either through the hilum or from any other point on the spore.

Scolecobasidium indicum resembles *S. constrictum* Abbott (Barron and Busch, 1962) in shape and size of the conidiophores, and in constricted nature of conidia. However, the conidia of *S. indicum* are smooth and 7·6–16·0 × 3·2–5·2 μ, whereas those of *S. constrictum* are echinulate to verrucose and 5·0–12·5 × 2–4 μ. *S. indicum* also resembles *S. humicola* Barron & Busch (Barron and Busch, 1962) in the size of the conidia, but the conidia of the latter are finely echinulated and rarely constricted at the septum. The conidia in the present fungus are smooth and always conspicuously constricted at the septum. Further, the conidiophores of *S. humicola* are up to 300 μ long while those of *S. indicum* are up to 40 μ long. *S. indicum*, therefore, is a distinct species which can be easily identified with its smooth and constricted conidia produced on short conidiophores. Since the combination of these features of this fungus does not agree with other known species of the genus, it is described here as a new species.

Hyphæ vegetativæ hyalinæ vel subhyalinæ, septatæ, *ca.* 1·5 μ latæ. Conidiophora simplicia, pallide olivaceo-brunnea, septata, cylindrica, recta vel curva, 8–40 × 1·6–2·0 μ. Conidia producta singulariter, acrogena, ut plurimum efformatia corymbos, connectivo angusto fixa; connectivum vulgo persistens conidiophoro fixum ut tubulus brevis angustusque, nonnumquam conidio fixum persistens ut segmentum breve hyalinum. Conidia vulgo uniseptata, ovoidea vel breviter cylindrica, eminenter constricta ad septum, pallide olivaceo-brunnea, levia, fastigata in basin angustam truncatam, 7·6–16·0 × 3·2–5·2 μ.

Typus lectus in aquæ vasa fictili ad Jodhpur in Rajasthania, mense martio anni 1963 a B.C. Lodha (Herb. R.U.B.L. No. 68).

I am deeply indebted to Professor C. V. Subramanian, University Botany Laboratory, Madras, for his guidance and suggestions during the preparation of this paper. I am also grateful to Rev. Father Dr. H. Santapau for his ready help in translating the diagnosis of this new taxa into Latin.

Department of Botany, B. C. Lodha.
University of Rajasthan,
Jaipur-4 (India), *November* 29, 1969.

1. Barron, G. L. and Busch, L. V., *Can. J. Bot.*, 1962, **40**, 77.

EFFECT OF CHLORIDE IONS ON GERM TUBE GROWTH OF *BOTRYTIS* SPP.

Ether extracts of acidified (with N.HCl) leaf exudates of *Vicia faba* caused significant inhibition of germ tube growth of *Botrytis fabæ* and *B. cinerea* as revealed from bioassay tests. It was, therefore, considered necessary to investigate whether this inhibition was primarily due to chloride ions of HCl or some other factors present in leaf exudate. Incidentally, the effect of sulphate and phosphate ions in ether extracts of acidified water on the growth of test organisms were also compared. Bioassay tests with acidified plant exudates sometimes show erroneous results due to the presence of minute quantities of unwanted ions even after extraction with diethyl ether. Hence it is desirable to check the influence of ions on the growth of test organisms. This work was undertaken with a view to ascertain the individual effect of chloride, sulphate and phosphate ions on the growth of microorganisms after ether extraction of water containing different acids usually employed for acidification.

In the preliminary experiment ether extracts of both acidified and neutral (control) leaf exudates of bean were tested on the germ tube growth of the said fungi after dissolving the residue in phosphate buffer solution (0·01 M, pH 6). Both the exudates inhibited growth but markedly in case of acidified exudate. So in the second experiment, 300 ml. distilled water was taken in 3 conical flasks (100 ml./flask) and acidified with 0·4 ml. N. HCl, 0·15 ml. N. H_2SO_4, 0·65 ml. N. H_3PO_4 respectively. All acidulated water were adjusted to pH 3 and subsequently extracted separately with equal volume of diethyl ether (b.p. 60°–80° C.). After separation of the ether fraction, it was evaporated to complete dryness in a rotary film evaporator in room temperature (23–25° C). The residue in each case was dissolved in 2·5 ml. phosphate buffer solution and tested on both the species following the method used for the bioassay of antibiotics.[1] The spore suspension of fungi was prepared as described by Deverall and Wood[2] and 10 μl of either *B. fabæ* or *B. cinerea* (12 days old culture) was added to 100 μl. of the solution to be tested and incubated for 24 hrs. at 15–17° C. and 380 f.c. light. The results are given in Table I.

The results suggest that chloride ions have significant effect on the germ tube growth of the test species of *Botrytis*. The growth of

B. cinerea is more affected (about 50% reduction) than that of *B. fabæ* (about 40% reduction). However the rate of spore germination has been found to be nearly normal (as in buffer control) in all cases. The sulphate and phosphate ions have less effect on the germ tube growth under test conditions.

TABLE I

Effect of ether extracts of acidified water on the germ tube growth of B. fabæ *and* B. cinerea

Treatment*	Average length of germ tube (μ) †	
	B. fabæ	*B. cinerea*
Phosphate buffer (control) ..	281·61 (94–515)‡	187·44 (78–313)
Distilled water ..	273·35 (78–515)	171–82 (78–235)
Distilled water + HCl ..	167·13 (63–345)	93·72 (31–157)
Distilled water + H_2SO_4 ..	242·11 (110-345)	140·58 (63-219)
Distilled water + H_3PO_4 ..	210·87 (78–515)	139·01 (94–282)

*All ether extracts finally dissolved in phosphate buffer solution. † Average germ tube length based on 60 germ tubes. ‡ Range of length of germ tubes.

The author is grateful to Dr. B. J. Deverall, Department of Botany, Imperial College of Science and Technology, London, for his valuable suggestions and for providing necessary facilities to carry out this investigation.

Department of Botany, R. P. PURKAYASTHA.
Univ. College of Science,
35, Ballygunge Circular Road,
Calcutta-19, *December* 10, 1969.

1. Purkayastha, B. P., *Curr. Sci.*, 1969, **38**, 172.
2. Deverall, R. J. and Wood, R. K. S., *Ann. Appl. Biol.*, 1961, **49**, 461.

ROLE OF AFLATOXINS IN GROUNDNUT SEED SPOILAGE

AFLATOXINS are a series of metabolites produced by some strains of *Aspergillus* spp. associated with the spoilage of agricultural commodities. The compounds are acutely toxic to poultry, calves, swine, monkeys and even to human beings.[1] Bampton[2] and McDonald and Harkness[3] reported the growth of *Aspergillus flavus* and production of aflatoxin in groundnuts. *A. fumigatus* has been reported by Sreenivasamurthy *et al.*[4] as the aflatoxin producing fungus in groundnut. The authors, working on the seed-borne microflora of groundnut, isolated eight species of *Aspergillus* from the stored pods and kernels and those species were found to cause seed germination failures and reduction in seedling vigour. Hence studies were undertaken to assess the possible role of aflatoxin, the toxin which affected animal species, in the seed germination failures.

The ability to produce aflatoxins by the *Aspergillus* spp. was tested.[4,5] The effect of the toxins on the seed germination and seedling vigour of groundnut was assessed by the method described by Vidhyasekaran *et al.*[6]

The data in Table I reveal that only *A. flavus* and *A. tamarii* produced aflatoxin.

TABLE I

The presence of aflatoxins in the culture filtrates of various Aspergillus *spp.*

Species of *Aspergillus*	Presence of aflatoxins
A. nidulans	–
A. versicolor	–
A. flavus	+
A. tamarii	+
A. niger	–
A. fumigatus	–
A. variecolor	–
A. ustus	–

The culture filtrates of all the *Aspergillus* spp. tested did not inhibit the seed germination, but their effect was much pronounced on root and shoot elongations. All the aspergilli inhibited the root elongation more than 60% and *A. flavus*, *A. ustus* and *A. tamarii* inhibited the root elongation more than 90%. *A. flavus* inhibited shoot elongation also markedly and *A. versicolor* inhibited more than 60% shoot elongation (Table II).

Armbrecht *et al.*[7] reported production of aflatoxin by several *A. flavus* strains. Codner *et al.*[8] obtained production of as much as 265 mg. of aflatoxin/kg. of peanuts by *A. parasiticus* and smaller amounts by five strains of *A. flavus*. *A. fumigatus* has also been reported to produce the toxins.[4]

In the present studies, *A. tamarii* was also found to produce the aflatoxins.

Although only two of the species of *Aspergillus* tested were found to produce aflatoxins, all the aspergilli were observed to affect the seedling vigour markedly. Hence it may be concluded that the toxin produced by the aspergilli to inflict damage on the crop is different from the aflatoxin which is toxic to animal species. Only few species and few strains produce aflatoxins. Jackson[9] observed that matured peanuts were largely free from aflatoxin. But the toxins produced by these