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A NEW EAR-ROT OF BARLEY

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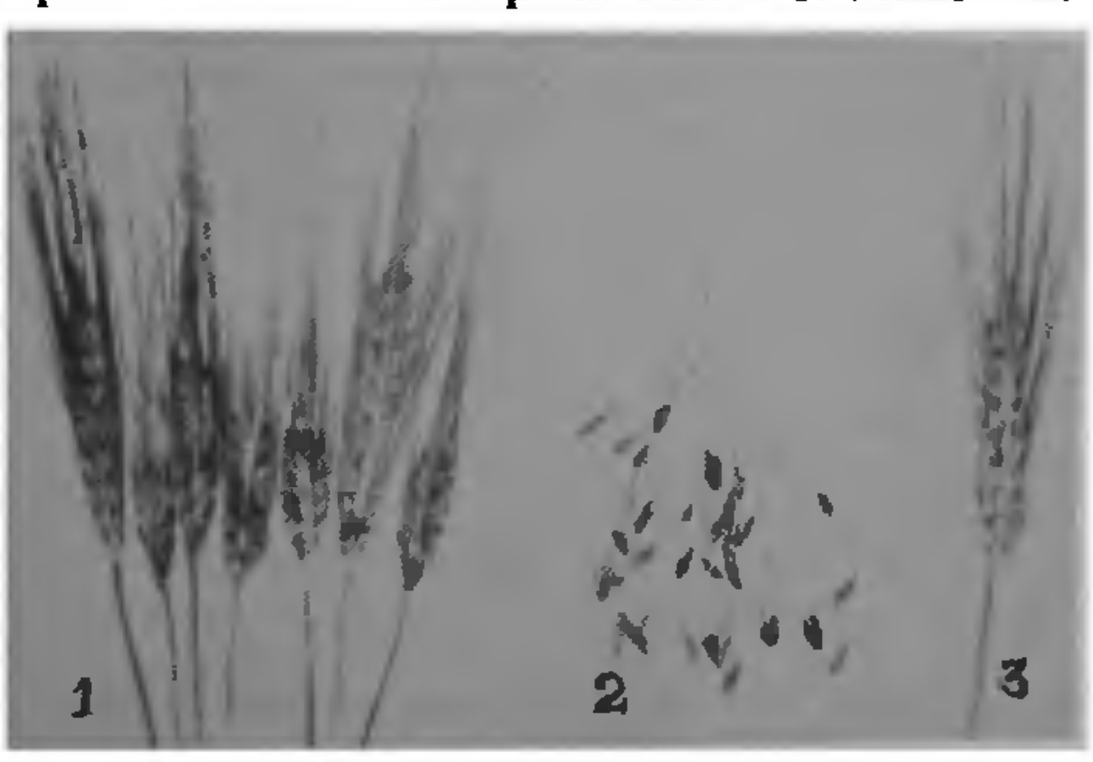
ALTHOUGH *Curvularia pallescens* Boedijn has been reported to cause black point disease of wheat[1-3] the present study is however the first sign of this disease on barley (*Hordeum vulgare* L.) from India.

When spore suspension from 10-day old culture was sprayed on pin-pricked barley grains, small brown lesions appeared on the inoculated grains which increased gradually to form bigger lesions and finally covered the whole surface of the grain (figures 1–3).



Figures 1–3. 1. Diseased ears. **2.** Infected grains. **3.** Healthy ear of barley.

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POLYSTELY IN THE TUBERS OF ORCHIDACEAE AND THEIR FORMATION

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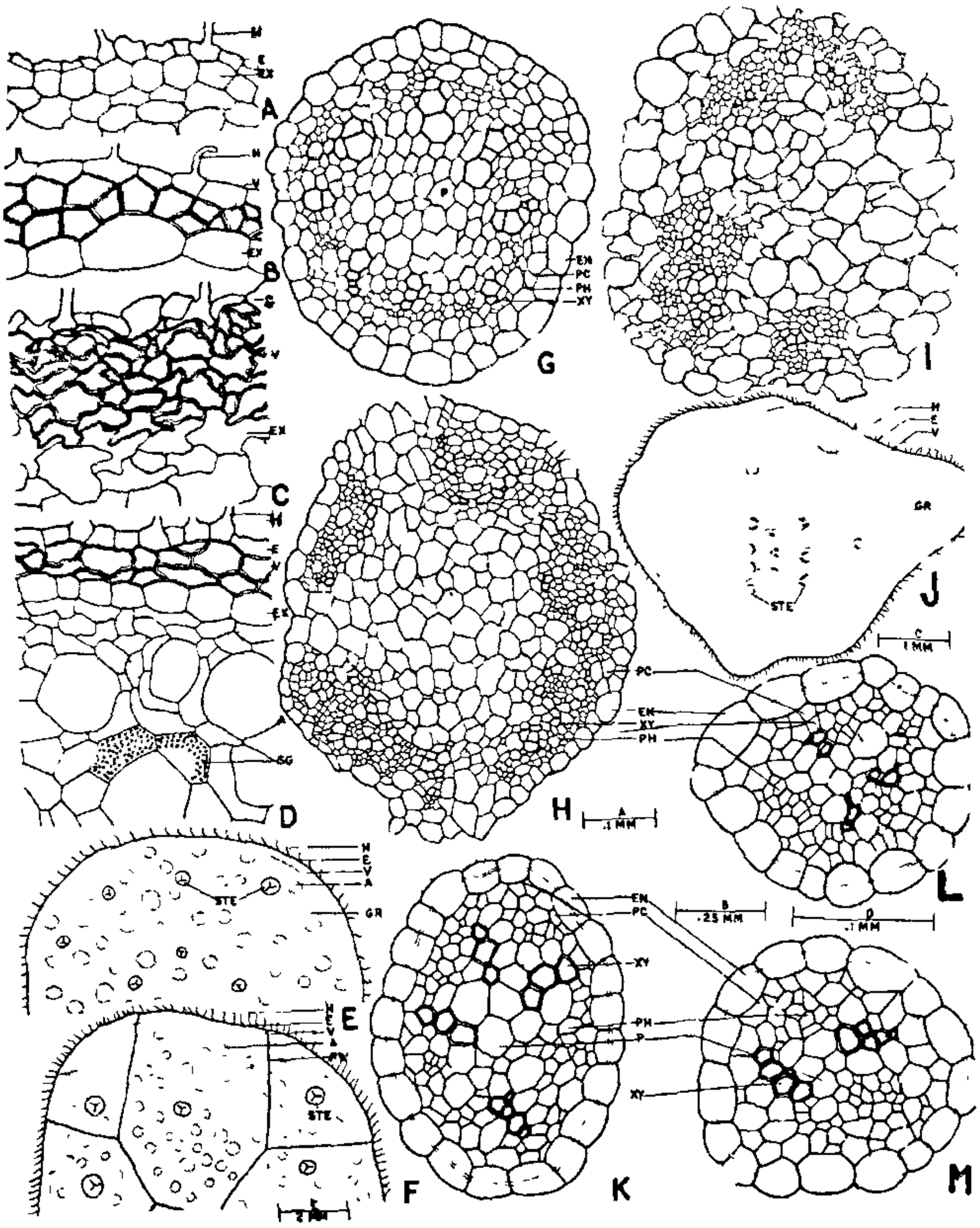
POLYSTELE is a rare phenomenon in orchid roots. It has been reported in certain orchids by some earlier workers[1-6]. However, the author while investigating the anatomy of terrestrial orchids came across polystelic condition in *Habenaria arietina* Hook. f., *H. griffithii* Hook. f., *H. pectinata* Lindl., *Herminium angustifolium* Benth. and *Satyrium nepalense* Don.

Of the few roots given out of the stem base, one or two turn out to be fleshy and tuberous. Cross-section of such tubers show polystelic condition. The steles are scattered in the parenchymatous ground tissue with numerous aerenchyma and starch containing cells (figures D and E). In the older tubers of *Habenaria* and *Herminium* some of the cells of the ground tissue anastomose in radial and tangential plane and form many compartments. Each compartment surrounds one or occasionally two steles (figure F). Each stele is di to tetrarch whereas the tuberous roots are polyarch surrounded by a single layer of thin walled pericycle and barrel shaped endodermis possessing prominent casparian strips (figures G, K–M). The tubers and tuberous roots both have thin walled exodermis, multilayered velamen, and epidermis with abundant root hairs except for *Satyrium* where velamen is absent in the tuberous roots.



Figures A–M. A, B. A portion of cross-section of the tuberous roots of *S. nepalense* and *H. pectinata* respectively. **C, D.** A part of cross-section of the tubers of *S. nepalense* and *H. pectinata* showing multilayered velamen respectively. **E.** A part of cross-section of the tuber of *S. nepalense* in outline showing distribution of steles and aerenchyma. **F.** A part of the cross-section of the tuber of *H. griffithii* in outline showing comparted ground tissue. **G–J.** Cross sections of very young tubers of *S. nepalense* showing transition from tuberous root. Only outline is shown in figure J. **K-M.** Cross section of steles from the tubers of *S. nepalense* showing tetrarch, triarch and diarch condition respectively.

Scale A for figures A,B
Scale B for figure D
Scale C for figure J
Scale D for figures C, G–I, K–M
Scale E for figures E, F

Abbreviations used:
A — Aerenchyma; E — Epidermis; EN — Endodermis; EX — Exodermis; GR — Ground tissue; H — Root hair; P — Pith; PC — Pericycle; PH — Phloem; PW — Partition wall; SG — Starch grains; STE — Steles; V —Velamen; XY — Xylem.

A small knob-like swelling at the tip of the tuberous root is the first indication of the initiation of a tuber. At this stage there is a splitting of the stele of tuberous roots into two halves accompanied by the disorganisation of the endodermis and pericycle due to random increase in the size of the pith cells (figure H). Next, the xylem tracheids come to lie more or less in tangential plane with phloem elements towards periphery (figure I). The endodermis and pericycle are already disorganised by this stage. Finally the vascular groups (*i.e.* xylem tracheid along with some elements of phloem) move outward into the ground tissue where these develop their own endodermis and pericycle (figure J). In this fashion several steles are formed in the ground tissue.

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ON THE VEIN TERMINI IDIOBLASTS IN *REAUMURIA* HASSELQ. EX L. (*TAMARICACEAE*)

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THERE have been a few recent studies on the leaf vein termini idioblasts to obtain an overall perspective of their presence in taxomony[1,9-15]. The reported occurrence of terminal idioblasts in *Reaumuria*[1,2] prompted us to continue the investigation for detailed information on the several species of this genus with a view to elaborate their morphological aspects and systematic applicability.

Reaumuria alternifolia (Labill.) Britten (Syn. *R. hypercoides* Willd.) U.S.S.R., Georgia, *R. F. Hohenachar, s. n.* (LE); Salzsteppeland, *Stapf* 2252 (CAL); Ghanabad, *Fichler, s. n.* (CAL). *R. hirtella* Jaub. et Spech. var. *palestina* (Boiss.) Zoh. et Danin (Syn. *R. palestina* Boiss.), Syria, *B. T. Lowne, s. n.* (CAL); *R. kaschagarica* Rupr., Mongolia, *A. N. M. Przewalski, s. n.* (LE). *R. persica* Boiss., U.S.S.R., Armenia, *Zovits, s. n.* (LE, CAL). *R. reflexa* Lipaki, U.S.S.R., Siberia, *Korvin* 309 (LE, CAL); *R. songarica* (Pall.) Maxim., Mongolia, *A. N. M. Przewalski, s. n.* (LE, CAL). *R. stenophylla* Joub et Spech. Africa., Algeria, *s. n.* (CAL); *R. stocksii* Boiss. Baluchistan, Afghan boundary, *E. P. Naynard* 44 (CAL). *R. turkestanica* Corschkowa, U.S.S.R., Siberia, *Korvin* 310 (LE, CAL). *R. vermiculata* L. Arabia Sinai, *W. Schimper* 272 (LE); Egypt, Cairo, *T. Boramuller* 10437 (CAL).

For the correct citation of the above listed specimens, the names followed by recent workers are adopted[3,4]. Herbarium specimens were kindly provided by the Komarov Botanical Institute (LE), Leningard, U.S.S.R. and Central National Herbarium (CAL), Howrah, India. Leaves were cleared by the modified technique as outlined in a recent paper[5].

Studies of the cleared leaves, hand sections and macerations revealed the presence of terminal or sub-terminal idioblasts in all the above mentioned species. They are categorised under 2 main types: Sclerotracheoids and sclereids. The characteristic features of them are as follows:

Sclerotracheoids are restricted to vien termini and also infrequently along the minor viens of all the investigated species (figures 3 and 4) except *R. persica*. They are spheroidal, oval or irregularly dilated thick walled cells and have pits in an orderly manner. They are disposed parallel to the leaf surfaces or a few of them show more or less perpendicular disposition to the surface. Often they are found in groups and rarely isolated at the vien endings.

Sclereids on the other hand are found in varied forms around the viens in *R. persica* (figures 1 and 2). They are of ramiform category showing a trend towards Y or T shape. The cell wall is striated, pitted and the lumen is of irregular width. They are disposed perpendicular to leaf surface often in groups or in continuous or interupted ring-like manner along the vien bundles (figures 1 and 2). In continuation of the previous reports to date, terminal sclereids have been recorded so far in 59 genera spread over 30 families[1,2,6]. The real significance of this terminal relationship is so far not known. In contrast to the other species of this genus, in *R. oxiana* (Ledeb.) Boiss., branched fibre like cells have been reported in the mesophyll[7]. The true nature of these cells needs further enquiry.

It is clear from this study that idioblasts in the studied taxa conform to sclerotracheoids or sclereids, and at no instance any intermediary cell forms were observed. Whether they represent extreme stages of development of the same type of cell or distinct cells needs further enquiry[8]. However, the consistent presence of tracheoids clearly indicates the existence of similar trends in the two tribes: *Reaumuriae* and *Tamariceae* of this family. This feature relates well to the alliance of the two tribes under one family and