TABLE 1

Effect of penicillin on chlorophyll content of rice leaves and hill activity of chloroplast

Treatment	Seedling age in days							
	8		10		12		14	
	Chl[a]	Hill[b]	Chl	Hill	Chl	Hill	Chl	Hill
Water control	2·2	0·16	2·8	0·26	3·6	0·10	5·9	0·04
Penicillin :								
250 ppm	2·3	0·19	3·6	0·35	5·2	0·17	7·3	0·13
500 ppm	2·5	0·28	5·0	0·57	6·5	0·35	9·9	0·16
750 ppm	2·5	0·18	5·7	0·41	8·0	0·21	9·6	0·15
1000 ppm	2·2	0·17	5·4	0·32	7·9	0·23	8·5	0·17

[a] Chlorophyll content mg/g fresh weight.

[b] Hill activity measured by DPIP photoreduction (– Δ absorbance at 581 nm).

It is of interest to note that chlorophyll content of rice leaves was greater in penicillin treated plants (Table I). Chlorophyll accumulation was dependent on penicillin concentrations and age of the seedlings. Hill activity was promoted by penicillin treatment showing higher values than control throughout the experimental period. Irrespective of the age of the seedlings, the maximum activity was displayed at 500 ppm penicillin. The data further indicate that the difference from control was the largest in a 10 day old sample which gradually narrowed as the samples grew older. Hill reaction, *i.e.*, oxygen evolution by illuminated chloroplast preparations is generally assumed to represent the photochemical splitting of water. In this context, penicillin may be assumed to have caused improved development and general stimulation of photosystem II reaction and oxygen evolving centres.

In the present experiment, penicillin may be assumed to have undergone transformation to penicillamine, a substituted cysteine which serves as nitrogen source. Apart from supplying nitrogen nutrition, cysteine might donate S–H groups for the synthesis of enzymes liable to enhance the synthetic activity of the tissue. In this context, the results obtained here might be interpreted as due to an indirect effect of penicillin.

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1. Brian, P. W., *Ann. Rev. Plant Physiol.*, 1957, **8**, 413.
2. Arnon D. I., *Plant Physiol.*, 1949, **24**, 1.
3. Vishniac, W., "Methods of study of the Hill reaction," In *Methods in Enzymology*, eds. Colowick, S. P. and Kaplan, N. O., Academic Press, New York, 1957, **4**, 342.

CANTHECONIDEA FURCELLATA (WOLFF.) (PENTATOMIDAE—HEMIPTERA): A PREDATOR OF LEAF-FEEDING CATERPILLARS OF RICE

THE Pentatomid bug, *Cantheconidea furcellata* is known to be predaceous on the larvae of many species of Lepidopterous crop pests. In India, it has been recorded as a predator on the larvae of *Amsacta albistriga* Walk. (David[1]), *Earias* sp., *Semiothisa pervolgata* Walk., *Terias hecabe* L., *Catopsilia pyranthe* L., *Spodoptera litura* Fabr., *Achaea janata* L. (Rao[2]) and on *Thosea cervina* (Rao[3]).

The leaf-feeding caterpillars of rice *Melanitis ledaismene* Cramer (Horned-caterpillar) and *Pelopidos mathias* (F.) (Rice skipper) commonly appear during the pre-flowering stage of rice crop when there is maximum vegetative growth. In Mandya District, Karnataka, September–October is the period when the incidence of these caterpillars is maximum. This period also coincides with the appearance of the Pentatomid bugs on the foliage. Observations made in the field on the feeding habits of these bugs revealed that they are predaceous on these two common leaf-feeding caterpillars of rice.

Observations in the laboratory showed that the nymphs and adults of *C. furcellata* attacked the caterpillars, sucking the body fluid, which results in larval mortality. The attacked caterpillars turned blackish and died. A bug attacked 5 or 6 caterpillars in a day. Predation of horned caterpillar and rice skipper larvae by *C. furcellata* has not been reported earlier and this Pentatomid bug seems to be an effective predator of two rice pests.

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1. David, B. V. and Busheer, M., *Jour. Bom. Nat. Hist. Soc.*, 1962, 58 (3), 817.
2. Rao, J. K., *Curr. Res.*, 1977, 6 (10), 169.
3. Rao, S. A., *Rept. Tea Dept.*, U.P.A.S.I., 1936, p. 35.

A SHOT HOLE DISEASE OF NUTMEG

A LEAF SPOT disease of nutmeg (*Myristica fragrans* Houtt.), caused by an unidentified species of *Colletotrichum* has been recorded from Kerala[1]. Recently, a survey revealed that the disease is common wherever nutmeg is cultivated in the State. In addition to the leaf spot symptoms already reported, another characteristic symptom of the disease noted was the appearance of shot hole in an advanced stage of the disease (Fig. 1). The central necrotic regions surrounded by reddish brown bands get detached and resulted in shot holes.

FIG. 1. Shot hole symptoms on nutmeg leaves.

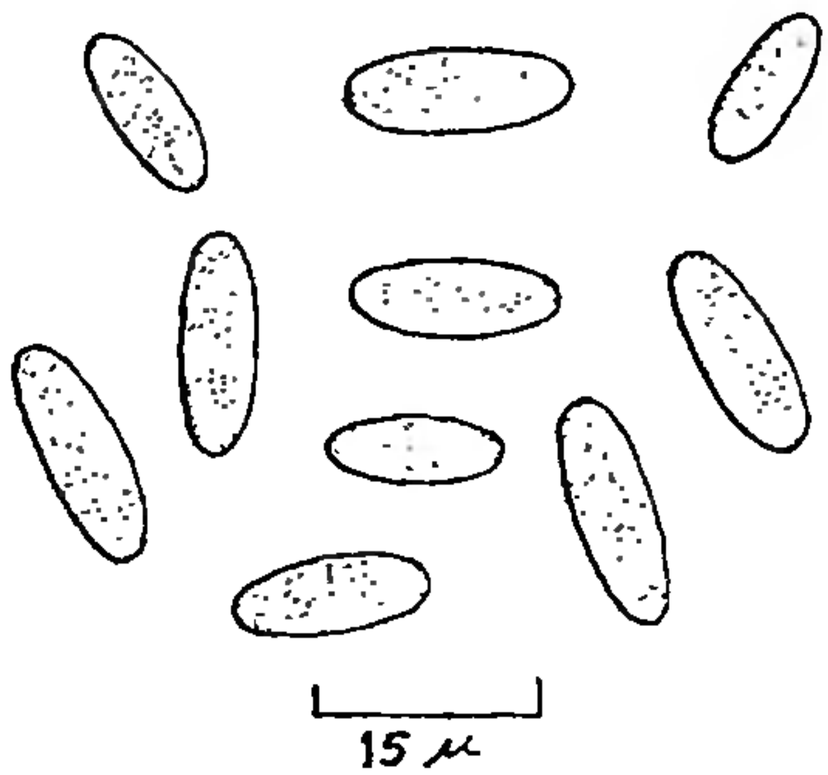

FIG. 2. Conidia of *Colletotrichum gloeosporioides*.

The pathogen was isolated and brought into pure culture on potato dextrose agar medium. It produced greyish white to dark grey colonies. Conidia were cylindrical, hyaline and single celled (Fig. 2). They measured 11·7–14·3 × 3·5–5·5 μ in size, average being 13·0 × 4·5 μ. Based on the cultural and morphological characters, the pathogen was identified as *Colletotrichum gloeosporioides* (Penz.) Sacc. and the characters agree with those described by Mordue[2]. This is the first record of *C. gloeosporioides* causing leaf spot and shot hole disease of nutmeg.

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1. Menon, M. R. and Rema Devi, L., *Sci. and Cult.*, 1967, 33, 130.
2. Mordue, M., *Descriptions of Pathogenic Fungi and Bacteria*, C.M.I., Sheet No. 315, 1971.

OBSERVATIONS ON THE MONOTYPIC GENUS *PAATHIRAMAYA* SUBRAM.

THE form genus *Paathiramaya* based on the type *P. sundara* Subram., is a dematiceous hyphomycete producing unbranched, dark to blackish brown fan-shaped monocephalous synnemata (Subramanian, 1956, 1971). The conidiophores are macronematous, unbranched, pale brown, smooth with a lower cylindrical sterile and an elongate clavate upper part bearing a terminal and many lateral conidiogenous vesicles (prorruberances). The conidogenous vesicles are constricted at the base, discrete, not cut off by the septum, determinate, subspherical and monoblastic. They become calyciform after the conidia are released and