

three weeks. Watch the young cultures and you will soon see a little leaf pecking up in the sinus from the under side of prothallium, it grows larger day by day and soon expands into a frond. At the same time a little stem is formed with a tiny bud at the end, and a very small root strikes downward into the soil; but there is yet another part, the foot, by means of which it retains connection with the parent prothallium and through which the baby plantlet is nourished until it has grown its root and formed its green tissue, and is able to build up food for itself, and thus finally to become an independent plant. When this stage in the life of the fern is reached the prothallium usually dwindles away, as its life-work has been accomplished.

In the life cycle of the ferns we find two phases or generations of plant life alternating with one another: One, with which we are familiar, with leaf, roots, and stem, that bears spores,—the spore bearer or sporophyte; the other, the small flat heart-shaped body that produces the gametes, the eggs and sperms,—the gamete bearer or gametophyte. This is what is meant by the alternation of generations in Botany.

The life cycle and the alternation of generations in the ferns may be illustrated by a diagram. Make a circle on the board about two feet in diameter and make breaks in the circle at the north, south, east and west. In the break at the north place the sporophyte, the fern; in the east place what it produces, the spores; in the south, what develops from the spores, the gametophyte; and in the west the gametes, the eggs and sperms.

In these few condensed paragraphs we have tried to make interesting a phase of winter and spring plant study that we fear is sometimes much neglected, and incidentally we have introduced the reader to some of the most sublime facts of biological science.

The alternation of generations takes its rise among the lower forms of plant life, the algae, but does not become a fixed characteristic till we reach the liverworts, mosses, ferns and all the higher plants. When it is first found as a fixed plan of development, the gametophyte is the more important generation, while the sporophyte, never becoming independent, lives as a parasite upon its tissues. When we reach the fern, however, we find the sporophyte independent. Is it ever parasitic in the fern at any period of its life?

It is also a most interesting fact that among the higher plants, where the alternation is less evident but always present, it is the gametophyte that is parasitic upon the sporophyte.

Other evergreen ferns that may be substituted for the Polypodium are *Aspidium marginale*, the Christmas fern (*Polystichum acrostichoides*) and at times *Aspidium spinulosum*, though the fronds of the latter are usually much broken by the snow of winter.

Aspidium marginale loves the rocky hill sides and grows in clumps with several fronds close together. The frond is larger than that of *Polypodium* and is bipinnatifid or bipinnate, the fruit dots are marginal and covered with a shield-shaped tissue, called an indusium. The Christmas fern also grows in clumps with very upright fronds and is once pinnate. The pinnules have finely serrate margins and are arranged alternately on the midrib. Each has a triangular ear on the upper side at the base.

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THE CURRENT HISTORY CLASS.

(The answers to the following questions will be given in the April issue of the REVIEW.)

1. What great plot has been revealed during the past month?
2. Who was granted a passport from United States to Copenhagen?
3. What important town, in the east, have the British captured recently?
4. What is the name of the Act which is said to have taken place between United States and Germany?
5. What large Cunard liner has been sunk last month?

ANSWER TO LAST MONTH'S QUESTIONS.

1. The British Nation.
2. Between Azores Islands and the South American Coast.
3. Admiral Dewey.
4. Off the Belgian and Dutch Coast, near Ynuiden.
5. The Victoria Cross, Legion of Honor and Cross of St. George.