

v of the response to kinds. The intermittent t on certain parts will e smell of a lemon or times causes a flow of fore, it is quite within bability that insects in parts of plants found bark of the stem, nor ected by cuticle, but in flowers, and there l at the juicy tissue sap towards a wound any acacias, etc., will considerable period, so would flow to make sed by the insects feed- repeated frequently unless generations, be l at last, as have nec- the unopened flower- producing nectar until

lands or nectaries, as noted, are restricted to t are resorted to by lized flowers, such as e no nectar) and these sified. Flowers favored l visitors are spoken of animals, and we have "bird-loving," "at- loving," "insect-loving," insect-loving flowers we utterfly- and moth-lov-," "bee-loving" flow-

n describes some of the ments of flowers and to the nectar gathering bee. He furthermore metimes the honey bee, smell of nectar issuing made in the corolla by partakes of the treasure eely-what-the-Gods-offer' the habit from which it the practice of biting a ured flower; and so the becomes occasionally a , since there is no con- ded, a highway robber! f flowers are then con- ing the nectar exposed, he nectar concealed in a he third with the nectar

protected by special modifications of the otherwise open tube, as, for instance, in the *Cobea scandens*, which is considered in some detail.

The writer closes with some generally accepted rules, barring certain exceptions.

"Pollen flowers are generally of circular or star-shape, or, in other words, "radically symmetrical" and well open to visitors.

"Nectar flowers are more highly specialised, and with the nectar generally concealed by projections, stamen filaments, hairs, etc., or in spurs. They are not star-shaped, but may be cut in equal portions only in one direction (bi-laterally symmetrical). Such are pea-shaped flowers; snapdragons (*Antirrhinum*), larkspur (*Delphinium*), fox-glove (*Digitalis*), etc.

"Reddish, blue and violet flowers are preferred by bees, hoverflies and butterflies, which are highly specialised visitors," writes Knuth, who is probably the world's greatest authority on flower pollination; but we have a powerful apiphilous or bee-loving group in our Eucalypts, of which the great bulk of the species have pale yellow flowers, though a few are greenish (*E. cornuta*) and a few are crimson, scarlet, pink, etc., e. g., (*E. marginata*, *E. calophylla*, *E. sideroxylon* (sometimes))."

This author would seem to accept that it is the "smell of the nectar and the color of the flowers" which attract insects, quoting from Knuth's "acceptable law," which is in general as follows:—"Insects are attracted from a considerable distance by smell. On nearer approach (one or two yards) the color of flowers attracts them nearer, and, when they finally settle, the lines and other marks, serve to point the way to the nectar."

"We may note that flowers visited by moths are often white, and, therefore, most conspicuous in the gloom in addition to the usually strong scent, not very agreeable, of such flowers. But by binding insects, for experimental purposes, experts have watched them flying without hesitation to flowers at a distance, though they seem somewhat bewildered when they arrived there. And in the case of mutilation, flowers often proved unattractive (if the mutilation consisted of the removal of the guide marks, stripes, spots, etc), at closer quarters to

insects that had been attracted to them from a considerable distance. In such cases where the mutilation of the flowers exposed the glistening nectaries the removal of the colored guides was no obstacle, as the insects approached without hesitation."

BEE-KEEPERS' REVIEW.

Mr. Tyrrell has four good articles in the October "Review," dealing with various phases of wintering. Ralph Benton in a well thought out paper on "Essentials in Outdoor Wintering," describes what experiment and his own experience under widely varying conditions of climate and place have taught him to be the fundamental principles and essential truth of the matter. In the first place he holds that the bee can stand almost any amount of cold for varying periods of time, provided other conditions are favorable, and he argues that this is to be expected from an insect which is so nearly related to the hibernating wasps, solitary bees and the bumble bees. Whilst, however, individual hive bees can withstand a comparatively long exposure to cold, yet they are unable to regain activity without external warmth, such as that supplied by the semi-torpid winter cluster. "It is this fact," Mr. Benton remarks, "which makes the problem of wintering bees in the open air a hopeful one; and the provision of a goodly and compact cluster of comparatively young and vigorous bees in each colony constitutes the first essential of successful wintering out of doors." By means of a series of curves, the author graphically represents the conditions of life in colonies under various conditions, and the reader is made to realize how late breeding carries a colony past the critical period in late winter and early spring, when so many unfortunate stocks come to an untimely end through dwindling. To keep bees breeding through the autumn months, stimulative feeding is advised in cases where there is nothing coming in from natural sources, and