the oocyte: it rests directly upon a nodal cell, which gives off the five sheath-cells and then divides no farther, becoming the stalk-cell of the oogonium. By the time the tips of the earlier sheath-cells have reached the level of the oocyte the latter divides at its smaller end, which is directed slightly upward: the new cell, which is soon separated by a distinct wall, is the first polar body. Very soon after the nucleus of the oocyte divides again in a direction at right angles to the first division, that is, downward and slightly to one side, and the new cell is separated by a distinct wall; it is the second polar body. The new "mature" ovum soon elongates vertically, its nucleus assuming its characteristic position near the base.

The rapid enlargement of the ovum and the inward pressure of the upper ends of the sheath-cells (which have already begun to form the corona) cause the first polar body to move toward the base: on its way it sooner or later divides to form the two secondary polar bodies. This completes the formation of the three famous "wendungszellen" (which, as will be seen, are *not* formed by three successive divisions of the oocyte).

In the antheridial primordium the apical cell early becomes swollen and elongated. The nucleus then divides in a horizontal plane: and this is immediately followed by a second division in the same plane, but at right angles to the first: both divisions take place before any indication of parting walls are seen, the four resulting "resting" nuclei being located in a horizontal group at equal distances from each other in the cytoplasm of the single enlarged mother-cell. The longitudinal parting walls soon follow, thus completing the formation of the quadrant cells. This is the reduction division; and all that now follows is in the haploid phase (the "x-generation"). The further development of the antheridium shows in this species some interesting features that have not yet been noted, but I will not discuss them here, except to say that in this species the total number of spermatic filaments does not exceed sixteen, two being given off by each of the four capitula, and two from each of the four capitella. This can be clearly seen until the filaments become so long and so much intermingled as to fill the entire cavity and hide the basal cells from sight. No branching of the filaments has been observed.

The counting of the chromosomes is very difficult, owing to their small size and their crowding in the very small mitotic figures. Repeated counts, which have in most cases been independently corroborated by colleagues familiar with such work, give 15 (or 16) for the haploid and 30 (or 32) for the diploid phase.

This preliminary notice has been published for two reasons. The first of these (as has been already indicated) is that it may be of interest and service to those who desire to know more about this unique group of plants. The second is that, for the comparative study that I purpose to make, I am in need of material and of assistance in obtaining it. I am very desirous of obtaining well-fixed material of any dioecious species of *Nitella*. One species of *Chara* I have located in an adjoining county; but I should be glad to have other species. I am particularly desirous to get some good material of *Tolypella,* which I have not yet been able to find, here or elsewhere. I should be more than glad to see and study plants of either of the three remaining genera of the family, but they are very rare. Any one, therefore, who can conveniently help me to obtain well-fixed material of either of the three principal genera of the group will do me a great kindness.

It is now probably too late for securing good material in which the formation of the reproductive structures is still going on, except in the more southern regions of this country. I hope, however, that this request for assistance will be borne in mind next season by some of those living in more northern regions where such material can then be obtained.

A few words regarding its preparation. It is essential that the fixing solution be carried to the place of collection and the plants (or tips of large plants) put into it at once. Any good fixing mixture that penetrates (and therefore kills) quickly will serve. Thorough washing should be at once followed by successive alcohols up to 70 per cent.

The material should then be sent by express at my expense to me at the address given below.

ALBERT H. TUTTLE

BIOLOGICAL LABORATORY,
UNIVERSITY OF VIRGINIA,
CHARLOTTESVILLE, VA.

THE PLASTICITY SYMPOSIUM AT LAFAYETTE COLLEGE

PROGRAM of the Plasticity Symposium held at Lafayette College on October 17, Professor Harry N. Holmes, presiding.

Introduction: EUGENE C. BINGHAM, Lafayette College.

Emulsions: HARRY N. HOLMES, Oberlin College.

The plasticity of single crystals as related to their crystal structure: WHEELER P. DAVEY, General Electric Research Laboratory.

The plasticity of clay: WILDER D. BANCROFT and LEON E. JENKS, Cornell University.

The Ostwald viscometer as a consistometer: WINSLOW H. HERSCHEL, United States Bureau of Standards.

Plasticity in relation to gelatine: S. E. SHEPPARD, Eastman Kodak Company Research Laboratory.

Plasticity in relation to glue: ROBERT H. BOGUE, Portland Cement Association Research Laboratory.

Plasticity as applying to viscose and artificial silk: CHARLES S. VENABLE, The Viscose Company Research Laboratory.

Plasticity in relation to cellulose and cellulose derivatives: S. E. SHEPPARD, Eastman Kodak Company Research Laboratory.

The plasticity of starch: CARL BERGQUIST, Corn Products Refining Company Research Laboratory.

Plasticity as applied to blood and other physiologic systems: I. NEWTON KUGELMASS, Yale University Medical School.

What the paint and rubber technologist wants in plasticity measurements: FRANK G. BREYER, New Jersey Zinc Company Research Laboratory.

The plasticity of dental compounds: WALTER S. CROWELL and ALBERT SAUNDERS, JR., S. S. White Dental Company Research Laboratory.

A simple plastometer for control use with dental creams: E. MONESS and P. M. GIESY, Brooklyn Research Laboratory, E. R. Squibb and Sons.

THE ILLUMINATING ENGINEERING SOCIETY

THE program of the eighteenth annual convention of the Illuminating Engineering Society held at Briarcliff Manor, New York, from October 27 to 30, was as follows:

MONDAY, OCTOBER 27

Morning

Registration.

Afternoon

Address of Welcome, HON. FRANK L. YOUNG.

Response to Address of Welcome, L. B. MARKS.

President's Address, CLARENCE L. LAW.

General Secretary's Report, NORMAN D. MACDONALD.

Report of Committee on Progress, F. E. CADY.

Report of Committee on Motor Vehicle Lighting, DR. CLAYTON H. SHARP.

Report of Committee on Nomenclature and Standards, E. C. CRITTENDEN.

Report of Committee on Research, M. LUCKIESH.

Report of Committee on Lighting Legislation, L. B. MARKS.

TUESDAY, OCTOBER 28

Morning

Predetermination of daylight from vertical windows: H. H. HIGBIE.

Report of committee on sky brightness—a Symposium on Daylight Recording:

Records of total solar radiation intensity and their relation to daylight intensity: H. H. KIMBALL.

Records of daylight by the photoelectric cell: JAMES E. IVES.

Daylight recording by the New York Edison Company: WALTER R. BOYD.

Daylight recording by the Edison Electric Illuminating Company of Boston: H. J. BAKER.

The chromograph: H. LOGAN.

Afternoon

Session at the Boyce Thompson Institute for Plant Research—a symposium on the Effect of Light on Plant Growth:

Summary of literature on the various phases of the effect of light on plant growth: HENRY W. POPP.

Work to date at the Boyce Thompson Institute for plant research on light: JOHN M. ARTHUR.

Discussion of work to date and its applications: DR. WILLIAM CROCKER.

Influence of colored light on plant growth: SAMUEL G. HIBBEN.

Stimulation of plant growth by means of electric lighting: VICTOR A. TIEDJENS.

Tour of the institute and inspection of constant-light room in auxiliary lighted greenhouses and other equipment.

WEDNESDAY, OCTOBER 29

Morning

High intensity illumination at the McGraw-Hill Publishing Company's Plant: HAROLD V. BOZELL.

Display-case lighting in stores: J. L. STAIR and WM. FOULKS.

Daytime illumination in show windows: WARD HARRISON and WALTER STURROCK.

Periodic eye examinations in a testing laboratory: NORMAN D. MACDONALD and DR. JAMES W. SMITH.

The ocular principles in lighting: C. E. FERREE and G. RAND.

Evening

Decorative and theatrical lighting: CLAUDE BRAGDON.

Toward a closer cooperation between producer and engineer in motion picture lighting: WIARD B. IHNEN and D. W. ATWATER.

THURSDAY, OCTOBER 30

Morning

A survey of street lighting practice in the United States: J. FRANKLIN MEYER.

Some results of the Columbus street lighting tests: F. C. CALDWELL.

Traffic control systems: C. A. B. HALVORSON, JR.

Short cut design for electrical advertising: C. A. ATHERTON.

Report of Committee on Educational Courses.

Afternoon

The meaning of speed of vision: PERCY W. COBB.

The connection between astronomical and practical photometry: PROFESSOR CHAS. FABRY, University of Paris.

Glare and visibility: M. LUCKIESH and L. L. HOLLADAY.

Is a new class of membership desirable? PRESTON S. MILLAR.

The luminous efficiency of "cold light": ELLIOT Q. ADAMS.

FRIDAY, OCTOBER 31

Morning

Section development meeting under the direction of President Crittenden.