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ORCHID RESEARCH PROJECTS

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Influence of daylength and temperature
on the flowering of orchids. This study in-
cludes the determination of the normal date
of bud initiation. As far as the work has
progressed, this has not yet been definitely
established, but we have found very interest-
ing and helpful results. Cattleya labiata

was observed to have formed its buds by July 1st. This species normally flowers in our greenhouses from late August to early November. Cattleya mossiae, the Easter flowering Cattleya had formed its buds by November 15th. With Cattleya Percivaliana and C. trianae which normally flowers for us from late November up to January, buds were present by October 5th. Samples taken on September 3rd showed no bud formation. With these two species it is probable then that the date of bud initiation would be around September 19th. Most of our C. Skinneri flowered around May 15, 1949. By January 5th, samples showed the buds already formed.

As far as we have been able to determine bud formation is not at all related to the length or age of the shoot. On the other hand, the indications point to the fact that bud formation is closely associated with daylength and temperature regardless of whether the pseudo-bulb, which is going to bear the flowers, is actively growing or fully matured. It is common knowledge that mature pseudo-bulbs sometimes produce flowers when the flowering time comes, even when they do not have flower sheaths.

In the second phase of our experiments we subjected several species of orchid plants to long and short day treatments. The results obtained to date indicate that some species of Cattleyas, Dendrobiums and Phalaenopsis are sensitive to daylength and temperature and that their flowering and growth may be strongly influenced by these two environmental factors. It is still too early, however, to say definitely in what manner the above plants may react in response to variations in length of day and temperature.

As far as the rate of growth is concerned we have generally observed that the Cattleya plants in the 65°F. house are much farther along in growth (pseudo-bulbs are matured earlier) than those in the 55°F. house.

The possible positive effect of temperature in causing Cymbidiums, Cypripediums, and Dendrobium nobile to initiate and develop their flower buds is also being studied. We have just started our experiments with these plants and it is still too early for any effects to show.

In a separate study of the effect of temperature on the growth of Cattleyas, evidences showed that low temperature (40°F. - 50°F.) for four weeks was injurious to the plants. They showed characteristic low temperature symptoms. The leaves and pseudo-bulbs turned black and became soft. When transferred to a 60°F. - 65°F. house, the trouble was checked almost immediately. Further tests are being carried on to check the earlier observed results.

Vegetative propagation of Phalaenopsis. We have recently worked out a new method of vegetative propagation of Phalaenopsis from flower stalks. The eyes of the flower stalk are planted on an agar medium. The method is very simple and practical. Leaves were produced from the buds of the flower stalk within 2 to 3 weeks. In certain cases, however, growth may not occur until after 2

months. Roots appeared after 5 months when two or three leaves had been fully developed. At this stage the plants may be transferred to pots, and it is very probable that they will flower within a year or two.

The water requirements of orchid plants.
To find out how much water orchids can stand and how much they need for best growth a preliminary experiment has been set up using Phalaenopsis and Cattleya seedlings. The experiment with Phalaenopsis was started January 15, 1949. We observed that those which were watered every day grew better than those watered every 3, 5, or 10 days. Those with a constant water level were just as vigorous and as fast growing as the daily-watered plants. Watering every 10 days, which amounts to drying the plants before each application, has proved to be detrimental to the plants and the growth has been very slow.

Cattleya seedlings newly transferred from test tubes were observed to grow faster and more vigorously when grown in a medium constantly supplied with water than when merely sprayed several times a day.

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