extended to the upper aerial branches. The tender aerial parts showed ' epinasty ' followed by premature defoliation. In severely affected plants, yellowing of leaves was conspicuous and the plants ultimately died prematurely. At the advanced stage, black bodies made their appearance which were identified as *Colletotrichum capsici* (Syd.) Butl. and Bisb.

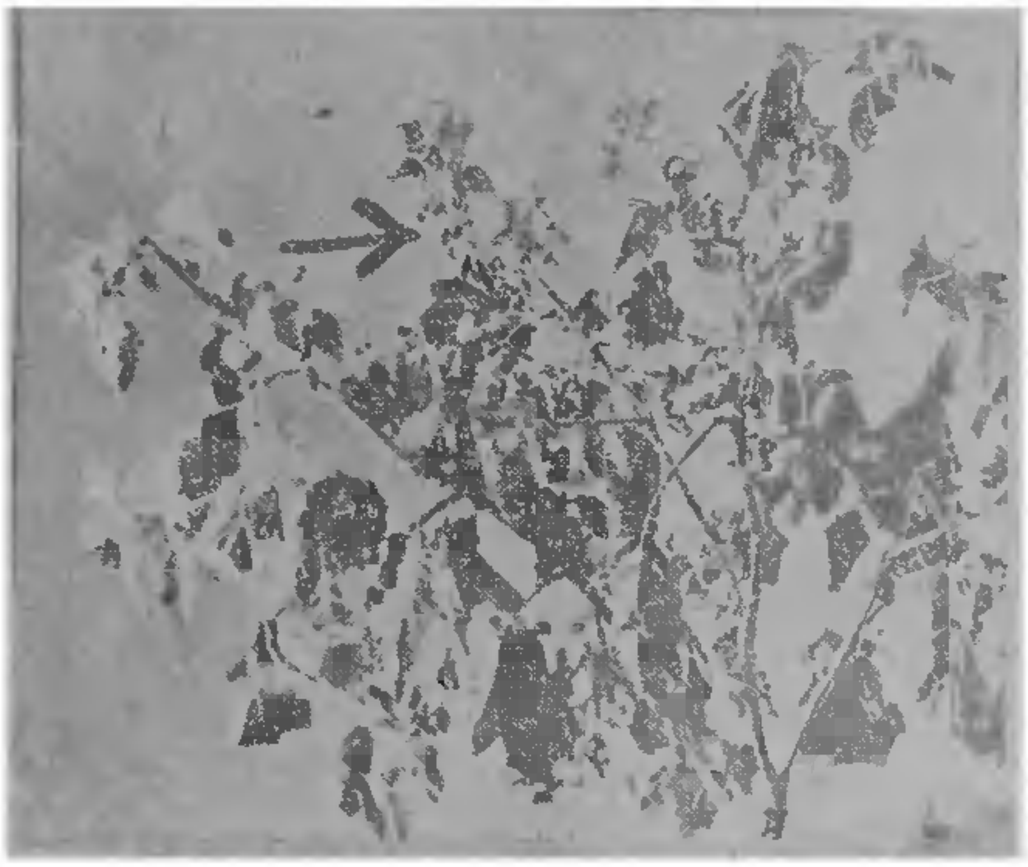

FIG. 1. A branch of *Solanum khasianum* showing the symptoms of the disease caused by *Colletotrichum capsici*.

Pathogenicity of the organism was established by spraying spore suspension in sterilized water as well as mass inoculation after a scalpel injury. The inoculated plants were protected by covering with sterile polythene bags. Sufficient moisture was maintained by placing wet cotton pad over the inoculum. Characteristic symptoms developed after 5–7 days. Isolations from the induced disease tissue yielded the same organism. The disease was more prevalent during October–November months during which high humidity and favourable temperature prevailed.

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AMYLASE ACTIVITY IN A BLUE-GREEN ALGA

ELECTRON microscopic studies in blue-green algae have revealed the presence of interlamellar granules such as α-granules[1,2]. These were further isolated into a pure state from the blue-green alga *Nostoc muscorum*[2]. Chemical analysis of the α-granules suggested these to contain highly branched polyglucosides. Degradation of the isolated α-granules by α-amylase was also achieved *in vitro*[3]. The α- and β-amylases and their isoenzymes of the blue-green alga *Anabaena ambigua* were studied by Wahal *et al.*[4] Since a comparative account on the activity of α-amylase in the vegetative cells and spores of blue-green algae is lacking, the present work was undertaken.

The filamentous, heterocystous and sporulating blue green alga *Anabaena* sp. was employed during the present study. The alga was grown in the nitrogen-free medium of Allen and Arnon[5]. The cultures were maintained at 30 ± 1° C and illuminated with daylight fluorescent tubes. Log-phase cultures and spores were used for obtaining cell-free preparations. Two methods were tried. In the first method, the enzyme extracts were prepared by directly grindng the cells in buffer in a pre-chilled glass mortar. Significant activity of the enzyme could not be detected from these extracts. So the second method was adopted further in which the cell-free preparations were obtained from protoplasts. Log-phase cultures of the alga were concentrated by centrifugation, washed with sterilized water, followed by washings with 0·03 M sodium phosphate buffer (pH 6·8). The cells were resuspended in 10 ml solution consisting of phosphate buffer, 0·5 M mannitol and 10 mg lysozyme (BDH, London, 3 X crystallized). The suspension was incubated in a water bath at 37 ± 1° C for 4 hours to obtain protoplasts[6,7]. Microscopic examination revealed the formation of protoplasts. Initial attempts to wash the protoplasts revealed the loss of amylase activity in the supernatant of the centrifuged protoplast suspension. Hence no further attempts were made to free the protoplast suspension from the added lysozyme. The suspension was then macerated in a glass morter at 4° C for 10 min with 0·5 g of acid-washed sand. The leaching out of the biliprotein pigments indicated the disruption of the protoplasts. It was then centrifuged at 3,000 rpm for 10 min to remove cell debris. The process of maceration was repeated thrice followed by intermitent washings with cold buffer-manitol solution. The cell-free extract thus pooled to a final volume of 25·0 ml was utilized as crude extract for the assay of α-amylase.

Amylase activity was measured by incubating 1 ml of the cell-free extract with 2 ml of 2% soluble starch solution (dissolved in PO_4-mannitol buffer) and 2 ml of buffer solution, pH 6·8, for 1 hour at 37 ± 1° C.

Necessary precautions were taken to prevent bacterial growth in the reaction mixture under incubation. The increase in reducing power was determined by the addition of 3, 5-dinitro salicylic acid reagent[8]. The protein content of the cell-free preparation was determined by the method of Lowry *et al*[9]. While calculating the protein content of the extract the amount of lysozyme added was subtracted from the total protein content. The experiments were performed in duplicate and each experiment was carried at least 2–3 times.

The presence of amylase activity in the supernatant fractions of centrifuged protoplast suspension indicates the release of the enzyme from the protoplasts. This is in agreement with the observations of Heinen and Lauwers[10] who studied the amylases released by the protoplasts of *Bacillus caldolyticus*. The results are summarized in Table I. It is apparent that the

TABLE I

Amylase activity in Anabaena *sp.*

Phase of culture	Amylase activity mg maltose/h/mg protein	
	Range	Average
Vegetative cells	1·368–2·933	2·150
Spores	6·487–8·000	7·243

actively growing cell suspension showed comparatively less activity of the enzyme than that of vegetative cells. It is now established that the accumulation of glycogen takes place in photosynthesizing conditions and the degradation in photosynthetically inhibited cultures or in dark[11]. As the log-phase cultures employed during the present study were directly taken from light, it may be that a basal level of utilization of glycogen persists even in light. The isolated spores of *Anabaena cylindrica* fixed CO_2 in light at considerably lower rate than vegetative cells[12]. Hence it is probable that the spores have to depend largely on the glycogen reserves. The high amylase activity observed in the spores during the present study supports the above conclusion.

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VAUCHERIA BILATERALIS JAO.— A NEW RECORD FROM INDIA.

THE genus *Vaucheria* is represented in India by nine species[1], although the genus contains 54 species in all[2].

In the course of studies on the algal flora and its periodicity in the river Gomati (U.P.), a species of *Vaucheria* hitherto unrecorded from India was found. It is proposed to record the taxon in the Indian flora and to briefly describe the Indian plant.

The alga was found growing in January 1976, floating in a back-water portion of the river near the bank in Lucknow (U.P.). It formed a bright green woolly mat-like patch on the surface of the water having scanty flow.

The main siphonaceous filaments of the alga measure 20–40 (–50) μm in diameter. In this respect the alga is slightly narrower than the type species which is (32–) 40–48 μm across. Branching is lateral and monopodial and the distal branches are slightly narrower. The vegetative morphology is quite similar to other species of the genus.

Zoosporangia were not found in the material and no other mode of asexual reproduction was observed. Sexual reproduction was abundant in the material at the time of collection. Oogonia were subsessile or possessed a short stalk and were formed in series on two opposite lateral sides of the main axis. The number of oogonia on each side ranged from one to six (Fig. 1). The fertilised oogonia possessed a prominent pore-like opening at the