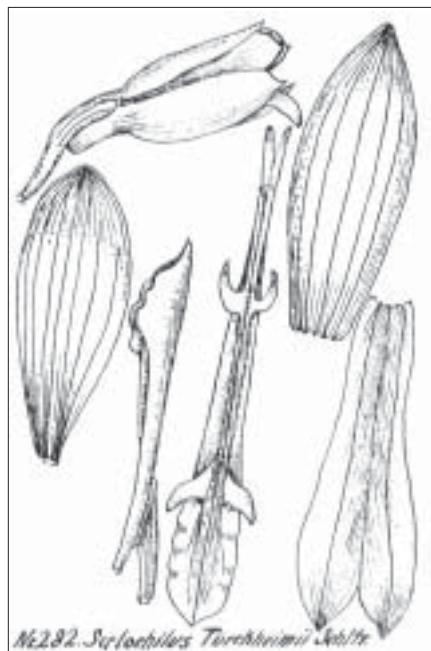


# The Genus *Scelochilus*

## Determining the Number of Species in Central America

BY FRANCO PUPULIN AND DIEGO BOGARÍN



ABOVE In 1931, professor Mansfeld published the drawing of the flower of *Scelochilus tuerckheimii*, tracing the sketch prepared by Schlechter from the holotype. The holotype specimen and the original drawings by Schlechter were lost during the fire of the Berlin herbarium in 1943.

ABOVE RIGHT Tracing of Schlechter's analysis of the flower from the holotype

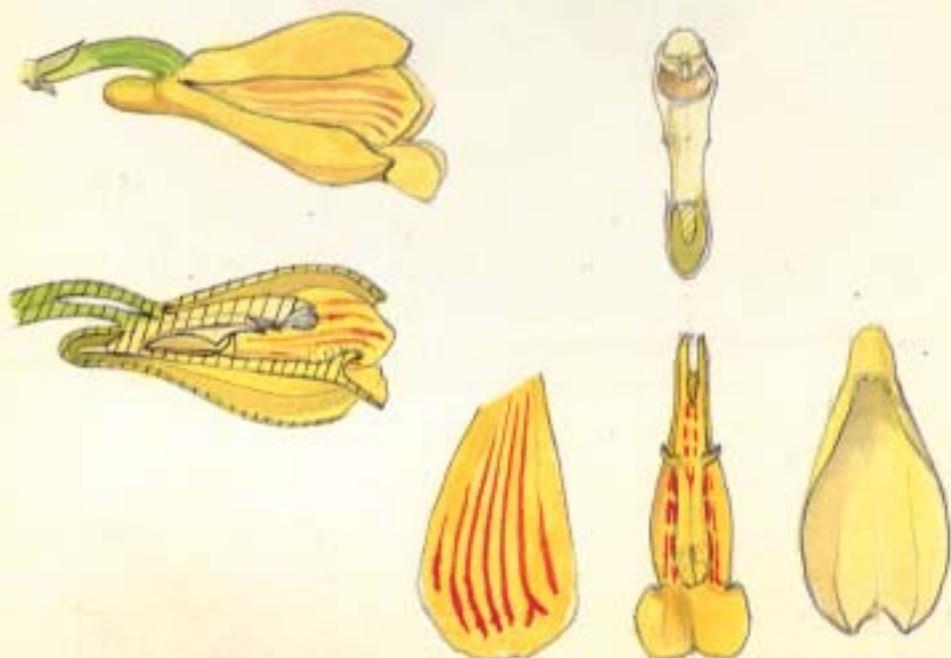


specimen of *Scelochilus aureus*, now destroyed, kept at Oakes Ames Orchid Herbarium (n. 31591). Reproduced with the kind permission of the Director, Harvard University Herbaria.

OPPOSITE *Scelochilus aureus* illustrated in a fine watercolour by Rafael Lucas Rodríguez Caballero. Reproduced with the kind permission of Costa Rica University Press.

THE GENUS *SCELOCHILUS* IS PERHAPS best known to the orchid growers for some of the species native to the Andes of South America that bear showy flowers on miniature plants with compact, mostly pendent inflorescences. Established by the German botanist J.F. Klotzsch in the *Allgemeine Gartenzeitung* for 1841, the genus was based on *Scelochilus ottonis*, a species endemic to Venezuela, where members of *Scelochilus* are rather uncommon (besides *S. ottonis*, only two other species have been recorded from Venezuela, *Scelochilus paraguensis* and *Scelochilus stenochilus*, originally described by John Lindley as members of the genus *Rodriguezia*). Indeed, *Scelochilus* is eminently Andean in distribution, with 17 species recorded for Ecuador, 16 for Peru and seven for Bolivia. The South American species of the genus are mostly restricted to the Andean heights, and the only somewhat aberrant species known from the Guyanas, *Scelochilus ecalcaratus* (the specific epithet refers to the lack of a spur, otherwise characteristic of *Scelochilus*), has been segregated from *Scelochilus* into its own monotypic genus.

As understood today, after the removal of a few species to the closely related *Neokohleria* and *Scelochilopsis*, *Scelochilus* includes some 50 species that range from western South America to Mexico, but have not been recorded from the West Indies. Species of *Scelochilus* are characterized by the lip attached to a short column foot forming a mentum, provided with a pair of nectariferous hornlike auricles at the base, the midlobe with a bipartite callus and the two basal projections inserted into a spurlike cavity produced by the fusion of the lateral sepals. These basal, terete



appendages are by no means restricted to the genus *Scelochilus*, but are a rather constant trait in the genera of the so-called *Rodriguezia* Alliance (including *Comparettia*, *Ionopsis*, *Rodriguezia*, *Stigmatorthos* and *Sutrina*). Studies aimed toward the reconstruction of phylogeny in the Oncidioid orchids, carried out by Norris Williams and co-authors using DNA sequences (Williams *et al.* 2001), confirm the close relationships of these genera. They are often referred to as the twig-epiphytes, due to their ecological preference for the outermost portion of the canopy, and they are among the early colonizers of secondary vegetation growths in the Neotropics. This preference is so well marked that, searching for twig-epiphytes, one usually looks in guava plantations and other orchards rather than in pristine vegetation, where they are sparsely represented.

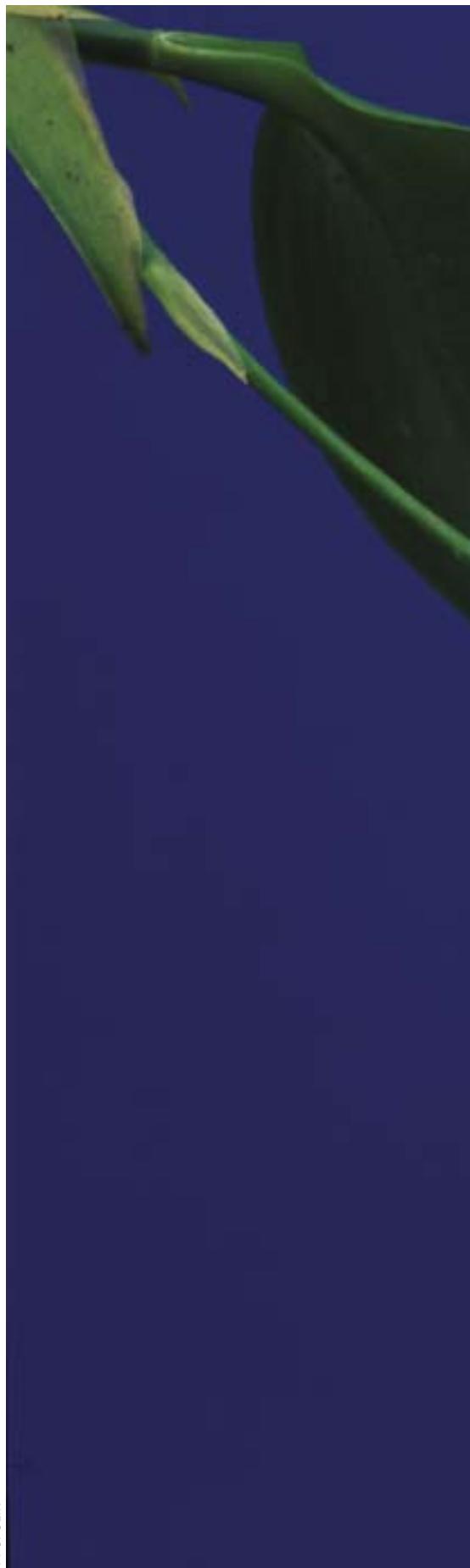
Gentry and Dodson (1987) used *Scelochilus* as a model to present a suggestive hypothesis of the supposedly explosive speciation of epiphytic plants in the Andes. According to Dodson's data, two species recorded as common in a guava plantation in Ecuador (*Scelochilus embreei* and *Scelochilus frysirei*) became extinct at the same place in a survey done 15 years later, probably due to climatic changes induced by human activities. However, during the same period, two different species appeared in the plantation, later described as *Scelochilus romansii* and *Scelochilus gentryi*. The latter species also appeared in several other localities in western Ecuador, but at least in the case of *S. romansii* (apparently closely related to *S. frysirei*), the authors suggest that *in situ* natural speciation must have occurred in as little as 15 years.

*Scelochilus* have not experienced such an explosive speciation in Mesoamerica. The paucity of taxa recorded in the region suggests that speciation here mainly occurred through geographic isolation. The distribution of *Scelochilus* species in Central America is actually restricted to mountainous areas (mostly at elevations of 3,940 to 6,560 feet [1,200–2,000 m]), with two notable disruptions in central Panama and in the Nicaraguan depression, where the orographic conditions are less suitable for the establishment of *Scelochilus* popu-

lations. Considering the overall distribution of this Andean-centered genus, it is likely to assume that *Scelochilus* entered the American isthmus through seed dispersal from some populations in northern South America. The hypothetical ancestor of Mesoamerican taxa must have been a species somewhat related to *S. ottonis*, actually known only from the northernmost extension of the Andean chains. Like the South American *S. ottonis*, species from Central America are characterized by laxly flowered inflorescences bearing a few strongly cupped, laterally compressed flowers. Their flowers are typically golden-yellow, with the petals and the lip striped and flecked with red. The lamina of the lip is narrow, provided with two small horns or teeth in its central portion.

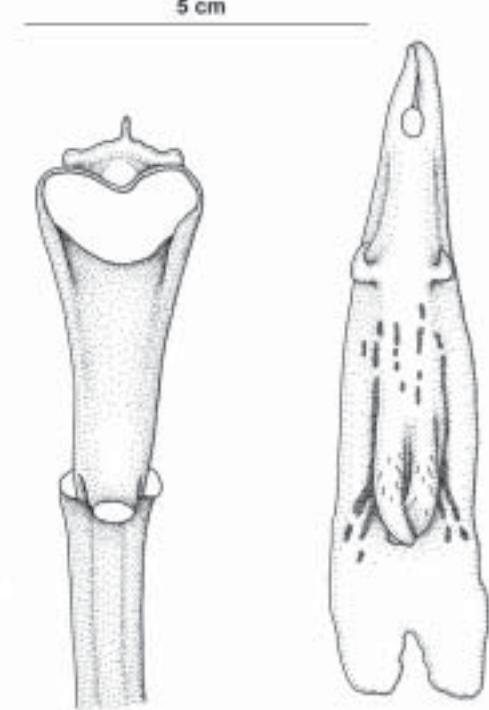
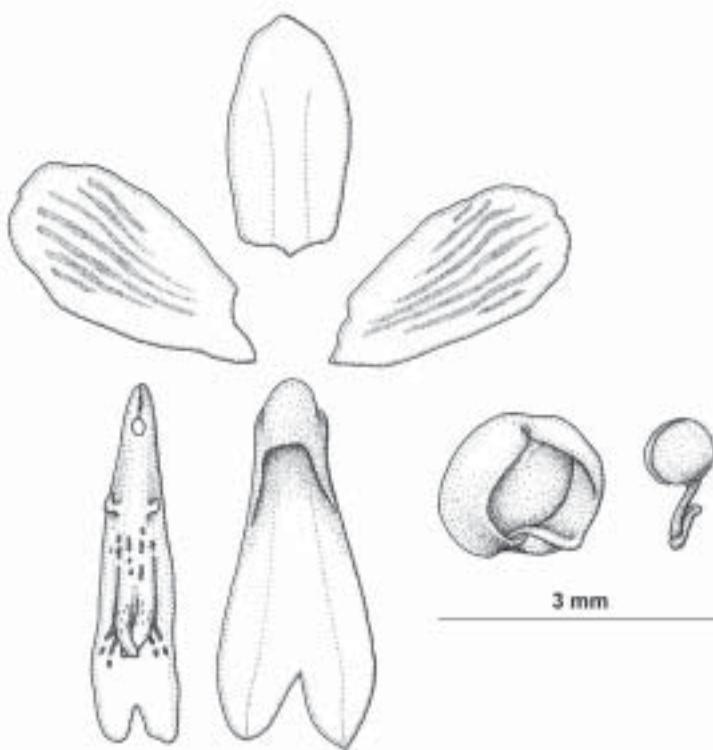
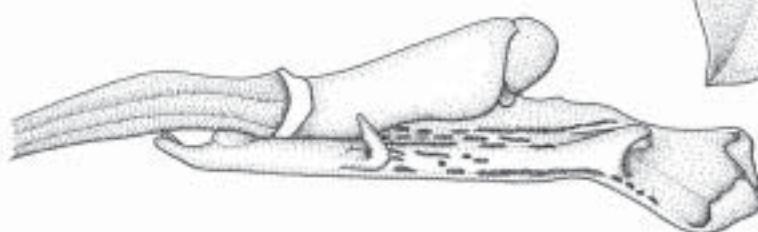
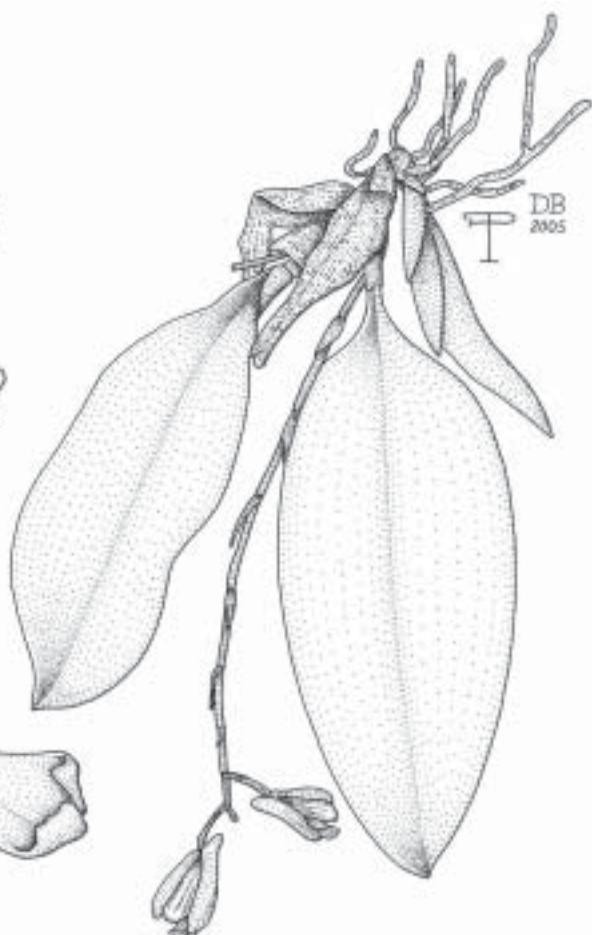
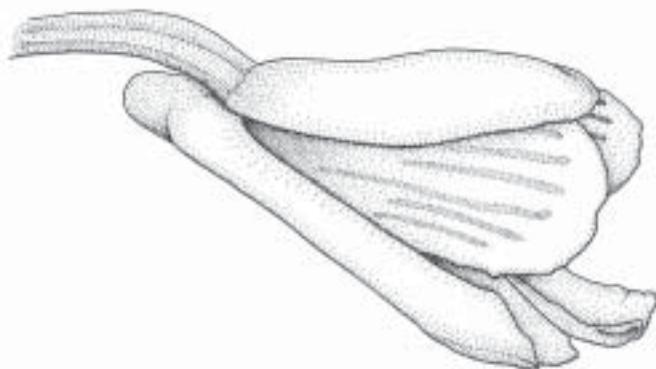
Rudolf Schlechter described the first species of *Scelochilus* from Mesoamerica in 1911, on the basis of a plant collected by H. von Türcckheim (n. 1919) at Cobán, Guatemala. He characterized *S. tuerckheimii* comparing it with *S. ottonis*, from which it differs mainly in the narrower outline of the lip (Schlechter 1911:253). The holotype of *S. tuerckheimii* was destroyed by fire in the Berlin-Dahlem herbarium in 1939, but in 1931 professor Mansfeld had published a posthumous tracing of Schlechter's analysis of the flower from the type plant (page 526, left). Three isotypes (or parts of the original collection on which the author prepared the description of a new species) of *S. tuerckheimii* are kept at the National Herbarium of United States (US) and at the Oakes Ames Orchid Herbarium of the Harvard University (AMES). One of the specimens at US was selected by Christenson (1996:23) as the lectotype of the species, and Fritz Hamer drew the specimen at AMES, probably from rehydrated material. His informative sketch is now conserved among the archives of the Marie Selby Botanical Gardens in Sarasota, Florida. Other illustrations of *S. tuerckheimii* were published by D.E. Tibbets in Ames and Correll's treatment of the orchid family for the *Flora of Guatemala* (1953,

RIGHT The inflorescence of *Scelochilus aureus* from the mountains of Costa Rica. This specimen was collected on the slopes of the Irazú volcano, at an elevation of almost 7,220 feet (2,200 m).



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based in part on Schlechter's sketches) and by Fritz Hamer (1974) on the basis of a living plant collected by him at Boquerón, on the slopes of the San Salvador volcano, El Salvador. Plate 1268 of the orchids of Nicaragua in the *Icones Plantarum Tropicarum* series (Hamer, 1985) depicts the same specimen from El Salvador. Material of *Scelochilus* from Nicaragua is quite scanty: Hamer (2001) cited only a single collection, a plant collected by Alfonso Heller in mided pine-oak forests in Nueva Segovia, northern Nicaragua, at an altitude of 3,740 feet (1,140 m).

In 1923, Schlechter published a second species of *Scelochilus* from the American isthmus, this time based on a plant collected by the brothers Alfred and Kurt Brade (n. 1063) at Cerro El Tablazo, not far from San José, the capital city of Costa Rica (Schlechter 1923). Alfred Brade also sent Schlechter a watercolor of the flower (now destroyed), allowing the German botanist to record it as "golden yellow." The diagnostic drawings of *S. aureus* prepared by Schlechter were copied under his supervision for the orchid herbarium of professor Oakes Ames, and they are now conserved at Harvard University Herbaria (page 526, right). The Costa Rican *Scelochilus* was later illustrated with a fine watercolor by Rafael Lucas Rodríguez Caballero, a professor and accomplished orchid illustrator of the Biology School at the University of Costa Rica, and Costa Rica University Press published his plate in 1986 (page 527). In the original description, Schlechter distinguished *S. aureus* from *S. ottonis* by the smaller lip and its greater size. Inexplicably, the author made neither comparison of the new species nor any mention of his earlier *S. tuerckheimii* from Guatemala.

In general, plants of *Scelochilus* are poorly represented in herbaria, and apparently they are uncommon in the field. The little material available for study and the loss of Schlechter's types of Mesoamerican *Scelochilus* contributed to the prevailing opinion that *S. tuerckheimii* and *S. aureus* should be considered conspecific. Most of the subsequent authors shared this view (Ames and Correll, 1953; Hamer, 1974, 1985; Horich, 1985; Dressler, 1993, 2003), treating *S. aureus* under the synonymy of *S. tuerckheimii* and extending the distribution range of this species from Chiapas in southern Mexico to Panama. Citing the original



OPPOSITE *Scelochilus aureus*, drawn from a plant collected in 1998 at an elevation of 7,050 feet (2,150 m) near Cot de Oreamuno, province of Cartago, Costa Rica. A. Habit. B. Flower. C. Dissected perianth. D. Column and lip, lateral view. E. Lip, adaxial view. F. Column, ventral view.

G. Anther cap and pollinarium. Drawn by the authors from *Pupulin et al.* 778. ABOVE A plant of *Scelochilus aureus*, originally collected in Costa Rica, without specific locality, flowered in July 1997 in Italy. Grower: Giancarlo Pozzi.

#### LINKS

- <http://www.orchidspecies.com/scelhirtzii.htm>
- <http://www.orchidspecies.com/scellanglasei.htm>
- <http://www.orchidspecies.com/szellatipetalis.htm>
- <http://www.orchidspecies.com/scelottonis.htm>
- <http://www.orchidspecies.com/scelpoertillae.htm>
- <http://www.orchidspecies.com/scelotuerkheimii.htm>

Jay Pfahl's Web site, the International Orchid Species Photo Encyclopedia, offers images of and brief information about six different members of this beautiful but little-known Andean genus.

collection by the brothers Brade as the only known specimen, Oakes Ames (1939) accepted *S. aureus* for the flora of Costa Rica. In his treatment of the genus *Scelochilus*, Karlheinz Senghas (1987) maintained both *S. aureus* and *S. tuerckheimii* as good species, distinguishing them by the relative length of the apical and basal “horns” of the lip (subequal in *S. tuerckheimii*, the basal ones much shorter than the apical ones in *S. aureus*). He recorded both the species from Costa Rica, but his sketch of the lip of *S. aureus* (p. 115) matches nothing we have seen from Costa Rica, and the origin of the illustrated plant may be erroneous. In his last treatment of the genus for Schlechter’s *Die Orchideen*, Senghas (1995) confirmed his opinion about the distinctness of the two species, but he accepted a single taxon for the flora of Costa Rica. Dora Emilia Mora-Retana and John T. Atwood (1993; Atwood and Mora, 1999:160–161) adopted the same view in their treatment of the Oncidiinae for the *Flora Costaricensis*. After studying a living specimen collected at the type locality of *S. aureus*, they excluded this species from

## How to Grow *Scelochilus*

MANY species of *Scelochilus* deserve to be grown for their spectacular flowers. The plants are usually small and they may find a place in any collection, including those specializing in miniatures and grown in the windowsill. *Scelochilus* plants are intolerant of heat and dryness. Their usually very reduced pseudobulbs and the thin leaves are designed to meet the conditions of the temperate and rather cool forests that cover the high mountains of Central and South America. Here, the temperatures range from 65–77 F (18–25 C) during the day to 50–59 F (10–15 C) at night, and the humidity is always very high. In their native habitats, *Scelochilus* are commonly found in bright-light conditions. They can be grown in pots, with a rather fine mix, allowing them to dry between waterings. However, it is advisable to mount the plants on plaques of hardwood or cork, wrapping a small pad of sphagnum moss around the thin roots. This reduces the risk of rotting and permits the best display of the pendent inflorescences. — *Franco Pupulin and Diego Bogarín*.

the synonymy with *S. tuerckheimii*, arguing that the latter has “smaller flowers and a narrower, rounded midlobe.” Pupulin (2002) followed this interpretation and recorded *S. aureus* in his catalogue of Costa Rican Orchidaceae.

Both species, in our opinion, deserve recognition. *Scelochilus tuerckheimii* is the northernmost species of the genus, ranging from southern Mexico to northern Nicaragua, while *S. aureus* is native to Costa Rica and the adjacent mountains in western Panama. Apparently, the distributions of the two species do not overlap, the lowlands of the Nicaraguan depression representing the barrier that separates populations of the two taxa. All the material we examined from Costa Rica, including living plants (illustrated in this article), herbarium specimens and sketches of flowers from wild populations, is consistent in the shape of the lip, with the midlobe emarginate to bilobulate. This character agrees with Schlechter’s drawings and protologue of *S. aureus* and contrasts with *S. tuerckheimii*, which has an acute to obtuse lip, and somewhat shorter flowers. If geographic isolation, as a result of the geological history of the Central American isthmus, may perhaps explain the actual distribution of *Scelochilus* taxa in Mesoamerica, the reasons of the low speciation rate of the genus in the region, when compared with the Andes of South America, remain substantially unknown.

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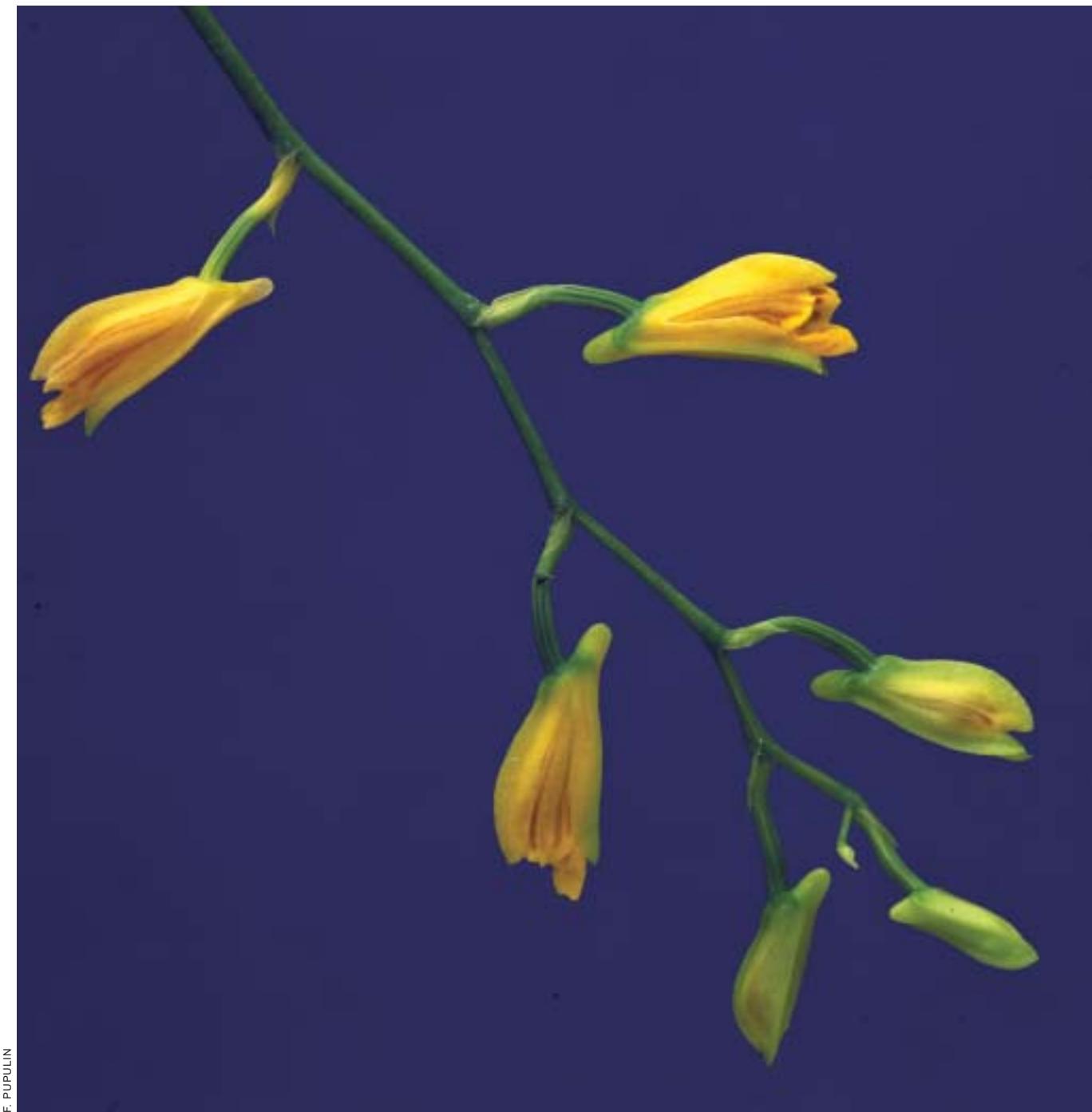
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ABOVE Another specimen of *Scelochilus aureus* from Costa Rica. It flowered in Italy in September 1997. Grower: Giancarlo Pozzi.