet for the Rearing of Stalk Borer, *Chilo auricilius* Dudg.

The stalk borer, *Chilo auricilius* (Lepidoptera: Pyralidae), an important pest of sugarcane in the North Indian sugarcane belt, has so far defied all conventional control methods. Attempts are now being directed towards biological and parabiological methods of control. These studies require rearing of large number of insects in the laboratory. It is quite well-known that the supply of the immature stages from rearing done on sugarcane itself is always meagre; therefore it is necessary that the borer should be developed on a suitable diet to ensure continuous supply of the larvae and pupae for various research studies.

In recent years, artificial diets have been developed for many lepidopterous caterpillars of agricultural pests[1-6]. However, efforts made at this Institute in this direction with the wheat germ medium (personal communication) met with only partial success, as earlier instars of the insect had to be reared on sugarcane tissues. Rearing of only the last 2 instars of the pest was possible with artificial medium. Therefore, a number of new recipes were tried and of these one with French beans (*Phaseolus vulgaris* L.) was found to be suitable for the artificial rearing of *Chilo auricilius*, right from the 1st instar caterpillars to developing insects.

Material and method. French bean medium comprises of: French bean, 100 g; yeast extract, 16 g; ascorbic acid, 1 g; casein, 50 g; Wesson's salt, 5 g; sorbic acid, 0.5 g; methyl-*para*-hydroxybenzoate, 1 g; vitamin mixture[7], 8 g; agar-agar, 8 g; powder of dried sugarcane tops, 50 g; formaldehyde, 1.0 ml, and water, 425 ml.

French beans, first soaked in tap water for 24 h, were boiled for a few min and seed coats were peeled off. Peeled seeds were mixed with other ingredients, except agar-agar, ascorbic acid, sugarcane powder and vitamins, and ground to a paste in hand pastle and mortar. Agar-agar was melted in 155 ml of water and sugarcane powder was slowly added to it accompanied by constant stirring. Bean paste, suspended in 240 ml of water was then mixed slowly and thoroughly into molten agar medium, stirred thoroughly and cooked for 5 min on a water-bath. Vitamin mixture and ascorbic acid were dissolved separately in 30 ml of distilled water. Along with formaldehyde, this was finally added to the diet on cooling.

Rearing technique. Sterilized 9.5 cm × 2.5 cm glass tubes, open end plugged with sterilized cotton, were used for the rearing of the caterpillars. The diet was poured into the tubes with the help of a glass rod, upto a quarter of the space, and allowed to set in a slanting position. The tubes were placed in a wire basket and kept overnight for the removal of moisture from the inner walls.

Freshly hatched stalk borer larvae were transferred to the medium with a surface sterilized fine camel-hair brush, at the rate of 10 per tube. After 2–3 weeks these were transferred to fresh tubes keeping 5 larvae per tube. After 33–58 days, these pupated either near the cotton plug or within the medium after forming a pupal cell. The pupae were taken out and kept in 7.5 cm diameter petri-plates, where after 6–10 days, adults emerged.

Range of duration in days, of various stages and fecundity of stalk borer moths reared on an artificial diet.

Larval period	Pupation (%)	Pupal period	Moth emergence (%)	Longevity ♂	Longevity ♀	Eggs laid per ♀	Sex ratio ♂ : ♀
33–38 (47.0)	82.0	6–10 (8.3)	65.8	5–6	4–5	134–265 (224.8)	1 : 0.8

Figures in parentheses are the averages.

Moths were mated in 15 cm × 10 cm diameter round glass jars and allowed to oviposit on freshly cut 15 cm long sugarcane leaf sections. The rearing was done in a constant temperature room maintained at 22 ± 27 °C and 60–75% RH.

Results. Data obtained for one complete life cycle are presented in the Table. Contamination of medium by micro-organisms was also observed in certain cases; the infected tubes were discarded. The emerging moths were almost normal as regards their vigour and fecundity.

Zusammenfassung. Es wird eine Methode zur Zucht des Zuckerrohrstengelbohrers *Chilo auricilius* auf einem semisynthetischen Medium beschrieben.

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Influence of Some Nitrogen Sources on Amino Acid Pool of Two Hyphomycetes

Evidence for the presence of amino acids in soil was provided by the studies on organic matter decomposition (MCLAREN and PETERSON[1]), roots excretions (VERONA[2]), metabolic activities and in situ decomposition of soil microflora.

In this connection, a study was made on the influence of 4 common nitrogen fertilizers on amino acid content of fungal mycelium and spent cultural media of 2 hyphomycetes isolated from soil.

This topic has received only a limited coverage in the literature, apart from some qualitative and partial data (STOKES and GUNNESS[3], WEETE, WEBER and LE TOURNEAU[4], WHITAKER and MORTON[5]), mostly referring to blastomycetes (MOAT, AHMAD and ALEXANDER and BARNES[6], BROWN[7], BROWN and ROSE[8]) or pathogenic species for man (KASHIAP, BISWAS and GHOSH[9]) or plants (CASTELLANI and CALLIANO[10], SHERROD and DOMSCH[11]). Recently many efforts have been made to define quantitatively the free amino acid pool of some micromycetes, with relatively uncertain results because of extraction

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