the splendid series of Saturday lectures just completed, which, by the way, netted them some $360. It is stated that but $200 more is needed to enable them to proceed with the building. This certainly seems but a small amount, and surely it will not be difficult to find a number of public-spirited men ready to contribute towards such an enterprise. A Women's Residence is undoubtedly a necessary adjunct to a University where co-education exists, and it is to be hoped that success will meet the earnest efforts of the women who are urging the building of a Residence for the women undergraduates, in the desire of providing them with a certain degree of home-life.

On behalf of the Arts students, we beg to extend our sympathy on behalf of the Medical students on the loss of one of their most popular and best men, Mr. Dunnington, of the Third Year.

UNIVERSITY OF TORONTO STUDIES.

The number of valuable contributions to knowledge, which have already appeared in the *University of Toronto Studies*, have abundantly demonstrated the wisdom of the Senate in their publication. The last one in the series, "The Gametophyte of *Botrychium virginianum*," by Mr. E. C. Jeffrey, will be found up to the high standard of the preceding numbers. This paper is republished from the transactions of the Canadian Institute. The typography, which is of an excellent quality, is uniform with that of the rest of the series. In addition to the 32 pages of letterpress, there are 4 plates lithographed by Hutt, of Edinburgh, from the drawings and photographs made by Mr. Jeffrey.

The subject is, as the name suggests, of a very advanced nature, and the bustling array of scientific terms, of which Botany has such a plentiful supply, is calculated to repel the non-scientific reader. To a botanist, however, it is of very great interest. The philogenetic position of the *ophioglossaceae* to which *B. virginianum*, the moonwort, belongs, has always been a question much discussed and little understood. Whether to consider these plants as linking forms between the ferns and their humbler allies, or as related more nearly to the higher cryptogams has been difficult to decide, owing to the fact that that phase of the plant, in which the floral organs are produced,—the gametophyte—is minute and subterranean. A fortunate discovery put Mr. Jeffrey in possession of a number of specimens of the gametophyte of *B. virginianum*, and the results of a careful investigation extending over a period of nearly two years, are published in this monograph. Results which, while not settling the position of the order itself, adduce a series of facts which will be of very great value in settling that point.

In 1852 the gametophyte of a related species *B. lunaria* was investigated by Hoffmeister and it was not until 1893 that Professor Campbell secured his specimens of the gametophyte of *B. virginianum*, by growing them from spores. In each of these cases the material at the disposal of the investigators was so scanty that the results were anything but satisfactory. The only other member of the order whose floral organs had been seen and described was *ophioglossum pedunculosum*. As early as 1856, a few pages in a work by Mettenius were devoted to this subject, but until the present our knowledge of the life processes of this interesting order of plants was very limited. It remained, then, for Mr. Jeffrey in his masterly monograph, to eclipse all that had previously been achieved in this direction by the great lights of the science.

Although Professor Campbell had previously obtained specimens of the gametophyte of this plant, they were grown under abnormal conditions in the glare of a hot-house, instead of the darkness of the forest and had developed chlorophyll, which has not been found in any of Mr. Jeffrey's specimens. Then none of the artificially-produced specimens developed to the stage when the embryo begins to segment, which is the point of importance in this case. Now, the youngest specimens collected by Mr. Jeffrey were a little older than the most advanced of those previously obtained, and so we now possess the complete life-history of the plant from the first growth of the spore to the prothallus, through the intermediate stages of the formation and segmentation of the egg-cell, down to the final production of the fern itself.

Since the gametophyte is without chlorophyll, it has to depend upon external sources of food supply, principally decaying vegetable matter. Another and very remarkable possible source of supply is in the presence of numerous plants of a "filamentous fungus," which thrives within the cells of the host. This was invariably found to be the case, and we may conclude that this alliance was for mutual benefit. As the plant grows older, the strands of the fungus enlarge, and are surrounded by an oil. Later they decrease in size and are separated into small pieces and finally disappear, and it seems reasonable to suppose that in this, as in other cases known to science, the host has digested and assimilated the substance of the smaller member. This phenomenon occurs among the clovers and other members of its family, and is the reason why some plants, as the lupine, can flourish on unproductive soils.

A large part of the work is devoted to the details of growth and segmentation of the plant, which has little interest for the general reader, but altogether it forms a valuable addition to the science of Botany.

W. HARVEY MCNAIRN.

Y.M.C.A.

On Saturday evening at 7.30, the Mission Study Class meets for one hour in the parlor of the Young Men's Christian Association Building. Every student interested in the Sociological problems of non-Christian lands should make an effort to attend this class.

Professor Ramsay Wright journeyed to Ottawa last week to attend a meeting of Scientists with the Government, in order to try and induce the latter to give a grant towards the formation and maintenance of a Biological experiment station. In all probability the necessary amount will be forthcoming, and the station will likely be established in one of the Maritime Provinces.