that days to flowering in peas is controlled by single gene pair, lateness being dominant.

Resistance to powdery mildew (Table I) was controlled by single recessive gene as F_1 in both the crosses was susceptible and F_2 gave a segregation pattern of 3 susceptible : 1 resistant. BC_1 (F_1 × Arkel) was expected to be non-segregating type, however 4 unexpected resistant plants were obtained. These might have been escapes/off types, although the progenies were sprayed with the inoculum. BC_2 (F_1 × T-10) gave an excellent fit to a ratio of 1 : 1. Therefore involvement of a single recessive gene to control resistance for powdery mildew in T-10 is beyond doubt.

The test for joint segregation in F_2 plants in both the crosses fitted to a ratio of 9 late-susceptible : 3 early-susceptible : 3 late resistant : 1 early resistant indicating independent assortment for both these genes. Thus the parental genotypes could be designated as 11ErEr for early and susceptible genotypes (Arkel and NLP) and LLerer for late and resistant genotype (T-10). The inheritance being simple and free from undesirable linkage, a back cross breeding programme could easily be used to transfer the gene for resistance and earliness from T-10 and Arkel/NLP respectively into the genome of other varieties. Due to independent assortment of these genes, early and resistant genotypes could be recovered in a regular breeding programme following pedigree method of breeding also, one should raise large F_2 population as the frequency of this class will be low (1/16). As a result of breeding programme in this direction lines possessing earliness and resistance to powdery mildew are under evaluation. These results on inheritance of resistance to powdery mildew agree with those of Harland[1], Saxena *et al.*[3] and Narsinghani[2].

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A NEW SPECIES OF *PERICHAENA* FR.

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DURING the survey of Myxomycetes of Marathwada, the author came across an interesting myxomycete growing on dead stem of a shrubby plant. On critical examination, it was found to be a species of *Perichaena* Fr., but differing totally from the earlier described species. It is, therefore, being described here as a new species along with its Latin diagnosis

Perichaena thindii Nanir sp. nov.

Fructifications flat, pulvinate, circular to irregular elevated. Sporangia sessile on broad bases, scattered or grouped but not heaped or crowded, more or less 0·1 mm thick, 0·2–0·4 mm (–0·6 mm) in dia. Upper flat region dark chestnut brown or black; lower half bright yellow. Peridium single, membranous, opaque, blackish and rough in upper half; transparent, thin and persistent in lower half. Hypothallus after dehiscence transparent and honey-comb-like. Capillitium scanty, free elaters, very rarely with cross connections, non-calcarious, long, slender, tubular, constricted, more or less 2·5 μm in dia., echinulate. Spores yellow in mass, faint yellow under transmitted light, globose, tending to be elliptic, spinulose, 12–13·8 μm in dia.

One dead stem of shrubby plant, Daulatabad, July, 1975 leg S. P. Nanir, deposited at MACS, Poona, AMH No. 3033 (Holotype).

Perichaena thindii Nanir sp. nov.

Fructificatio planus pulvinatus, circularis ad *itregulater*. *Sporangia elevatus*, *sessilis*, suprabasín, despersus ad aggregatus sed noncongetus, ±0·1 mm crassus, 0·2–0·4 mm (–0·6 mm) latus 1 diameniso. Supra pars atrobadium vel vividus flavus. Peridium simplices membranaceus nontranslucidus, supra planus pars negellus et exasperatus dum dimidio, inferiore flavus et translucidus. Capillitium liber elaterum, non abundus, noncalcareus, longus, gracilis, tubulosus, constrictus, echinulatus, crux connexuz raro, plus minusve 2·5 μm diamensio. Sporae flavus aggregatae, vividus et dilutus flavus luce transmissa, globosus, affinitas per ellipticus, spinulosus 12–13·8 μm diamensio.

Lectus in caule mortuo, Daulatabad, Leg. S. P. Nanir, July 1975, et positus in herebario MACS Lab., Poona, AMH No. 3033 (Holotypus).

Perichaena corticalis (Batch) Rost. shows some resemblance with *P. thindii* Nanir sp. nov., but the former is recognised by its variable fructifications from sessile to short stipiltate, plasmodicarpus to globose, subglobose or hemispheric sporangia; double peridium, capillitium slender, warted to spiny threads 4 μm dia; spores unequally warted.

The distinguishing features of *P. thindii* Nanir sp. nov. are as follows :

1. Fructification pulvinate on the broad base.
2. *Peridium single* :

   A—Upper flat portion dark, chestnut blackish brown, opaque and rough.

B—Lower half up to the hypothallus bright yellow and transparent.

3. After dehiscence hypothallus is honey-comb-like and transparent.
4. Capillitium scanty of free elaters, constricted and echinulate.
5. Spores faint and bright yellow, spinulose, 12–13·8 μm in dia.

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ROLE OF IAA, IAA-OXIDASE, O-DIHYDROXY PHENOLS, POLYPHENOL OXIDASE AND PEROXIDASE IN STEM GALL DISEASE OF *CORIANDRUM SATIVUM* L.

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Healthy plant is a completely balanced complex of interrelated reactions which are in a state of dynamic equilibrium. Any change in this system tends to disturb the equilibrium and causes various deformities which are symptomatically displayed in one way or the other. The morphological and histological deformities caused by *Protomyces macrosporus* Unger in *Coriandrum sativum* L. have been studied but the exploration of underlying biochemical changes in this plant is still in the infant state. It was, therefore, intended to analyse the diseased and healthy plant, for IAA-oxidase, polyphenol oxidase (PPO), peroxidase (PO), IAA- and O-dihydroxyphenols and to discuss their possible implication in disease development and the resistance.

Freshly collected healthy and diseased plant pieces (30 g each) were finely crushed and subjected to IAA preparation and estimation with Salkowski reagent[1]. The enzyme preparation was done at 4° C temperature. *Plant material (10 g each)* was crushed and homogenized in prechilled acetate buffer (pH 5·2) for IAA oxidase and in phosphate buffer (pH 6·5) for PPO and PO. The homogenates were filtered and centrifuged at 4000 rpm for 10 min. The supernatants were subjected to ammonium sulphate precipitation between 20 and 80% saturation. The precipitates were collected by centrifugation at 16,000 r.p.m. for 15 min and suspended in 10 ml of respective buffers for each sample. The resultant solutions were assayed for IAA-oxidase[3], PPO[3] and PO[4] activities. The protein was determined by Lowry's method[5] using BSA as standard. O-dihydroxy phenols were extracted by crushing plant material (15 g each) in 80% ethanol and measured with Arnow's reagent[1].

High O-dihydroxy phenols, increased PO and decreased PPO activities were recorded in diseased plants of Coriander (Table I). The quantity of IAA was, however, considerably low with a simultaneously high activity of IAA-oxidase measured per unit fresh weight tissue (Fig. 1 A). But when the enzyme activity was determined per unit protein, it was found low in diseased plant than in healthy ones (Fig. 1 B). It indicates that enzyme protein has not correspondingly increased with increase in total protein contents. The high concentration of O-dihydroxyphenols was thought to have inhibited IAA-oxidase[8].

TABLE I

Quantitative analysis of healthy and diseased tissues of C. sativum *infected with* P. macrosporus

(Values are mean ± S.E. of 5 observations)

Analysed substances	μg/g fresh weight tissue	
	Healthy	Diseased
O-dihydroxyphenols	425 ± 4·4	580 ± 2·3
IAA	19·7 ± 0·15	5·0 ± 0·23
Polyphenol oxidase*	140 ± 3·9	80 ± 1·6
Peroxidase*	45 ± 2·4	75 ± 2·2

Values are significant at 0·05 level.
*Change in absorbance/min/ml enzyme solution.