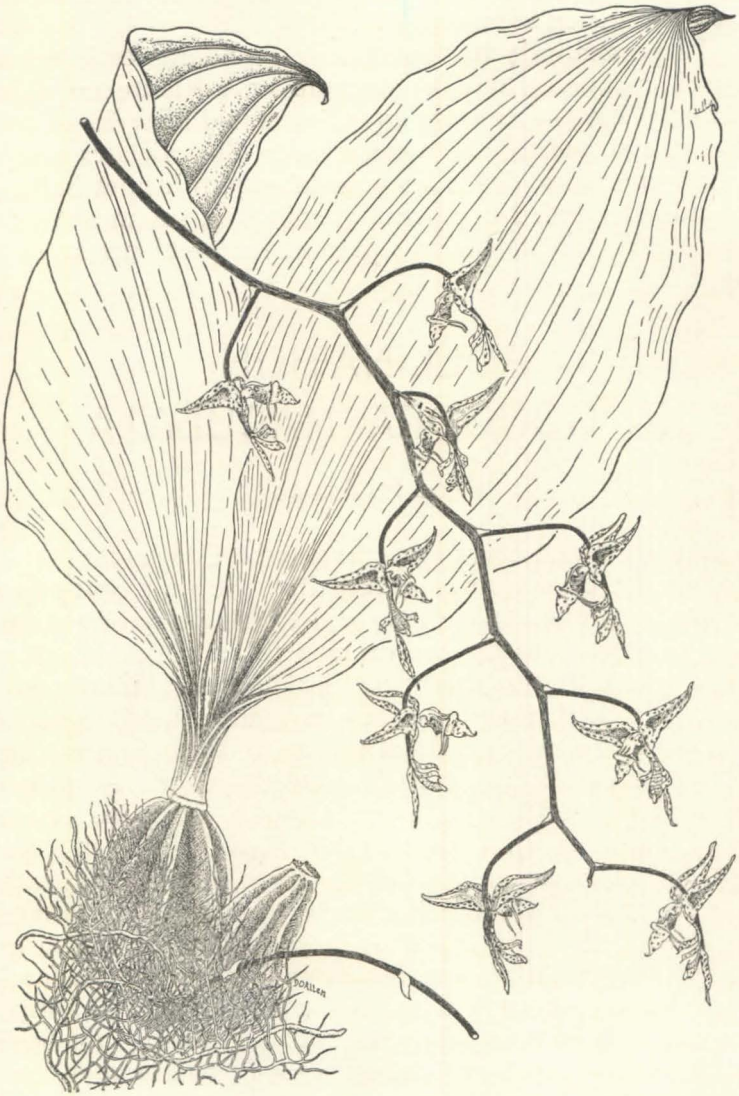
nizando la tercera campaña contra incendios, la cual será la mejor organizada desde la primera que se organizó durante la estación seca de 1951.

El porvenir de las florestas de Honduras está seguro; ya está en buenas manos; de aquí en adelante no habrá duda respecto al futuro de estas florestas. El Servicio Forestal es nuevo, fuerte y bien organizado. Sus oficiales son jóvenes y enérgicos, desde los guardabosques locales hasta el Director General. No esperamos milagros, solamente éxito en el control de los bosques para el mejor bienestar de la República.

POLLINATION IN GONGORA MACULATA

PAUL H. ALLEN

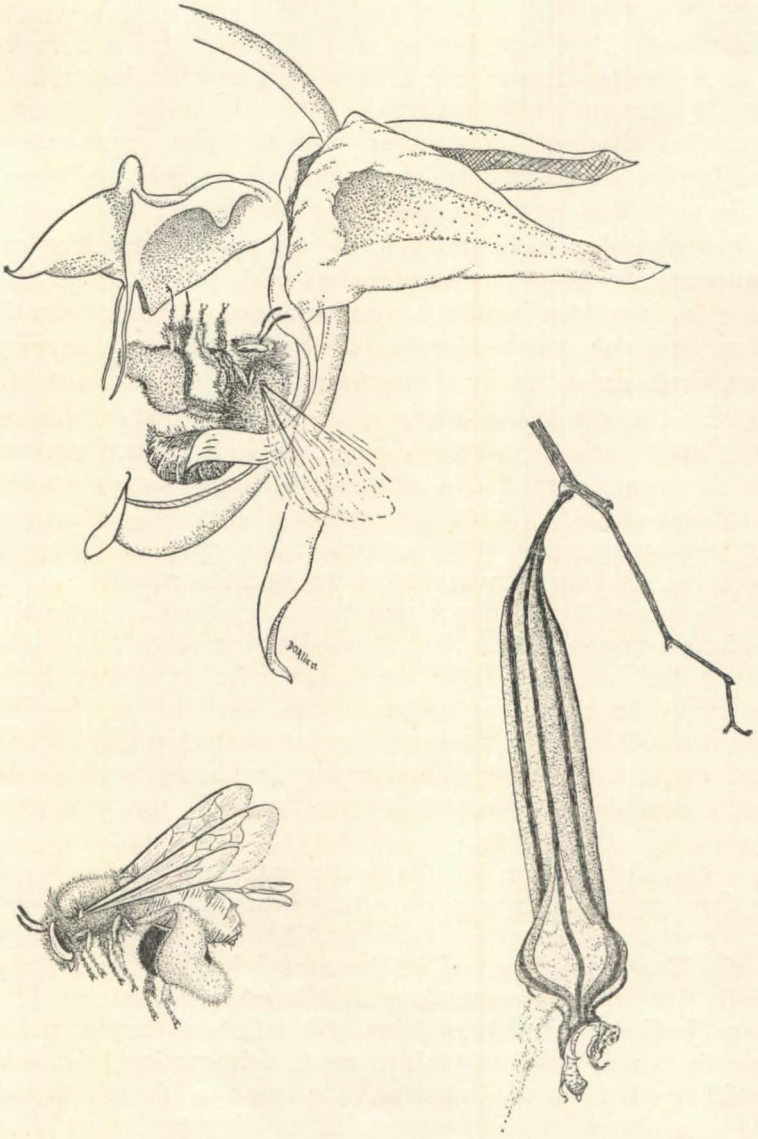
TO THOSE FORTUNATE MORTALS whose eye for structure has not been forever dimmed by the rapt contemplation of unending ranks of hybrid Cattleyas nature offers many marvels. Among the orchids there are a wealth of genera whose flowers might be likened to a fabulous toy or puzzle, yet there are few that can match the Gongorinae for sheer complexity of floral structure. Probably no more difficult task confronts the taxonomist than the attempt to adequately describe the assemblage of waxy structures, bristles, knobs and plates that typify the labellums of things like *Coryanthes, Stanhopea* or *Gongora*. John Lindley, probably the greatest Orchidologist who ever lived, once said in exasperation that the lip of *Gongora* looked like a chicken on a spit, and while such terminology is scarcely to be found in Jackson's Glossary of Botanic Terms, we can well sympathize with his feelings. Only a detailed drawing can begin to do such things justice, and yet, as we examine such marvels the question presents itself as to just what all these structures are for. Are they good for anything: Do they serve any useful purpose in the economy of the plant? Or are they simply examples of the lengths to which Dame Nature may go, when in a really expansive mood?



Habit sketch of *Gongora maculata*, much reduced.

Previous observations on *Coryanthes* (Amer. Orch. Soc. Bull. Oct. 1, 1950) have demonstrated that each separate structure in that amazing genus is designed for a definite end, the pollination of the flower by a specific insect, and that the complex mechanism could not function if a single part were changed. This seems to be true in a great many, possibly in all orchids, and yet we have puzzled again and again as to just how this could possibly be accomplished in *Gongora,* which had seemed to have a particularly illogical arrangement of parts. It may be said, in passing, that *Gongora* is seldom fertilized, and in fact, until quite recently I had seen only one seed capsule produced during some sixteen years residence in the tropics.

One bright dry-season morning in January of 1953, on examining plants in our small collection in Palmar, I noticed two or three males of the beautiful little metalic green bee [*Euglossa cordata* (Linn.)] previously observed pollinating *Coryanthes speciosa,* hovering near a fine spike of *Gongora maculata.* Although I watched them for a few minutes, nothing happened and I concluded that they could not be the pollinating agent, since they seemed to me to be too small. About half an hour later, my wife, who is a very keen observer came into my office in great excitement, having seen the split second process in actual operation. Both of us returned to the plant for another look, and found five or six bees competing for room near the floral cluster, evidently attracted by the fragrance. The bees would hover nervously for a minute or more, and then attempt to approach one of the flowers from the side, obviously intrigued by something on the under surface of the lip. At first the bee would cling to the lip, facing toward its base and holding on by the bristle-like anterior appendage and basal auriculate projection. Finding that this position still left him far from his objective, and evidently after some deliberation, the bee would make a frantic attempt to maneuver himself to the undersurface of the lip, attempting to cling to the keel-like waxy plates. This position could be maintained for only an instant, after which our friend would fall, wings downward, onto the smooth, curved surface of the column, sliding off for all the world like a child on a tobogan! The petals are inser-



Gongora maculata and the Bee *Euglossa cordata*

ted on the side of the column in such a way that the bee cannot fall off before striking the tip of the anther, and removing the slender pair of golden pollinia, which remain firmly cemented to the insect's back. This initial misadventure in no way discourages the bee, who returns to try the same thing again and again. It was of considerable interest that three seed capsules were formed on various plants in the collections, all of which ripened abundant seeds.

On the basis of our as yet very limited observations, it would appear that several genera, which are strikingly dissimilar from one another, may be pollinated by a single species of insect. For example, *Mormodes igneum, Coryanthes speciosa* and *Gongora maculata* are all pollinated by *Euglossa cordata* and *Cycnoches ventricosum* var. *Warscewiczii* and *Catasetum Oerstedii* by *Centris* (Apeulaema) *fasciata* (Lep.), yet it would be difficult to imagine more completely divergent floral structures than are found within each of these groups which are dependent on a single pollinating agent. Although the insect in each case is the same, the basic principle involved, and approach to the flower is in each instance entirely different, and it becomes obvious that the floral structure has been modified, while the insect has remained unchanged. We must conclude that very little of what we see has happened by accident, yet so many of these unique structures are interdependent in action that it is impossible to conceive how such changes could have taken place. Simpler structures within the genus often exist, and manage to perpetuate themselves in a perfectly satisfactory manner. Very simple, and probably primitive Stanhopeas such as *S. cirrhata, S. pulla* and *S. ecornuta* are not notably less able to maintain their populations, for example, than complex species like *S. Wardii* or *S. graveolens.* It is my distinct impression that once the tendency to develop complex structures has begun in a given genus that it will continue at an increasingly accelerated rate, whether any further advantage is derived or not.