

instructive and are more wonderful. The bee and other insects visit plants to gather *nectar*. The bee could have here taught the poet a lesson, that the juices that were extracted from the plant had afterwards by skilful labor and patience to be manufactured into *honey*. Again accurate observation teaches us that there is a reciprocity between the animal and vegetable kingdoms, that for what the one receives from the other an equivalent is returned. No better illustration of this truth can be obtained than by closely watching the results of the visits of insects to plants. What seems to be selfish and wholesale plundering on the part of insects of juices necessary to the plant, is not really so. The fact is the plant gets even a greater return from the insect. The greater equivalent lies in this, that the insect bears away from the *stamens* of the plant on which it has just alighted innumerable particles of pollen dust to fertilize the *pistils* of a plant of the same species which it may next visit. Plants are even rivals among themselves as to which shall bid highest to secure the greatest number of insect visitors. These bids for favor may be seen in their brilliant colors or in the even more seductive charm of their fragrant juices. Plants therefore do not object to the visits of insects, but rather encourage them. On the other hand they are endowed with the means of protecting themselves from the attacks of a rabble of small or useless insects which are contented to circle around the flower and purloin its juices. These loafers are debarred from entering some plants by a close fitting calyx envelope, by a net work of hairs, by prickles, or other contrivances. To some plants these little insects are invited by alluring juices, and find when too late that they have crossed a bourne from which no insect traveller returns. Such plants

are our common *Drosera* or Sundew, the Pitcher plant, and others whose insectivorous habits are now pretty well known.

After this somewhat discursive introduction, let me endeavor to show why plants should require the aid of insects in order to fertilize them. Assuming that even the more general readers of the MONTHLY have a clear idea of the structure of the flower, I shall barely refer to the process of fertilization. This is accomplished when the pollen grain, alighting on the stigma of the pistil, penetrates to and fructifies the ovules or rudimentary seedlings. It would at first sight appear that in most phanerogams the design is that they should be self fertilizing, that is, that the pollen of the stamens should fertilize the ovules in the pistil of the same plant. This appears evident from the fact that in most flowering plants the stamens are in close proximity to the stigma, and sometimes bent towards it in such a way as to suggest the impossibility of the interference of any outside agency to prevent its accomplishment. The blossom of the pea is an instance where self fertilization seems evidently intended. Ten stamens closely surround the pistil the whole being nearly enclosed by a pair of the petals. Here it would seem that the design is not only for the flower to fertilize itself but to shut out any interference on the part of insects. Take also the flower of *Kalmia glauca*, in which the anthers of ten stamens are held close prisoners in chambers of the corolla until their pollen is ripened when a smart blow on the flower will set free the imprisoned anthers, causing them to strike the upright style with such force as to break the anther case, scattering the pollen dust. This seems to waft upward and surround the stigma like a little cloud. But it has been proved both in the case of the pea and of the