

Thus, in a recent retrospect Prof. Marshall Ward writes as follows:—

“Bower and Campbell have laid bare, by their indefatigable labours, the histological details of the Mosses and Vascular Cryptogams, and carried the questions of alternations of generations and the evolution of these plants so far, that it would almost seem little remains to be done with Hofmeister's brilliant conception but to ask whither it is leading us; the genetic relationships have become so clear, even to the details, that the recent discovery by Ikeno and Hirase of spermatozoids in the pollen-tubes of *Cycas* and *Gingko*, almost loses its power of surprising us, because the facts fit in so well with what was already taught us by these and other workers”.

The idea of alternation of generations came to botany from zoology through the influence of Steenstrup's famous essay. It was established by Hofmeister (1851) in regard to mosses, ferns, Alternation of Generations. conifers, and the like, where he showed the regular alternation of a sexual and a spore-bearing generation. The sexless “fern-plant” produces spores; these develop into minute sexual prothalli, from the fertilized ova of which the “fern-plants” arise. The sexual “moss-plant” produces ova and spermatozoa; from the fertilized ovum there springs a “moss-capsule”, which remains attached to the “moss-plant”, but is a separate generation producing spores; the spores germinate and form a thread-like protonema, from which the “moss-plant” arises. In our modern terminology, there is an alternation between a sexual gametophyte and an asexual sporophyte. But although the general idea is clear enough now, it has had an intricate history, and there are still many unsolved problems. In fact, as Dr. Scott has said, it remains “the greatest mystery in the morphology of plants”. From a scholarly historical sketch by Dr. W. H. Lang I have selected the following notes on the development of the idea:—

At first, the only alternation recognized in plants was the alternation between vegetative shoots and reproductive shoots or flowers, which is a different question. In 1851 came Hofmeister's monumental work. In 1856