Figures 7–9. Photomicrograph: **7.** Cleared lamina showing terminal and diffuse pattern of sclereids in the vicinity of midrib, ×50. **8.** Terminal sclereids ×100. **9.** Diffuse sclereids, ×100.

margin first and later extend centripetally and centrifugally in the expanding lamina. In the case of *Fagraea fragrans* Roxb[8]. and *Gnetum gnemon* L.[9] the basipetal initiation of sclereid initials along the midrib is followed by sclerification in an acropetal direction. The above mentioned patterns stand in contrast with the acropetal initiation above the petiole along the midrib towards the apex and subsequent sclerification in centrifugal directions as observed in the present study.

In view of the differences of initiation and variable sequential sclerification in different plants, it is necessary to work some more examples before arriving at definite conclusion on this point. However, it is safe to conclude that despite variations of sclereid initiation and maturation they are under patternized sequence of development. This raises some questions as to the nature of the control of their initiation, diversity, positional relationship with the differentiating procambial strands and sclerification of leaf sclereids. The entire process involves various factors working together or sequentially and this clearly needs further study.

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EUROTIUM REPENS DE BARY VAR. *COLUMNARIS*—A NEW VARIETY OF *ASPERGILLUS REPENS*

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A NEW variety of *Aspergillus repens*, isolated repeatedly from the soil collected from Indian Soil Salinity Station, ICAR Sub-station Canning, West Bengal, has been described for the first time.

Eurotium repens De Bary Var. *Columnaris* Varshney, Sarbhoy & Chowdhry

Colonies on Czapek-Dox agar restricted, compact attaining a diameter of 2.5 cm in 15 days at 26–28° C, Scheel's green (R* Plate VI) dark brown to black at maturity. Conidial heads tightly columnar. Conidiophores, smooth 110–330 × 5–10 μm in diam, vesicles subglobose to elongate, 6–12.6 μm. Metulae 7–12.6 × 2.8–3.5 μm. Conidia ovate to subglobose, elliptical, spinulose, 4.9–11.2 μm (mostly 5.6–9.8 μm). Cleistothecia and ascospores rarely observed.

Colonies on Czapek-Dox agar with 20% sucrose grow rapidly, attaining a diameter of 4.5 cm in 15 days at 26–28° C with thin margins, heavily sporulating, predominantly cleistothecial, primuline yellow (R., Plate XVI) (figure 1). Reverse Yellow. Exudate none. Conidial heads abundant, more tightly columnar, upto 240 μm in diam. Conidiophores smooth, hyaline, 180–575 × 6–10 μm, broadening at the apex

* Ridgway, R. 1912, Colour Standards and nomenclature. Published by the author, Washington, D.C.

of vesicles. Vesicular area hemispherical to mostly globose, fertile over entire area or at the surface only, 10–30 μm in diam. Metulae 7–12.6×2.8–3.5 μm. Conidia ovate to subglobose, rarely elliptical, spinulose 5.6–11.5 μm (mostly 7–10 μm). Cleistothecia yellow, spherical to subspherical, 650–110.5 μm in diam. Asci 9.8–12.6 μm. Ascospores lenticular 4.2–5.6×4.2–4.5 μm, smooth-walled with equatorial area rounded and flattened with crests (figures 3–6).

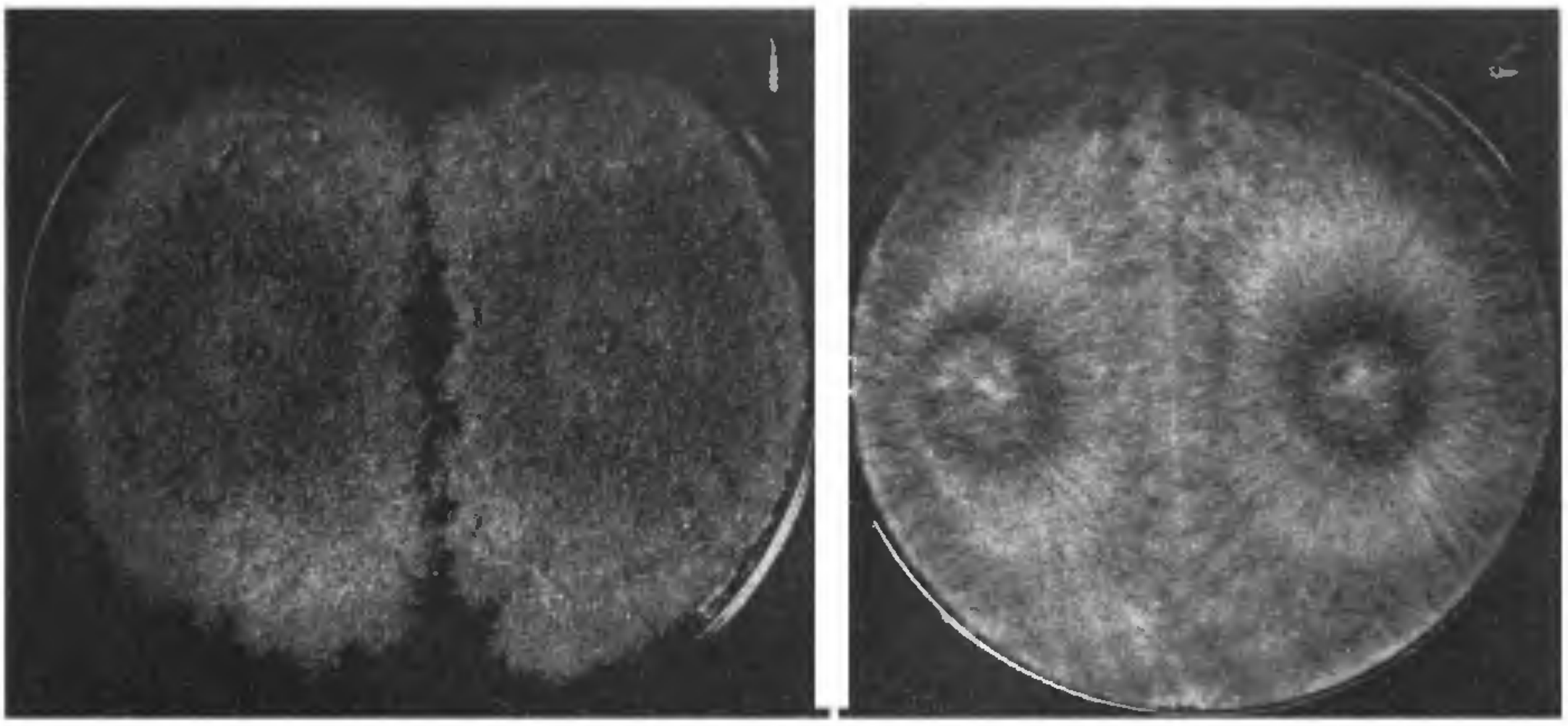
Colonies on M40Y agar grow even more rapidly with abundant aerial mycelium and conidial structures. Cleistothecia maturing more rapidly than on the above two media, olive ocher (R. Plate XXX) (figure 2). Reverse honey yellow (R. Plate XXX).

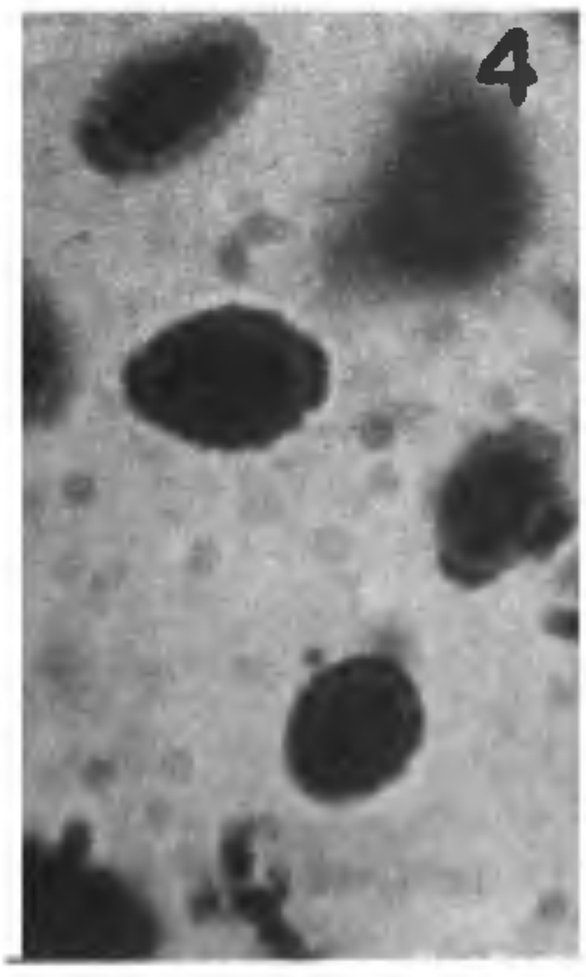
The present isolate differs from the descriptions[1,2] in having the tightly columnar conidial heads, conidia bigger in size, vesicular area is mostly globose and produces sterigmata on entire or the vesicular apex. In view of the differences mentioned above, a new varietal name has been assigned to the present isolate.

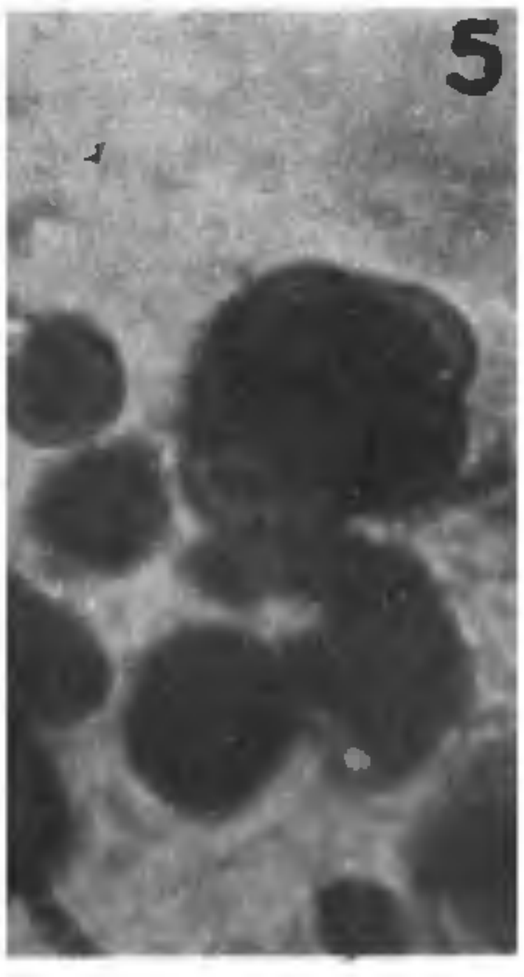
Culture deposited as I.T.C.C. 2645, Mycology and Plant Pathology, IARI, New Delhi, J. L. Varshney.

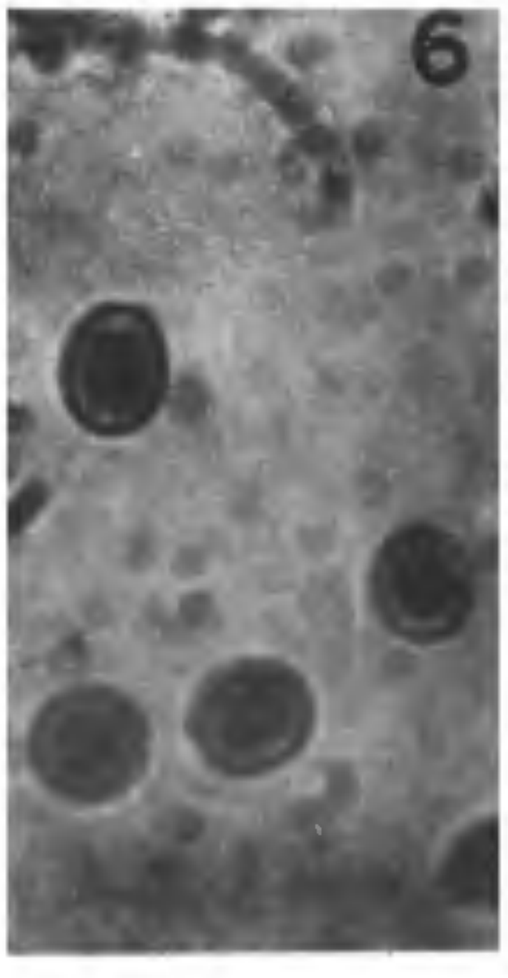
Latin diagnosis of *Eurotium repens* De Bary Var. *Columnaris* Varshney, Sarbhoy and Chowdhry.

Isolate praesens a descriptionae[1-2] differt habendo capita conidica quae stricte columnaria sunt, conidii grandis, area vesicularisest globosa producatque sterigmata supra integra vel in apice vesiculari.









Figures 1–6. *Eurotium repens* var. *Columnaris* **1.** Colonies on Czapek-Dox agar with 20% sucrose ×150· **2.** Colonies on M40Y agar ×150· **3.** Conidial heads ×195· **4.** Conidia ×1200· **5.** Asci and ascospores ×1200· **6.** Ascospores ×1200.

Thanks are due to Father B. Santos, Archbishop's Parlour, New Delhi for kindly rendering the latin diagnosis.

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ON THE PAPILLATE COTYLEDONARY SURFACE OF *SCLERIA FOLIOSA* HOCHST. EX A. RICH. (CYPERACEAE)

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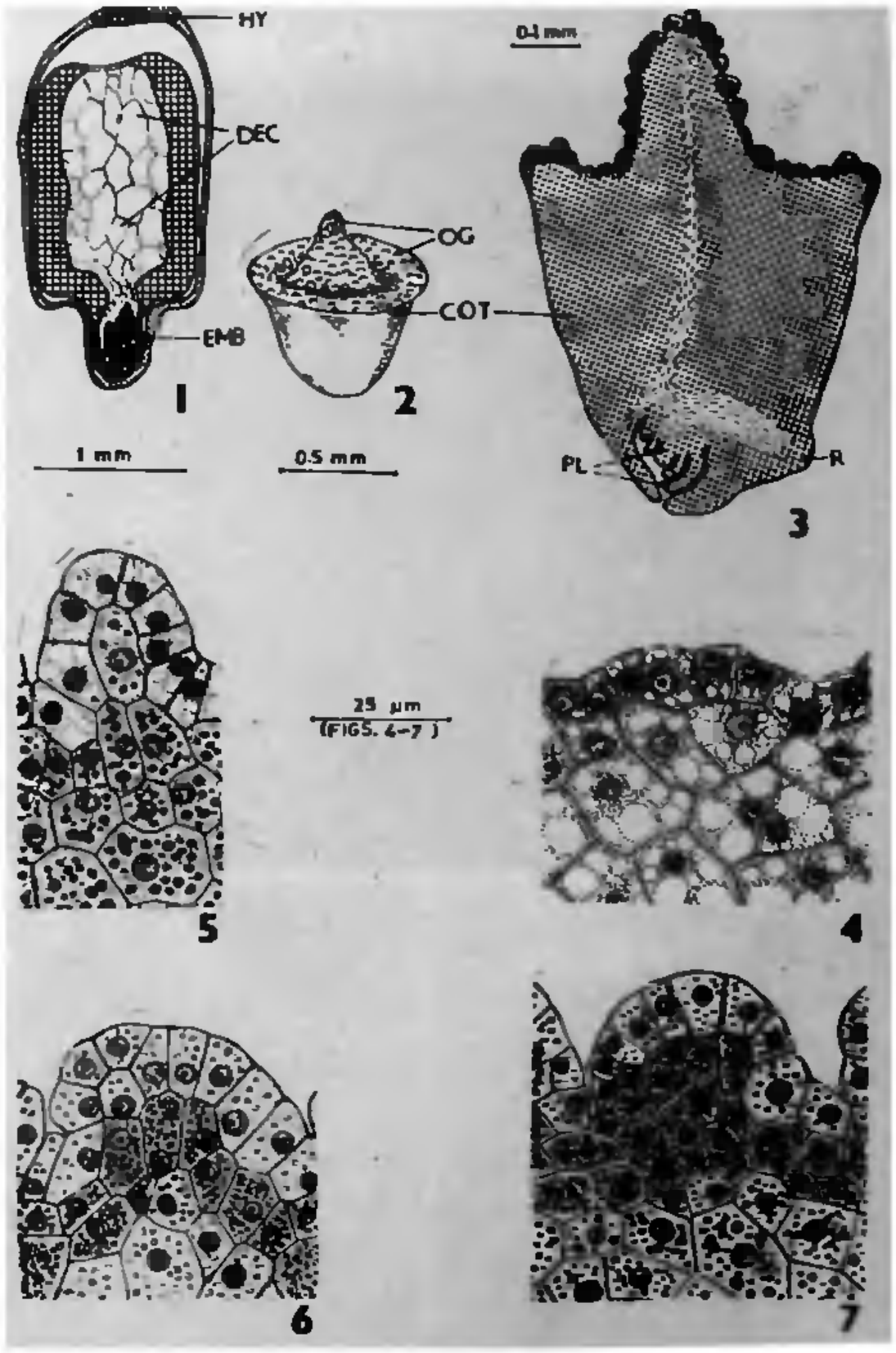
In the majority of angiosperms so far investigated, the cotyledon maintains a uniform surface contour. However, in *Zea mays*[1] and *Cyperus alternifolius*[2] it exhibits unevenness. In *Scleria foliosa*, the embryo may bear a highly papillate cotyledonary surface which differs in many respects from that of the species mentioned above. This is the first report of such a structure and ontogeny, and organisation of this papillate region is described here.

A mature seed of *S. foliosa* shows two distinct regions in longisection; a basal knob-like embryotega, in which the embryo is lodged and an upper region filled with endosperm rich in food reserves. The embryo consumes the endosperm lying immediately around it and that of the central region of the seed. Subsequently, a continuous supply of nutritive materials is provided by the peripheral endosperm (figure 1).

The mature embryo has a terminal cotyledon, a sublateral radicle and a plumule conforming to the *Schoenus* type[3]. There are two procambial strands: one in the plumule-radicle axis and the other in the plumule-cotyledon axis, the latter extending up to the base of the cotyledonary sheath (figure 3).

The cotyledon constitutes the major portion of the embryo. As it grows, its distal region gradually increases in girth and acquires a characteristic umbonate apex which functions as the absorptive region. At the final stages of maturation, numerous papillar outgrowths are initiated at the surface of the absorptive zone (figure 2). These are dome-shaped and vary in size. Each of them is composed of an irregular core of parenchymatous cells covered by the epidermis (figure 7). To begin with, the epidermal cells are densely cytoplasmic. At the time of initiation of the papillae, the cells of the epidermis as well as those of one or two sub-epidermal layers enlarge in places. As a consequence, elevated areas arise at those sites of the cotyledonary surface (figure 4). Whereas the sub-epidermal layers undergo both anticlinal and periclinal divisions forming the central core of the papillae, the epidermis shows predominantly anticlinal divisions to keep pace with the increase in volume of the internal tissue.



Figures 1–7. Stages of development of cotyledonary outgrowths of *S. foliosa*. All are longisections except figure 2 which is a whole mount. **1.** Seed with embryo showing papillate cotyledonary surface and endosperm with depleted cells. **2 & 3.** Embryos showing papillar outgrowths. **4–7.** Stages in the development of a single papilla.
[COT, cotyledon: DEC, depleted endosperm cells; EMB, embryo; HY, hypostase; OG, outgrowths; PL, plumule; R, radicle]