

*tillantibus velut adamantibus minutis adpersis obtectis.*

**Plant** terrestrial, deciduous, leafless when flowering, to ca. 46 cm high. **Roots** simple, numerous (to ca. 15), fasciculate-spreading, articulate, thick, fleshy, tuberous, round, long subovoid, long-tapering to the subacute to narrowly rounded apex, shortly tapering to the thin, somewhat flexible articulation; unequal, to ca. 17 cm long, 1.4 cm diameter well above the middle, quite smooth, covered by a thin, dense mat of hyphae holding soil particles; light to medium brown. **Rhizome** nearly hidden by the roots, erect, subcylindrical, tapering slightly downwards, almost covered by the root articulations, to ca. 1.3 cm long, 1 cm diameter; sometimes lasting through two growing seasons. **New growth** lateral, from the apex of the rhizome at the base of the flowering peduncle, first appearing as a small, laterally flattened, subconical bud, usually with a smaller reserve bud opposite. **Leaves** absent at flowering, 4-7, in a basal rosette, wide spreading, subequal, short petiolate, slightly arcuate, long ovate, acute, base acute, the margins decurrent to the petiole, nearly flat transversely, to ca. 20 cm long, 6 cm wide; margins entire to gently undulate; 5 main veins, axial vein depressed in a shallow, asymmetric groove, forming a rather prominent rounded keel on the lower surface, the keel decurrent to the petiole; upper surface lustrous-shining, finely colliculate, cells in longitudinal rows below the middle, medium green; lower surface lustrous, colliculate, cells polygonal, with numerous stomata, cells of the keels and veins elongate, in longitudinal rows; whitish silvery green. **Petiole** not clearly defined, short, winged, narrow to V-conducuplicate, base dilated, semi-clasping, to ca. 2.5 cm long, 8 mm wide above the base, 6 mm high; surfaces lustrous, cells elongate, in longitudinal rows, whitish to pale green. **Peduncle** erect, stout, stiff, round, bracteose, ca. 46 cm high including the inflorescence, 8-9 mm diameter at the base, 4-5 mm below the inflorescence; surface almost glabrous below, cells elongate, in longitudinal rows, with a very few soft hairs, becoming densely long, soft pubescent above, dull red, darker above, hairs transparent, white, appearing silvery, shining

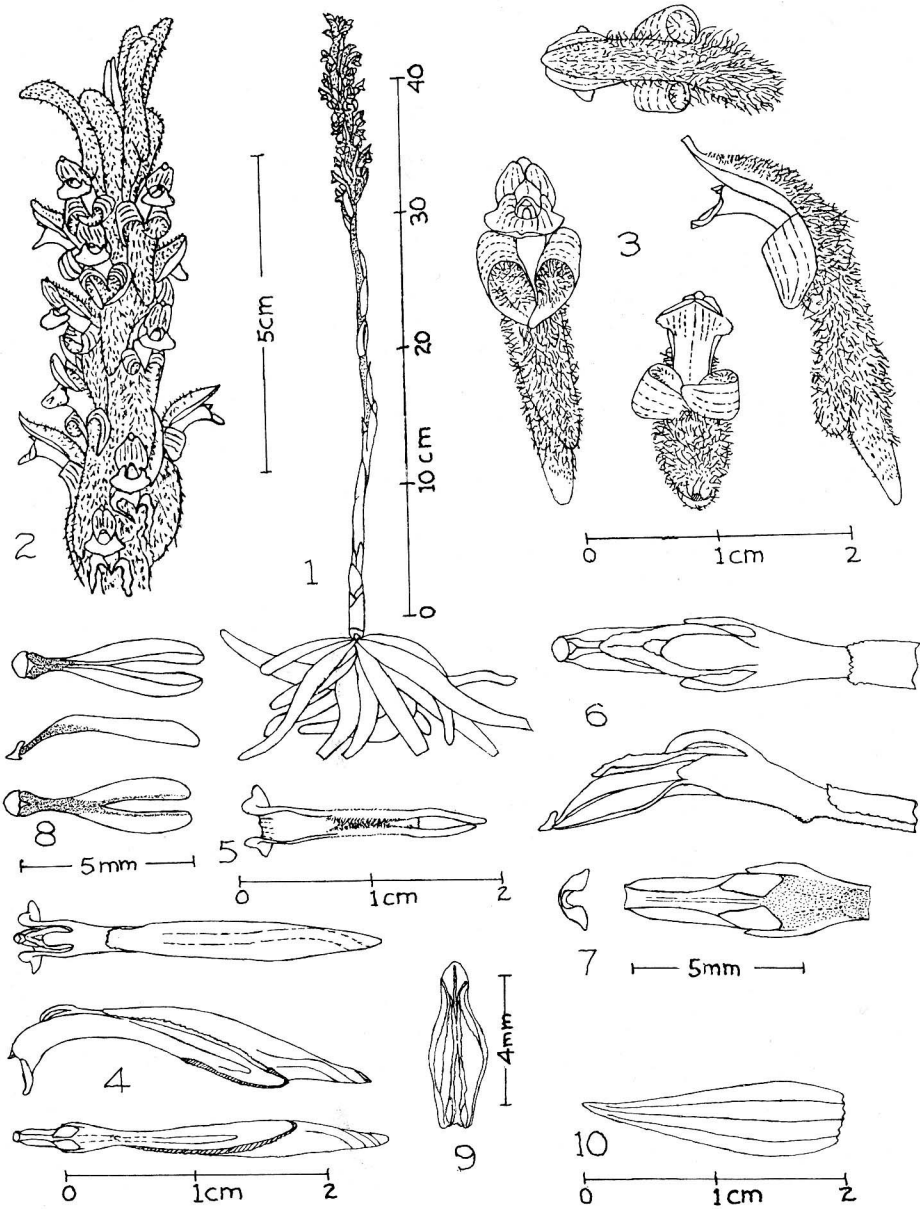
*Pelexia scintillans* Greenwood, *sp. nov.*

*Planta terrestris, tempore florescentiae aphylla. Pelexia typica floribus longe tubularibus, apicibus nectarii discretis, differt planta tota sub anthesi rubra sed petalis et labello roseis pallidis venis rubris, inflorescentia dense longeque lanata, pilis albis, sub luce solari scin-*

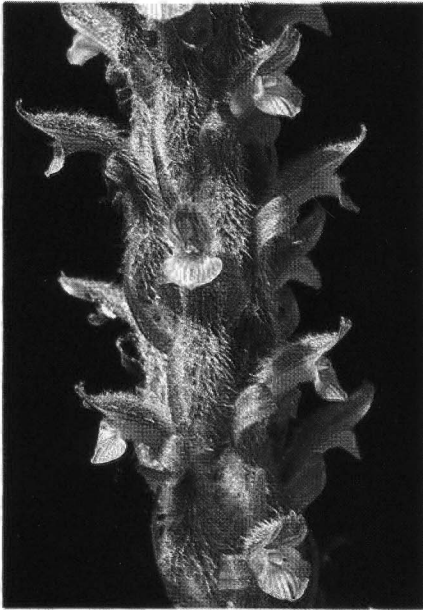
and sparkling in sunlight. **Peduncle bracts** 11-15, overlapping near the base, separated above, clasping, bases tubular except upper three or four, apices triangular, subacute to long apiculate, appressed to the stem, to ca. 4 cm long, 2.5 cm wide when flattened, becoming smaller upwards; margins entire; up to 9-veined, the principal veins slightly raised; surfaces glabrous, lustrous, finely colliculate, cells in longitudinal rows, dark red, finely soft pubescent. **Inflorescences** a long, almost symmetric,\* cylindrical, dense raceme of ca. 30 flowers, ca. 13-16 cm long, 3-3.5 cm diameter; flowers opening in succession from below, all becoming open simultaneously; very showy, even in bud. **Flower bracts** not clasping, long, narrow, arcuate, the apex lying alongside the ovary near the middle, deeply canalicate, margins in contact from below the middle to the base, forming a tube, ca. 15-16 mm long, 1 mm wide in natural position; margins subentire, with a few short, suberect, tapering hairs near the middle; 3-veined; outer surface lustrous, finely colliculate, cells in longitudinal rows, elongate near the base, inner surface shining, cells in longitudinal rows; pale red. **Flowers** ascending-arcuate, perianth axis horizontal by flexure of the column and neck of the ovary, tubular, perianth abruptly flaring, bilabiate (hood and lip), the lateral sepals strongly revolute; rather small, to ca. 3.5 cm long including the ovary, perianth ca. 1-1.2 cm long; mentum very prominent; reddish, lip pinkish white. **Ovary** erect, pedicellate, very slightly arcuate, long, slender, ovoid, apex very oblique, with a conspicuous mentum projecting from the lower surface just below the middle, ca. 1.8 cm long, 3 mm wide; 3-keeled, keels prominent, wide, flat, nearly straight, one on the dorsal axis, two short ones at 60 degrees on either side apparently entering the upper margins of the mentum; surfaces where visible finely colliculate, cells in longitudinal rows, slightly elongate in keels, reddish brown; whole surface to the pedicel densely soft long tapering hairy, hairs transparent, white, appearing silver, sparkling.

\* **Note:** The raceme is in fact one-sided, but so nearly symmetrical that the asymmetry is hard to see even in the living plant. However, the spurs of the mentums are asymmetric, either to the left or right of the ovary, and always point away from the less crowded side of the inflorescence.

**Pedicel** long, slender, subcylindric, to ca. 4 mm long, 1.2 mm diameter; twisted ca. 90 degrees; very pale green. **Mentum** very prominent, attached along a line apically above the floral axis, running at a long diagonal downwards across the ovary axis to just below the middle of the ovary, dorsiventrally slightly compressed near the middle, expanded laterally, axis slightly curved, the apex free, noticeably to one side of the ovary, apex simple, subconical, extreme apex rounded; wider than the ovary at the middle, ca. 10 mm long from the base of the free part of the lateral sepals, 4.5 mm wide; visible surface pale reddish brown, lustrous, finely colliculate, cells in longitudinal rows, densely soft long tapering hairy, hairs slightly shorter than those of the ovary, silvery, sparkling. **Dorsal sepal** forming a hood with the petals and lightly adherent to them; gently arcuate over the column, the extreme apex upturned 30-90 degrees, transversely canalicate; when flattened, long lanceolate, abruptly acute-apiculate, the base slightly narrowed, ca. 14 mm long, 3 mm wide below the middle; margins entire; 3-veined; outer surface lustrous, finely colliculate, cells in longitudinal rows, somewhat elongate near the base, densely long suberect glandular hairy almost to the apex, hairs slightly irregular, longer near the base, colourless, transparent, appearing silvery, shining, inner surface lustrous-shining, finely colliculate, cells elongate near the base; red to pale red. **Lateral sepals** extremely oblique, forming a mentum with the column and lip, upper margin adnate to the column foot to the base of the dorsal sepal, lower margins united from below to the middle, free portion smoothly recurved to revolute, transversely nearly flat, total length to the apex of the mentum ca. 2-2.3 cm, free portion ca. 1/3 as long, 3 mm wide; mentum section subligulate, slightly falcate, convex outwards, ca. 1.8-1.9 cm long, 2 mm wide, free portion narrow subovate, gently falcate, acute; free margins entire; 3-veined; outer surface lustrous, finely colliculate, cells in longitudinal rows, sparsely long, slender, shining hairy towards the upper margin, inner surface similar, not hairy; medium reddish brown. **Petals** oblique, lightly adherent to the dorsal sepal almost to their apices, the outer halves extending beyond the dorsal margins;



*PELEXIA SCINTILLANS* Greenwood

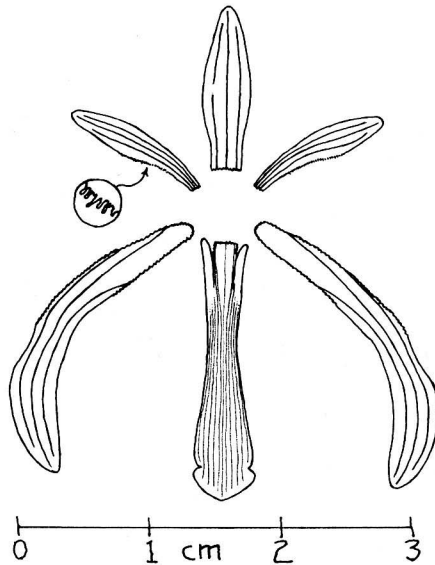


*Pelexia scintillans*, spike and flower

***Pelexia scintillans***

Drawing legend (front page)

1. Flowering plant
2. Raceme
3. Flower, four views
4. Column and lip, three views
5. Lip, top view
6. Column apex, top and side
7. Bare column apex, bottom view
8. Pollinarium, three views
9. Anther cap, bottom view
10. Flower bract, flattened



Perianth dissection, flattened

gently arcuate over the column, apex upturned with the dorsal, twisted 90 degrees above the middle, the apex nearly horizontal transversely; when flattened hardly sigmoid, slender obovate, abruptly subacute-rounded, as long as the dorsal, ca. 12-13 mm long, 2.1-2.2 mm wide above the middle; decurrent 1-2 mm along the edge of the column behind the dorsal sepal as a narrow, tapering fin; inner margin entire, free margin minutely erect clavate glandular hairy from just above the middle nearly to the base; 3-veined; surfaces lustrous-shining, very finely colliculate, cells in longitudinal rows, elongate towards the base; very pale reddish, almost white, veins dark brownish red. **Lip** from a long, slender adnate column foot forming an integral part of the base of the mentum; fleshy, long, slender, auriculate, 17-18 mm long to the apex of the auricles, smoothly arcuate, subparallel to the column, departing slightly from it within the mentum, above the middle clasping the sides of the column and lightly adherent to them; **disk** long, slender, canaliculate, dilated slightly around the column apex, apical margins thin, entire, thickened from above the middle, at the base extending backwards as a pair of slightly convergent, long, slender, subcylindrical auricles with elongate, concave-conical apices, the extreme apices rounded; inner surface lustrous-shining apically, finely colliculate, cells near the axis elongate, in longitudinal rows, middle portion densely long suberect hairy except along the axis, hairs almost blocking the central passage at the middle, slowly becoming shorter rearward, vanishing at the base of the auricles, auricles lustrous, very finely colliculate, cells somewhat elongate, in longitudinal rows; outer surface lustrous apically, below the middle densely short hairy on the sides, becoming short tuberculate towards the glabrous axis; **blade** smoothly but sharply deflexed ca. 45 degrees, wide subtriangular, apex wide obtuse, corners rounded, ca. 6 mm wide, 3 mm long; separated from the disk by shallow, irregular sinuses; apical margins entire, slightly upturned, within the sinuses irregularly subcrenate; 9-veined; inner surface lustrous, finely colliculate, minutely subtuberculate near the apical margins; outer surface lustrous-shining, finely colliculate, cells in longitudinal rows,

minute and irregular near margins; almost white, very faintly reddish-brown, veins darker, red-brown. **Column** very long and slender, gently arcuate, ca. 2 cm long to the apex of the mentum, adnate and free foot ca. 13 mm long, 1.2 mm wide apically, becoming slightly wider down the long, oblique lower surface of the ovary apex, apical 1/3 of the lower surface formed of two parallel convex half-cylinders separated by a deep, nearly sharp axial groove, basal 2/3 nearly flat transversely, surface nearly glabrous, finely colliculate, cells elongate, in longitudinal rows, cylinders thin short erect hairy; pale brown, free apical portion long, slender, gently arcuate, expanded smoothly from the base, widest at the stigma, ca. 7-8 mm long, 2 mm wide about the middle; lower face of neck nearly straight, with a prominent rounded transverse ridge opposite the base of the dorsal sepal, slightly concave from the middle to the stigma; nearly glabrous below, finely colliculate, minutely tuberculate on the transverse ridge; white, reddish near the base. **Clinandrium** 3-toothed, mid-tooth long, slender, sublinear, shrivelling at anthesis, lateral teeth thin, suberect, long, low, irregularly subacute, apex separated from the rostellum by an abrupt 90 degree round-bottom sinus, free margins entire; cavity shallow, extending shortly behind the mid-tooth, basally wide, flattened, obscurely bilobed, floor broadly biconcave, with a prominent rounded axial keel decurrent to the rostellum. **Rostellum** deflexed ca. 20 degrees, long, straight, ligulate in plan, apex slightly narrowed in an abrupt S-curve, extreme apex wide, flat, shallow V-concave, base shortly flaring; more than half as wide as the clinandrium, ca. 3.5 mm long, 1.2 mm wide; in profile, smoothly convex above, hardly convex below, transversely deeply V-concave below, with a deep, narrow, axial groove widening to the base, the margins wide, nearly flat, thickened, upper surface strongly convex transversely, margins flaring, entire; lustrous, nearly glabrous, white. **Stigma** nearly parallel to the column axis, bilobed, lobes separated by a deep, wide groove; lobes shaped like oblique parallelograms with somewhat rounded corners, the forward apices approaching the axial groove, the trailing apices almost at the edge of the column, lobes strongly convex transversely,

whole stigmatic area ca. 2 mm long, 1.8 mm wide; white, covered with a thin, transparent, shining, viscous liquid; stylar canal entrance a transverse slit between the adjacent inner basal corners of the stigma lobes. **Anther** drying at anthesis; sessile, subovate, abruptly subacute, extreme apex rounded; thecae 2, adnate along their dorsal axis to the long, narrow mid-tooth of the clinandrium, gaping, margins free, apices divergent, the gap bridged by a thin membrane which forms the main apex. **Pollinarium** complex, made up of pollinia and viscidium, clavate (narrow wishbone-shaped), the basal gap prominent but not wide, in profile abruptly deflexed 45 degrees ca. 1/3 from the apex, ca. 5 mm long, 2 mm wide. **Pollinia** 4, in two pairs, pairs long, slender, clavate; the apical 1/3 very thin, the apices attached to the upright, laterally convex rear face of the viscidium, the joint dorsiventrally compressed, much wider than high; apices closely appressed, leaving no post-viscidium aperture, in close contact along the lower margins to the middle of the pollinarium, the joint cemented by a pale yellow layer of sporopollenin which permeates the whole of the apices; in each pair the pollinia laterally compressed, the common surfaces slightly concave, closely appressed, the lower margins free from the base to ca. 1/4 the total length, then cemented and almost invisible to the apex, upper margins free, the outer overlapping slightly the inner; pollen in tetrads, very pale yellow, almost white. **Viscidium** wedge type, small, wide ovate in plan, apex very wide obtuse, the lateral apical margins only slightly arcuate to straight for half their length, base broadly rounded; in profile concave-faced, the upper and lower parts of the face making a rounded ca. 145 degree angle, upper and lower edges thin, almost sharp; lower face nearly flat, with a very thin, short, rear-facing pocket across the rear edge, its free margin torn irregularly by separation from the rostellum; semi-translucent, pure white, becoming brown on ageing, not adhesive.

**HOLOTYPE: MEXICO: OAXACA:** km 111-112 Puerto Escondido road, 1480 m, R. McCullough & J. Stewart s.n. sub Greenwood G-1043. Collected on 30 May 1981. Cultivated

Oaxaca, Oax. Specimen prepared from cultivated plant, AMO!

**DISTRIBUTION AND ECOLOGY:** known only from the type locality in the state of Oaxaca, Mexico. The plant was growing among shrubs near a permanent stream in the bottom of a deep barranca with a grove of *Taxodium mucronatum*; the area is limestone based, and soils are residual, scant, usually with fragments of limestone mixed in. The region is seasonally extremely dry; from about October to May or June the only rain is from very occasional local thunderstorms.

**FLOWERING PERIOD:** March-May.

**RECOGNITION:** a rather small plant, leafless when flowering, the whole stem and inflorescence dark brownish red, densely long, soft, white hairy, the hairs sparkling brightly in sunlight.

**ETYMOLOGY:** *scintillans*, sparkling, from the verb *scintillare*, to sparkle, glitter.

**DISCUSSION:** the rostellum of *P. scintillans* is remarkable for its large size and rigid structure. In engineering terms it looks much like half of an X-girder with wide flanges when seen in end view. This shape is chosen for construction when the member will be stressed by loads pushing directly on the end, as in a load-bearing column. The shape is highly resistant to buckling (bending laterally when end-loaded). Because the non-adhesive viscidium may attach to the pollinator by wedging between parts of the exoskeleton, a strong support for the viscidium seems desirable. However, not all wedge-viscidium orchid species have stiff rostellums, which suggests differences in the behaviour of different pollinators.

**CONSERVATION STATUS:** unknown. Vulnerable to habitat destruction, but the one known site is so unattractive for agriculture that it seems relatively safe.