

Govenia dressleriana Greenwood, *sp. nov.*

Planta gregis G. capitatae, rhizomate brevissimo, occulto, inter cormum veterum et augmentum novum; foliis duobus, plicatis, e vaginis concentricis in sectione transversali polygoniis emergentibus; racemo longo, symetrico, floribus brunneis.

Plant terrestrial, from a subglobose corm, stemless, 2-leaved, deciduous, flowering with the leaves, to ca. 90 cm tall. **Roots** numerous (to 40 or more), from the lowest internodes of the new corm close to the rhizome, irregularly spreading, long, slender, round, not

straight, to ca. 38-40 cm long, 2-2.5 mm diameter; nearly uniform in diameter, long-tapering to the fine, subacute to rounded apex; surface minutely irregular, the cells elongate, in longitudinal rows, white, becoming pale brown with ageing, often partially coated with soil particles. **Rhizome** from a lateral bud low on the old corm, hidden between the old and new corms, articulated, the internodes very short and hard to count, short, stiff, round, to ca. 3 mm long, 6 mm diameter. **Corm** subglobose, to ca. 8 cm high, 7 cm diameter (may weigh up to 400 g, usually about 100), with a pair of very short, extremely wide bosses opposite one another near the base; of ca. 7 or 8 internodes, the nodes of the old corm marked by narrow, irregular rings carrying fragments of sheaths and leaf bases, usually with a single bud on each internode, near but not at the next lower node, the buds roughly distichously arranged (alternate), short, wide, somewhat flattened and appressed to the corm, enclosed in tight sheaths, new growth from one of the main lateral buds on the sub-basal bosses, the other buds apparently functioning as reserves; surface where visible lustrous, minutely colliculate, light brownish yellow. **Sheaths** 4, from the lower nodes of the corm, tubular, concen-

tric, alternate, distichous, bluntly obtuse, successively longer upwards, to ca. 32 cm long, 3.2 cm diameter, the bases splitting as the corm develops, margins entire; many veined, the veins slightly raised externally, forming low keels, sunken in grooves on the inner surface; surfaces finely ridged, lustrous, finely colliculate, the cells in longitudinal rows, slightly elongate on the outer surface, much less so internally; red, the veins darker, paler where covered and on the inner surface. **Leaves** 2, from the uppermost nodes of the corm, petiolate, articulated, ascending, arcuate, to ca. 90 cm tall, blade plicate, thin, ascending, gently arcuate, obovate, acute, to ca. 60 cm long, 23 cm wide; margins entire; many-veined, the three main veins forming prominent, narrow, round-topped keels on the lower surface, decurrent to the petiole, the smaller veins forming keels on the upper surface; surfaces dull lustrous, finely colliculate, the cells in longitudinal rows, cells of the minor keels slightly elongate, of the major keels more so; medium green, lower (abaxial) surface paler, with abundant stomata; petioles tubular, concentric, fleshy, stiff, to ca. 35 cm long, 1.8 cm diameter, not round, almost dolabriform in cross section, with two flat sides and one strongly convex, with three prominent, sharp keels at the corners decurrent from the blade, to rhomboidal with a fourth less prominent keel decurrent from the junction of the blade margins; articulation just above the upper sheath, marked externally by a minute, abrupt reduction in diameter to the blade, internally by a narrow, sharp-bottomed groove; surfaces lustrous, nearly glabrous, minutely colliculate, the cells in longitudinal rows, smaller and elongate on the outer surface; green to reddish green externally, the red colour in minute, irregular longitudinal spots, inner surface pale green. **Scape** lateral, from an upper internode of the corm, usually between the outer petiole and the inner sheath*, erect, fleshy stiff, round, to ca. 90 cm tall including the inflorescence, 5-8 mm diameter at the base, tapering upwards; surface

dull lustrous, finely smooth colliculate, the cells elongate, in longitudinal rows, pale green. **Scape bract** solitary, usually above the middle well below the inflorescence, tubular based, the blade somewhat inflated, acute, usually shrivelling at flowering, during growth of the scape enclosing the young inflorescence as a protective sheath; ca. 4-5 cm long; margins entire; many veined; surfaces lustrous, finely colliculate, the cells in longitudinal rows, light green. **Inflorescence** an erect, long, loose to rather dense raceme of up to ca. 50 flowers, opening in succession from below, all open at once, to ca. 30 cm long, 6-7 cm diameter. **Rachis** thick, stiff, tapering upwards, nearly round, each flower subtended by a low, wide, rounded keel long-decurrent to the rachis; surface longitudinally many-grooved, the grooves very unequal, lustrous, finely colliculate, the cells in longitudinal rows, medium green. **Flower bracts** long, narrow, spreading, becoming pendent along the rachis as the flowers age; whitish, with red-brown veins; when flattened, subglabrate, acuminate, to ca. 5 cm long, 0.7-0.8 cm wide below the middle, narrower upwards; margins entire; 3-7-veined; surfaces lustrous, finely colliculate, the cells in longitudinal rows, becoming dry, brown, papery during flowering. **Flowers** showy, resupinate, facing outwards, gaping, to ca. 4 cm long including the ovary, 2.5-3 cm high, 2 cm wide; warm brown to greenish brown. **Ovary** inclined upwards at 20-50° from the horizontal, obscurely pedicellate, straight, subcylindrical to nearly round, apex ca. 60° oblique, ca. 15 mm long, 1-1.5 mm diameter; 3-keeled, the keels to the lateral sepals slightly more prominent, keels subequal to the interstices, narrower apically, all rounded, separated by narrow, sharp grooves; twisted 180° in the basal third; extreme base surrounded by a ring of the short, fleshy swollen bases of the keels and interstices; surface lustrous, finely colliculate, pale green. **Dorsal sepal** forming a loose hood with the petals, lying close to them to widely separated, originating at 90° or slightly more to the ovary axis, smoothly arcuate 90° or more, transversely flat basally, becoming broadly V-canalicate upwards, marginal areas slightly everted; when flattened, long oblanceolate-obovate, rounded, apex minutely decurved 90° or more, sometimes

*A second bud of another internode may produce another scape, but this rarely happens unless the first one aborts or is damaged.

forming a tiny pocket, to ca. 2.8 cm long, 0.6 cm wide; margins entire, thickened apically; 5-veined; surfaces lustrous, finely colliculate, the cells in longitudinal rows; warm brown to light orange-brown (approximately RHS 166B to 163A) to greenish brown* inner surface pale, especially basally. **Lateral sepals** originating along a straight transverse line at the rear edge of the flat base of the column foot, from lying in the same transverse plane to twisted inwards up to 90°, inner margins divergent 30–40°, becoming subparallel to convergent, the apices sometimes nearly touching, in profile nearly straight to prominently arcuate downwards, near the base almost in line with the ovary axis, transversely slightly concave; when flattened ovate, strongly falcate, subacute, to ca. 1.6 cm long, 0.6 cm wide; margins entire, slightly thickened apically; 5-veined; surfaces lustrous, finely colliculate, the cells in longitudinal rows; outer surface warm brown to light orange-brown to greenish brown outside the mid-vein, inner surface paler, light green in plants from Sinaloa. **Petals** strongly oblique along the column foot almost to its base, arising normal to the ovary axis, divergent ca. 45°, strongly arcuate ca. 180°, the adjacent margins usually overlapping slightly near the middle under the dorsal sepal, transversely nearly flat; when flattened, obovate, subacute to acute, falcate ca. 90°, to ca. 2.5 cm long, 0.7 cm wide; margins entire, apically slightly thickened and sometimes slightly irregular; 5-veined, the upper vein usually 1-branched; surfaces lustrous, finely colliculate, the cells in longitudinal rows, coloured like the dorsal sepal, but not uniform, the adjacent halves above the mid-vein usually much paler, especially on the inner surface. **Lip** from a very short, wide, flexible claw at the extreme bottom of the column foot; thin, fragile, arcuate ca. 90° in a short bend near the middle, the axis nearly straight above and below the bend, held upwards and fairly close and parallel to the column, becoming appressed in older flowers, lateral margins smoothly arcuate longitudinally, the lateral apical margins shortly deflexed to revolute 90 to 180°, the extreme apex decurved 90° or more; whole lip

seen from above subquadrate, the apex subtruncate, the base subcordate; transverse profile wide concave, flat-bottomed near the base, with the sides upturned 60–70°, near the middle a narrow, flatly V-bottomed axial groove is bounded by a pair of low, wide, rounded ridges sloping up at ca. 30° to join the straight marginal zone sloped at ca. 60°, near the apex nearly flat, with downturned edges; when flattened (always with some distortion, the base being reduced in width by one or more overlapping folds), ovate shortly obtuse, finely apiculate, to ca. 9–10 mm long, 6–7 mm wide below the middle; margins entire; 5-veined, the outer lateral veins branching soon and frequently; surfaces lustrous, very finely colliculate, becoming densely minute tuberculate near the base, the cells in longitudinal rows near the axis and apex; extreme margins and near the apex pure white, most of the upper surface almost to the apex deep to pale purplish-reddish brown, usually darker than the dorsal sepal, with 3 or 4 prominent small, rounded, yellow to brown spots at the margin, one always apical; lower surface unmarked, pale yellowish to pink-flushed to pale purplish brown. **Column** arising at ca. 90° to the ovary axis, short, thick, fleshy, inflated above the middle, with a short heavy column foot, smoothly arcuate ca. 45°; subtruncate, apex 3-toothed, the mid-tooth obscure, very short, wide, thick, lateral teeth at the lower edge of the apex, subconical, fleshy, short, narrow, subacute; broadly winged from below the middle, the wings gently arcuate, thin at the rounded margins, almost vertical, only slightly divergent, decurrent to the column foot; foot deeply canaliculate, the margins converging slightly towards the base, extreme base free, abruptly widened, its margins thickened, forming minute lateral bosses at the corners of the claw, truncate; whole column ca. 9 mm long along the curve, 3 mm high, 3.5–4 mm wide; upper surface rounded, lower surface deeply canaliculate; surfaces lustrous, finely colliculate, the cells in longitudinal rows; pure white externally, inner surface sparsely to densely spotted below the middle, spots small, rounded, irregular, medium to pale yellow-brown, on the foot yellow, with a pair of larger spots at the basal corners of the stigmatic cavity. **Clinandrium** normal to the column

*Plants from Sinaloa show the greenish brown colour.

axis, nearly lunate, very shallow, lateral wings extensions of the column wings at the rostellum margin, low, subconical; floor nearly flat, with an obscure, shallow, peripheral groove just within the upper and lateral rounded margins, and a low wide, sharp-topped ridge from the rostellum to a short, subconical boss at the middle; surface lustrous, finely colliculate, white. **Rostellum** a thin, sharp-edged diaphragm, thicker at the sides, forming the lower edge of the clinandrium floor and the apical wall of the stigmatic cavity; margin nearly straight to slightly concave towards the stigma, with a shallow, subacute-rounded to broadly rounded central sinus, occasionally containing a minute, broad, central tooth; white, quickly turning brown at the middle after removal of the pollinarium. **Stigmatic cavity** apparently simple, subelliptical, about as wide as long, very deeply concave, apical wall the nearly straight rostellum, side and basal walls gently curved, base usually obtuse, both walls overhanging, the basal wall deeply, at ca. 60°, the stylar canal opening at its bottom; ca. 1 mm long, 1 mm wide; surface shining, covered with a transparent, viscous layer, white. **Anther** very weakly attached subdorsally, fleshy, subconical, arcuate ca. 90°, with a prominent beak, lower surface nearly flat transversely, with a deep axial slit in the basal margin; outer surfaces lustrous, somewhat irregular, smooth colliculate, indistinctly 2-chambered, the chamber lying parallel to the column axis, forming a single wide, bilobed cavity, the outer walls fleshy, their outer margins free almost to the apex, the inner margins entirely inside the cavity, very thin, membranous, free nearly to the apex, widely separated, lying nearly flat against the dorsal surface of the cavity; whole anther ca. 2.8 mm long, 1.8 mm wide, 2.0 mm high, bright yellow. **Pollinarium** one, complex, made up of pollinia, caudicles, stipe, and viscidium; very compact, ca. 1.3 mm high, 1.5 mm wide, 0.8 mm thick, in the flower the axis in line with the column axis, with the pollinia apical. **Pollinia** 4, in two pairs, broad subovoid, dorsiventrally somewhat flattened, the adjacent faces appressed but not adherent, nearly flat; in each pair the pollinia unequal, the larger one ventral in the anther, farther to the side, the smaller members partly visible between the

larger ones; surfaces slightly irregular, lustrous, dark yellow. **Caudicles** reduced to small, irregular masses fastening the pollinia to the stipe, hidden by the larger structures. **Stipe** a rather irregular, short, wide mass of white material between the viscidium and the pollinia, extending up the clinandrium floor beneath the smaller pollinia as a broad, thin, subcordate, translucent, irregular plate reaching to about the middle of the pollinia, and concave to fit the ridge and boss of the clinandrium face. **Viscidium** subhemispherical below, shallowly convex above, ca. 0.8 mm diameter, 0.4 mm thick, facing somewhat downward and backward across the stigmatic cavity from the middle of the rostellum, the lower face soft, pasty, adhesive the surface appearing subcellular, pure white. **Capsule** pendent, pedicellate, plump subcylindric-subellipsoid, apex ca. 60° acute, base wide acute, shortly decurrent to the pedicel, symmetrical 6-ribbed, to ca. 4.5 cm long without the pedicel, 1.7 cm wide across the keels, not twisted, 3-keeled, keels prominent, rounded, with rounded, overhanging margins, the interstices wide, with prominent, sharply rounded, axial false keels; surface lustrous, finely colliculate, cells of the keels and false keels slightly elongate, in transverse rows; light green. **Pedicel** abruptly decurved up to 90°, not round, the surface formed of the keels and false keels decurrent from the ovary, the extreme base shortly dilated, twisted ca. 90°, ca. 4-5 mm long, 1.5 mm diameter; surfaces lustrous, minutely colliculate, the cells in longitudinal rows; light green.

HOLOTYPE: MEXICO: OAXACA: km 5.1, Río de la Y road, 1550 m, *E.W. Greenwood G-200*, 30 May 1976, pressed 31 May. AMO!; isotype AMES!

OTHER SPECIMENS: MEXICO: CHIAPAS: 53.9 km north of the junction with the Pan-Am highway, Pichucalco road, 1400 m, 30 Oct 1977, *E.W. Greenwood G-574 & J.P. Brenan*, cult. in Oaxaca, pressed 23 May 1978 AMO! In the colonia 'Ach'lum, Mpio. de Tenejapa, elevation 9100 ft. 15 May 1967, *A. Shilom Tom 2307 LL!* Paraje of Muctajoc near Mexican Highway 190, Mpio. de Ixtapa, 22 June 1966, *R.M. Laughlin 1140 US!* Highway Chapa de Corzo-San Cristóbal de las Casas, 3 July

1987, *E.W. Greenwood s.n. & L. McCook* AMO! Beside Pan-Am. Highway below crest west of San Cristóbal las Casas on descent to Chiapa de Corzo. 1 July 1987. *E.W. Greenwood 1400 & L. McCook* AMO! JALISCO: Tecalitlán, 50.7 km al SSE de Ciudad Guzmán, carretera Llanitos y brecha a las Animas, 1160 m, 26 jul 1988, *M. Fuentes O. 438* AMO! Near Puente San Pedro, ca. 7 km east of Tecalitlán, 30 June 1960, *R.L. Dressler 2680 & M. Wirth* US! MEXICO: Near Valle de Bravo dam, km 151 Toluca-Tingambato road, 14 July 1959, cult. pressed May 1960. *R.L. Dressler 2478* US! MICHOACAN: 22 km al SE de Morelia, rumbo a "La Escalera", jun 1985, *I. Avila Sereno & J. S.R. 660* AMO! Mango de Clavo, Zitácuaro, 7-8-38 [8 Jul 1938], *G.B. Hinton 13026* US! Malpais del Carmen, near San Juan Nuevo, ca. 12 km west of Uruapan, July 29, 1961. *R.L. Dressler 2157 & M. Wirth* MEXU(x2)! OAXACA: km 111-112 Pto Escondido road, 19 June 1981, *R. McCullough & J. Stewart s.n. sub E.W. Greenwood G-1037* AMO! km 13.6 Río de la Y road, 1830 m, 18 June 1984, *E.W. Greenwood G-1202 & O. Suárez* AMO! 5 km al W del entronque a San Sebastián con la carretera Oaxaca-Pto. Escondido, altitud 1480 m s.n.m., 16 de mayo de 1982, *R. Torres C. 444, R. Cedillo y L. Rico* MEXU! Barranco del pájaro, 20 km al N de Putla, alt. 1400 m, 9 de junio de 1985, *A. García Mendoza 1490 & R. Torres* MEXU(x2)! SINALOA: Chirimoyo de la petaca, 1500 m, coll. 1978, cult. Oaxaca, pressed Jul 1983, *L.D.H. de Patrón 57/79 sub E.W. Greenwood G-1123* AMO!

DISTRIBUTION: *Govenia dressleriana* is recorded so far only from Mexico, in the states of Chiapas, Jalisco, México, Michoacán, Oaxaca, and Sinaloa. Probably it is more widely distributed, and unidentifiable or wrongly identified specimens of this species are in herbaria, but lack notes on flower colour, which is the key feature separating it from all other Mexican species.

ECOLOGY: Terrestrial, usually in the transition zone between tropical deciduous and oak forests, between 1400 and 2000 m altitude, locally common in calcareous soils in Oaxaca, in pockets of organic litter on limestone outcrops,

and occasionally as an invader of disturbed roadsides. Like other members of the *G. capitata* group, it is tolerant of long dry seasons, when it loses its leaves and most of its roots, but it can also be found in areas much less dry, verging on cloud forest, with some rain and frequent fogs during its rest period.

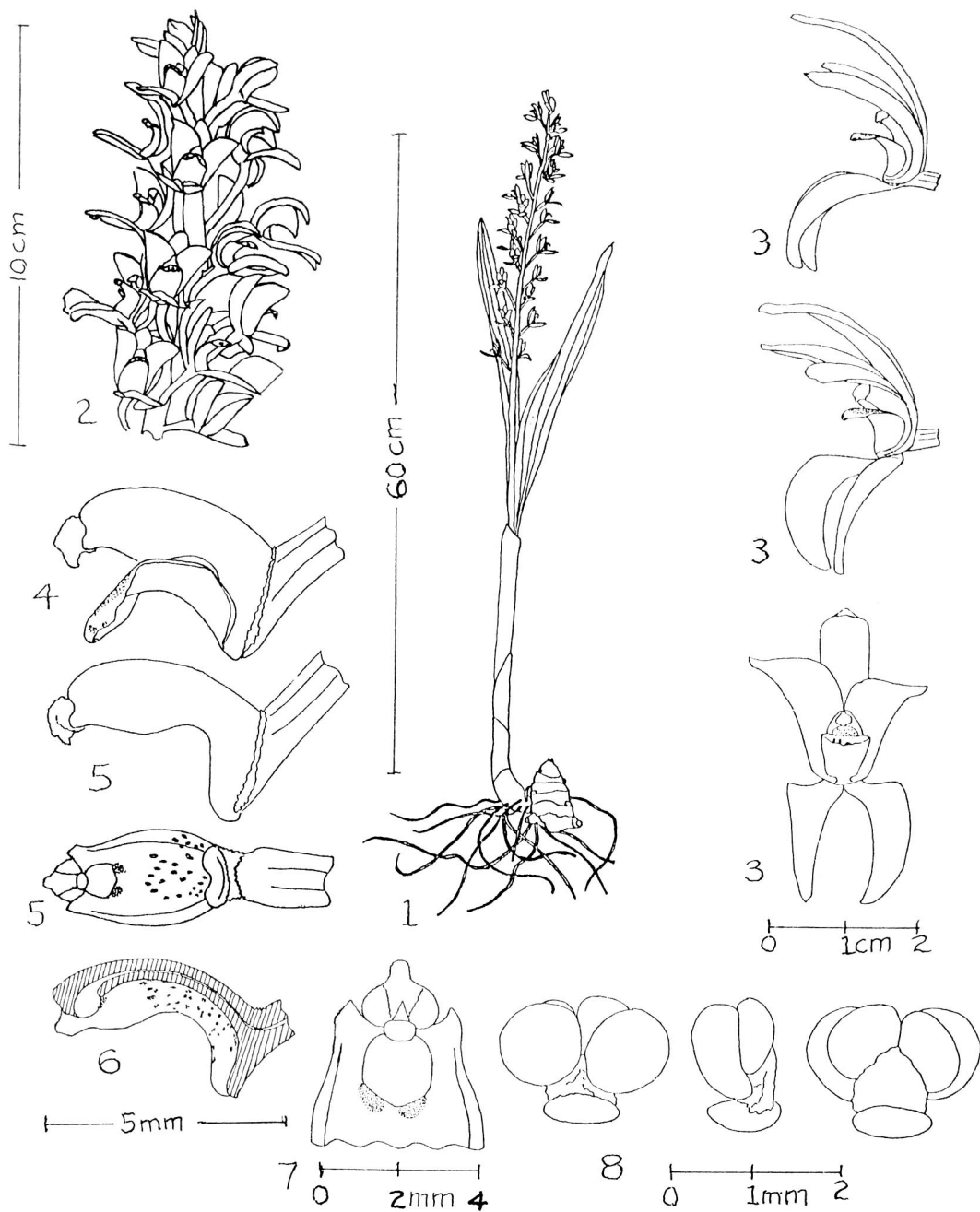
FLOWERING PERIOD: May to July.

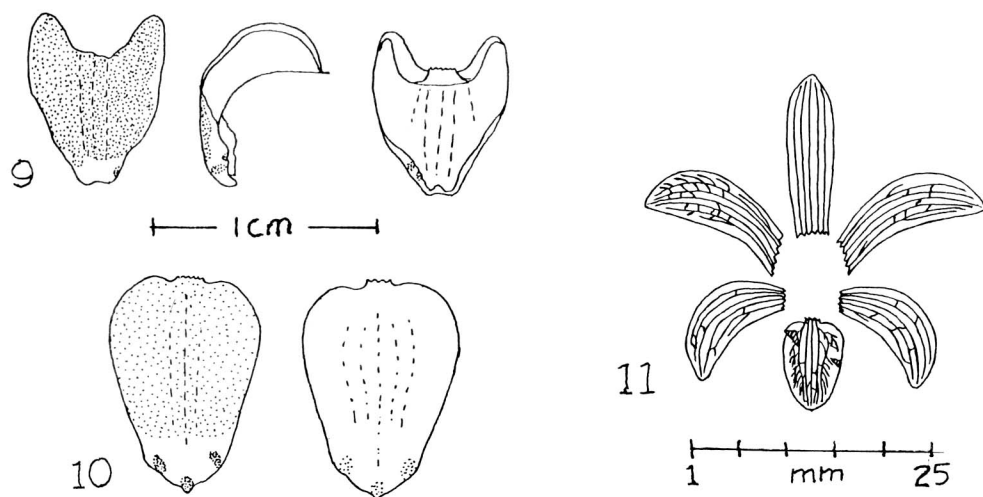
RECOGNITION: a typical *Govenia*, with the characteristic pair of large, plicate leaves, but its cylindrical raceme of warm brown to greenish brown flowers makes it the only species known with flowers of that colour. The petals are two-tone, the area above the axial vein (next to the dorsal sepal) being much paler than the half below the vein. This species keys to *G. lagenophora* sensu Dressler in my early key to the genus in Mexico (Greenwood, 1981).

ETYMOLOGY: the specific name honours Dr. R.L. Dressler, for his many important contributions to orchidology, and especially for his 1965 article on *Govenia* in Mexico, the first useful review of any part of the genus, and the original basis of my own studies.

DISCUSSION: Dressler (1965) used the specific name *G. lagenophora* Lindley for the species described in this paper, being led astray by the muddled literature then available. Lindley's description (1839) is meager, being based only on descriptive notes and sketches in a letter from Mexico. The letter gave no information on the flower, but did emphasize the inflated basal sheaths. Later authors missed this critical point, and applied the name to several other species. The treatments of *G. lagenophora* between Lindley's and Dressler's publications should be ignored.

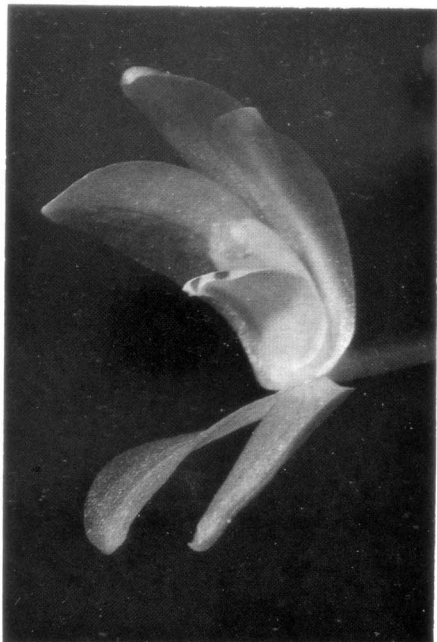
In the only site in Oaxaca for *G. lagenophora*, *G. dressleriana* grows intermingled with it, and the two flower at the same time. The warm brown flowers of the latter contrast strongly with the dull red and green flowers of *G. lagenophora*. More likely to be confused with *G. dressleriana* is any member of the still unresolved *G. superba* (Llave & Lex.) Lindley ex Lodd. complex, which have yellow (versus brown) flowers, and petals transversely barred with red (versus transversely two-toned warm brown and much paler orange-brown).





GOVENIA DRESSLERIANA Greenwood

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| 1. Plant (G-1202) | 7. Stigmatic cavity (G-1123) |
| 2. Inflorescence (G-1202) | 8. Pollinarium, three views (G-1123) |
| 3. Flower, three views (G-1223) | 9. Lip, natural shape, three views (G-1123) |
| 4. Lip and column, side (G-1123) | 10. Lip, flattened, top and bottom (G-1123) |
| 5. Column, side and bottom (G-1123) | 11. Perianth dissection (G-1202) |
| 6. Column, section (G-1121) | |



Govenia dressleriana, flower, 3/4, Greenwood G-574



Govenia dressleriana, raceme, Greenwood G-200

CONSERVATION STATUS: Not threatened.
G. dressleriana has been found so far in areas
useless for agriculture, and collecting pressure
in non-existent.