

ber of karyosomes, which later become chromomeres. There are twenty four of these in the spermatocytes and forty-eight in the spermatogonia. The spireme consists of a single linin thread connecting these chromomeres and forming a spiral which winds about the nucleus just beneath the nuclear membrane. At this stage the nucleus is an ellipsoid of revolution. The spireme makes three complete whorls about the spermatocyte nucleus; but six such whorls are formed in the nucleus of the spermatogonium. The centrosome appears at one side of the nucleus in the plane of its minor axis. The nucleus changes next to an oblate spheroid with the centrosome over the pole. The arcs of the spiremes form meridians. There are, therefore, six such meridians in the spermatocytes and twelve in the spermatogonia. Each has four chromomeres. The spireme now divides at the poles into six and twelve segments respectively. These contract, forming spherical chromosomes at the equator. In the chromosomes the individual chromomeres are indistinguishable.<sup>2</sup> Twenty-four karyosomes are to be made out in the late metaphase of the spermatogonic divisions.

The spermatid nucleus assumes the ellipsoid shape. The cytoplasm immediately about it changes so that it will not stain and a small drop of non-staining material forms at one end of the nucleus. This grows in size as the cytoplasm appears to be altered by the nucleus, absorbed by it and stored. This droplet increases until the nuclear wall which covers it, touches and fuses with the cell wall. A slight projection appears at this point of fusion. It rapidly elongates to make the tail. The droplet which forms the middle piece decreases correspondingly. Meantime the cytoplasm and cell wall have completely disappeared. The centrosome appears within the middle piece. From it anteriorly and posteriorly runs the axial fibre. Within the head of the sperm six dumbbell-shaped bodies are apparent, the persistent chromosomes.

The next meeting was held on May 29th and was devoted to two papers. The first of these 'Variation in *Daphnia hyalina*' was read by Miss M. M. Enteman. The following is a brief abstract:

The shell of *D. hyalina* is extremely variable. For the head crest a range of variation is observed covering forms characteristic for many different species of the genus *Daphnia*. The principal forms described for Europe are a low-rounded and a high-rounded crest, and a crest terminating in a more or less acuminate apex. In America, the species, as far as studied, shows the same variations, and, in addition, a triangular and an extremely recurved crest. Further it is to be noted, that while the European varieties resemble other European species in the form of the shell, the American varieties resemble the American representatives of these species. A study of local variation shows widely differing conditions for related regions, some lakes possessing a single stable form, while others furnish all transitions between extreme varieties. Finally, however, different the summer varieties, they are all represented by a uniformly low-crested form in the winter. The species abounds in our clear northern lakes, and these considerations ought to make it a favorable subject for the determination of environmental influences.

The second paper of the session was a review by Mr. R. H. Johnson of the paper 'On the Reactions of *Daphnia magna* Strauss to Certain Changes in its Environment' by E. Warren (*Quart. Journ. Micr. Sci.*, Vol. XLIII., Pt. 2, 1900).

C. M. CHILD.

#### THE BOTANICAL CLUB OF CANADA.

THE Botanical Club of Canada was organized by a committee of section four of the Royal Society of Canada, at its meeting in Montreal, May 29, 1891. The object is to promote by concerted local efforts and otherwise the exploration of the flora of every portion of British America, to publish complete lists of the same in local papers as the work goes on, to have these lists collected and carefully examined in order to arrive at a correct knowledge of the precise character of our flora and its geographical distribution, and to carry on systematically seasonal observations on botanical phenomena. The intention is to stimulate with the least possible paraphernalia of constitution or rules, increased activity among botan-

ists in each locality, to create a corps of collecting botanists wherever there may be few or none at present, to encourage the formation of field clubs, to publish lists of local floras in the local press, to conduct from year to year exact phenological observations, etc.; for which purposes the secretaries for the provinces may appoint secretaries for counties or districts, who will be expected, in like manner, to transmit the same impetus to as many as possible in their own spheres of action. Members and secretaries, while carrying out plans of operation which they may find to be promising of success in their particular district, will report as frequently as convenient to the officer under whom they may be immediately acting. Before the end of January, at the latest, reports of the work done within the various provinces during the year ended December the 31st, previous, should be made by the secretaries for the provinces to the general secretary, from which the annual report to the Royal Society shall be principally compiled. By the first of January, therefore, the annual reports of county secretaries and members should be sent in to the secretaries for the provinces.

The annual report of the club for the year May 20, 1898, to May 20, 1899, issued as a part of Vol. V., *Trans. Roy. Soc. Can.*, second series, 1899-1900, contains a sketch of the history of 'Phenological Observations in Canada.' It also indicates the progress of botanical research, points out the results obtained in Newfoundland, as well as in Labrador, Prince Edward Island and Nova Scotia. This is followed by 'Observations in a Wild Garden,' by Dr. G. U. Hay, of St. John, New Brunswick, besides notes on work done in Ontario. Professor Macoun's researches in the 'Cryptogamic Flora of Ottawa,' published in *The Ottawa Naturalist*, and Mr. James M. Macoun's 'Contributions from the Herbarium of the Geological Survey of Canada' have been published in *The Canadian Record of Science* and in *The Ottawa Naturalist*.

Full descriptions of the new species of Ottawa Violets were given with excellent plates in *The Ottawa Naturalist* of January, 1899, No. 10, Vol. XII., and reference is also made to *Viola Watsoni* Greene, from Prince Edward Island, and another new species from British Columbia,

besides notes on the genera *Antennaria* and *Fragaria*.

From Alberta, Assiniboia and British Columbia reports are also sent in. The teachers of the Department of Public Instruction in Nova Scotia, of which Dr. A. H. MacKay is Superintendent, have been most active in recording phenological observations, from which excellent results were gathered.

The officers of the Botanical Club of Canada for the ensuing year are :

*President* : John Macoun, M.A., F.L.S., Ottawa.

*General Secretary-Treasurer* : A. H. MacKay, LL.D., Halifax.

*Secretaries for the Several Provinces* : Newfoundland, Rev. A. C. Waghorne, Bay of Islands.

Prince Edward Island, Principal John McSwain, Charlottetown.

Nova Scotia, Dr. A. H. MacKay (General Secretary-Treasurer), Halifax.

New Brunswick, George U. Hay, M.A., Ph.B., St. John.

Quebec, Professor D. P. Penhallow, B.Sc., McGill University, Montreal.

Ontario, Principal Wm. Scott, B.A., Normal School, Toronto, Toronto.

Manitoba, Rev. W. A. Burman, B.D., Winnipeg.

Assiniboia, Thomas R. Donnelly, Esq., Pheasant Forks.

Alberta, T. C. Willing, Esq., Olds, N. W. T.

Saskatchewan, Rev. C. W. Bryden, Willoughby.

British Columbia (Mainland), J. K. Henry, B.A., High School, Vancouver.

Vancouver Island, A. J. Pineo, B.A., High School, Victoria.

H. M. A.

OTTAWA, June, 1900.

#### DISCUSSION AND CORRESPONDENCE.

##### HERMAPHRODITISM AMONG THE DOCOGLOSSA.

IN a recent number of SCIENCE (ix, 914) Dr. Dall gives a brief account of the newly discovered *Bathysciadium conicum*, in the course of which he remarks that should the animal prove to be really hermaphrodite, it will be the first of the Docoglossa to exhibit this character. This statement is one of Dr. Dall's rare slips; hermaphroditism has already been recorded in the case of *Patella vulgata* (Gemmell, *Anat. Anz.*, xii, 392-4, 1896), and of *Acmæa fragilis* (Willcox, *Jen. Zeitschr.*, xxxii, 441 et seq., 1899). Gemmell believes that this condition in *Patella* is excep-