the upper end of which is a round or oval body called the *Anther*, which contains the *pollen* grains. Under the microscope pollen grains present a great variety in form and general appearance, though to the naked eye pollen appears like dust. Some are perfectly round, others oval, some smooth, others rough. So marked is the difference in the pollen grains of plants, that an experienced observer can identify the plant by merely seeing some of the pollen. Few species show a more beautiful form than the Cuphæa (cigar plant). A close examination of a pollen grain shows that it is composed of two coats, an outside covering (extine) and inside of that another coat (intine), and yet the whole microscopic. Consequently whatever contents are inside of these must be of an exceedingly minute character.

The pistil usually occupies the central portion of the flower, like the stamens, there may be several on the same flower.

The upper part, usually more or less sticky, is called the *Stigma*, from that down, especially where slender, is the *style*, and the enlarged portion at the base is the ovary; in this you find the unfertilized ovules, which, after fertilization has taken place, become seeds. Now an ovule, under the microscope, shows several structures; the central portion nucleus (better nucellus because we have the term nucleus applied to a structure in the cells of plants), a part of this develops into the *embryo sac*, and a portion of this, exceedingly small, forms the *embryonal vesicle*, which becomes a very important factor in fertilization for here, after that process takes place, the embryo is developed.

The nucellus is surrounded by two coats; at one place there is an opening between them known as the micropyle—the use of which will be referred to afterwards.

3. *The process of Fertilization.*—The pollen grains reach the stigma of the pistil, and soon after the outer coat of the pollen bursts, and the inner develops a tube, which begins to penetrate its way down through the style, and finally reaches the embryonal vesicle of the ovule, by passing through a small opening (micropyle) between the coats of the ovule. You will remember I spoke of the ovule as consisting of nucellus, embryo sac, and embryonal vesicle, the last a very minute portion; but when it is reached by the pollen tube, which lies alongside of it, an interchange of elements takes place, and the process of fertilization is effected. At once changes commence in the ovule, and it develops into a seed possessing an embryo.

Sometimes the pollen of a flower fertilizes its own ovules, and, in fact, this was once thought to be the regular way; but close observation and thorough investigation seems to show that this is more exceptional than otherwise. Experience seems to indicate that plants fertilized in this way, are likely to produce weakly plants from their seeds. This method is known as self-fertilization. Where pollen fertilizes the pistils of others flowers of the same species, the term cross-fertilization is applied. In such cases seeds are produced, which give rise to strong, healthy, vigorous plants. Viola (violet), oxalis (sorrel), stellaria (chickweed), euphrasia (eyebright), are some examples of the few, that seem to be favorable to self-fertilization.

If cross-fertilization seems to be the common method adopted by nature, there must be some means by which pollen is transferred to the pistils of plants. The study of this becomes one of the most fascinating pages in botany. Time will not permit me to enter this interesting field further than to throw out a hint or two that may lead readers to follow up the subject when opportunity presents itself.