ordinary cooking steamer or metal pail with a shelf and closely fitting cover makes a good sterilizer.

The fruit dots are scraped from recently collected ferns, on a piece of white paper, and the spore-cases crushed open and the contents blown gently over the earth in the flower pot. The top of the pot is covered with a piece of glass and the culture is watered from the saucer beneath. Care should be taken not to keep it too moist, otherwise fungi may spring up and "damp off" your growing fern crop.

The spores of Polypodium and of many others of our common ferns are said to retain their vitality for over a year; the spores of the genus Osmunda, however, live only a few days after maturity.

In cultures prepared in this way, and kept an ordinary room temperature, prothallia will begin to appear in from three to four weeks and be full grown in six weeks, and little fern fronds will begin to develop in two or three weeks more.

This is an interesting experiment and every High School pupil should be familiar with it. In this very way the many beautiful varieties of the Boston fern have been derived. According to experiments carried on with the Boston fern, in the Agricultural College of Cornell University, its spores germinate best on a medium composed of "well-decayed oak-leaf mold."

On the under side of the porthallium are numerous fine filaments or rhizoids, which act like roots in that they connect it with the earth and supply it with water and certain mineral salts from the soil. On the under surface too, but nearer the growing point, are very small flask shaped bodies with long necks, so small in fact that they can be seen only with the microscope. When mature the neck is open and leads to the enlarged portion, set in the tissue of the prothallium, and in which is produced a round reproductive cell, called an egg. The flask-like structure is called archegonium.

The microscope also shows, scattered among the rhizoids, other small rounded bodies reminding one of very small microscopic ant-hills. These are the anthredia, and at maturity they set free many small motile cells, called sperms. A drop of water under a prothallium forms a little sea in which the sperms swim about, and, attracted by substances from the archegonia dissolved in the water, they make their way down the open neck and one of them unites with the egg cell. This is fertilization, and the cell formed by the union of these two — the egg and the sperm — grows at once into a new plant, like the one that produced the fruit dots.

The eggs and sperms are collectively known as gametes, they are also called reproductive cells,

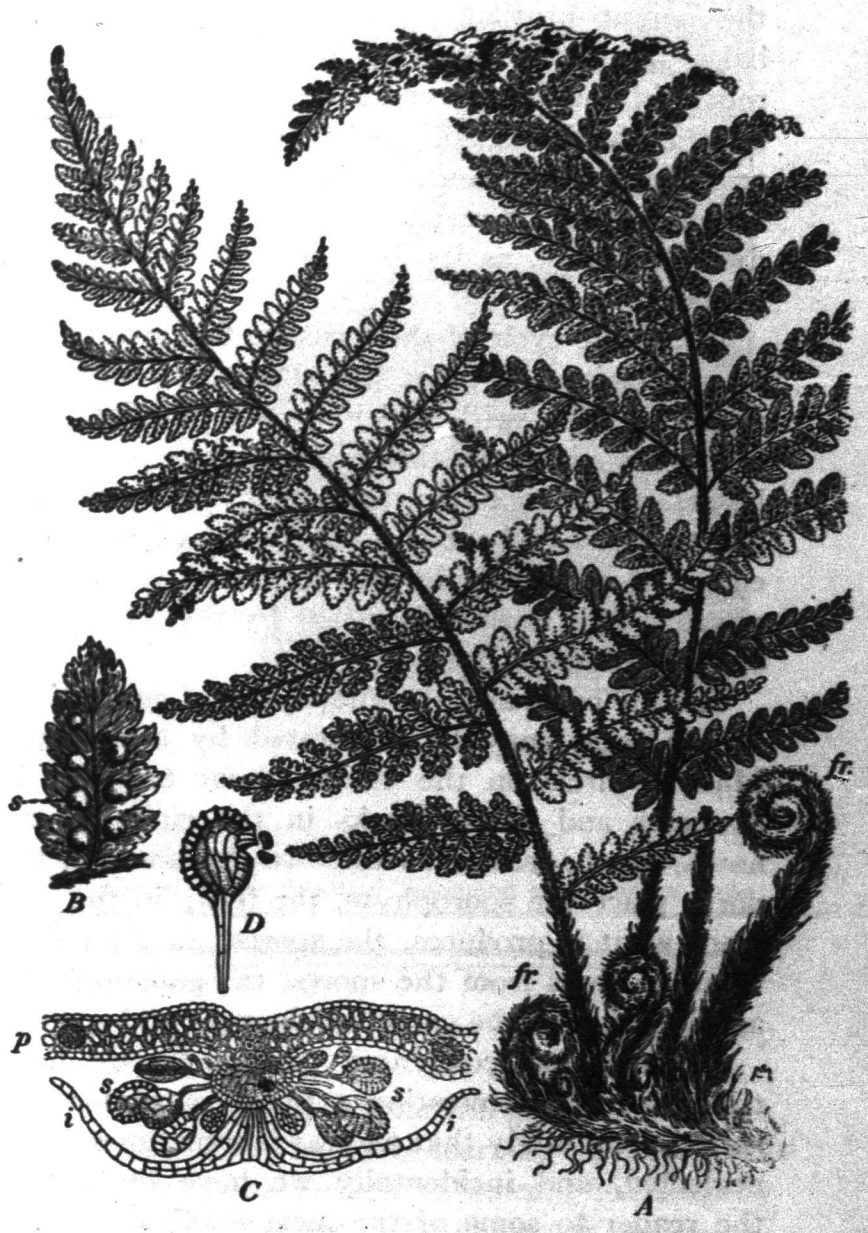

FIGURE 2. A fern (Aspidium marginale).

A, section of the creeping roodstock, showing the arrangement of the living leaves around the tip, and the dead stems of last year's leaves farther back. B, a leaflet of the leaf viewed from below to show the position of the sori. C, details of the sori and veining on a portion of a leaflet. D, section of a sorus: i, indusium; s, sporangia. E, a spore-case or sporangium, showing the opening from which the spores (sp) have been discharged; r, ring or annulus.

but they are obviously not of the same nature as the spores, for neither can make any further development by itself — there must be a union of the egg and the sperm before a new plant can be produced.

All this wonderful process takes place in two or