

FIG. 1359.—Essential organs of a Lily (Lilium).

a—Stamen. b—Anther. c—Pollen. d—Filament. e—Pistil. f—Stigma. g—Style. h—Ovary. (After Gray.)

and retain the pollen, to this end it is when mature quite viscid; the ovary is the body within which the seeds are formed, which in their early stage are termed ovules. The pollen, falling on the moist sticky surface of the stigma which is quite naked, that is, not covered as is all other parts of the plant by

vary greatly in number and form. Frequently the stamens appear in one plant and the pistils in another of the same species. Some idea of the great diversity of form may be gathered from examining. He should also be able to judge when the stigma is in condition to receive the pollen. (See Fig. 1361.)

The operator, having decided upon the qualities he desires to produce, selects for the parents two plants each possessing in a marked degree such qualities that if united in one plant the desired result would be attained; from one of which he will get the pollen with which to fertilize the pistil of the other. It sometimes happens that the pollen is ripe and falling before the stigmas in the flowers of the other plant are mature. In such case the pollen can be gathered into a small vial, care being taken that everything is perfectly dry, then tightly corked and kept in a cool dark place. Pollen absorbs moisture, which results in the extrusion of the pol-

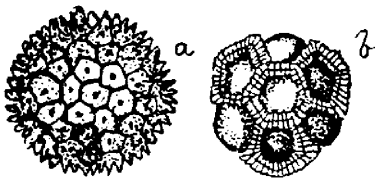
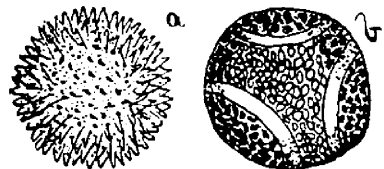


FIG. 1360.—Pollen grains highly magnified. a—Morning Glory (*Ipomœa purpurea*). b—Black Oyster-plant (*Scorzonera Hispanica*).

cuticle (epidermis), absorbs moisture, swells, thrusts out a tube which passes through the stigma, down the style, enters the ovary to the ovule, into which it is supposed to discharge its semi-fluid contents through a tiny opening. When this takes place not only the ovule but also the ovary increase in size and the product becomes a living seed. When this does not take place the ovule perishes. It is important that every one who wishes to produce new plants become familiar with these organs, for they



Pollen grains highly magnified. a—Hollyhock (*Althaea rosea*). b—Passion flower (*Passiflora carnea*).

len tube, or, if the moisture is in excess, in the bursting of the coats of the pollen grain and the loss of its contents. Too much moisture, either as rain or fog at the critical period of inflorescence when fertilization should take place, is often the cause of failure of fruit. A soft camel's-hair pencil is an excellent instrument with which to collect pollen, and also to apply it to the stigma.

The flowers to be pollenized must be cared for to prevent other pollen from being deposited on the stigma, both by