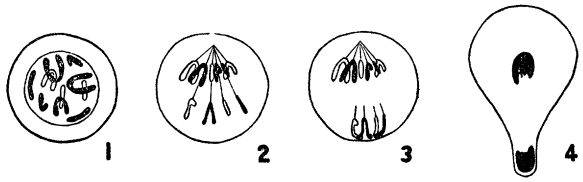
(4) No equatorial plate is formed, the chromosomes passing from their prophase positions directly on their anaphase course.

(5) The chromosomes do not divide, but are segregated bodily into two groups.



FIGS. 1–4. Diagrams representing, respectively, the prophase, early and late anaphase and telophase of the primary spermatocyte division in *Sciara coprophila*. In another species, *Sciara similans*, the two hook- or J-shaped chromosomes are replaced by V's. Actually, of course, the chromosomes lie at different levels in the cell. This is indicated very imperfectly in the figures by drawing those at a low level in outline and the others in solid black. It will be noticed that each of the four chromosomes going away from the visible pole has a counterpart or "mate" going toward the pole. The remaining two chromosomes (at the left in figures 2 and 3) are larger than any of the others, and both go regularly to the visible pole.

(6) An unequal distribution is effected, six chromosomes passing to the visible pole[3] and four going in the opposite direction. This segregation is a selective, accurate and regular process.

(7) Those going to the pole follow a convergent path and show the characteristics typical of anaphase chromosomes.

(8) The four going away from this pole are more elongate and are characteristically different in appearance from the others.

(9) They are irregularly placed in the cell and follow divergent instead of convergent paths. Like the other chromosomes they move along radii from the visible pole, but instead of approaching the pole they pass directly away from it (Figs. 2 and 3).

(10) The point of spindle fiber attachment of these four chromosomes appears to be normal—certainly it is in the case of the V-shaped ones, which are attached at the apex. But this point is posterior instead of anterior, and the chromosomes (at least the V-shaped ones) move backwards.

(11) The anterior ends of these chromosomes appear to lie free and show no indication of traction, while the posterior ends, to which the spindle fibers are attached, are usually taut and slender as if under tension.

(12) These four chromosomes continue to follow divergent paths until they approach the periphery of the cell, where their course is deflected and becomes convergent, ultimately bringing them together at a point opposite the visible pole.

[3] For an account of spermatogenesis in these flies see Metz, 1925, SCIENCE 61: 212, and papers in press.

(13) Subsequently an evagination occurs at this point and a very unequal cell division occurs, resembling the polar body formation of an egg (Fig. 4).

It will be noticed from this summary that asters and centrosomes are not visible in these cells, and hence that the mitotic figure is not known to be strictly of the monaster type. It is possible—although the evidence is all against the view—that an inconspicuous aster is present on the side opposite the visible pole. If so, the movement of the chromosomes seems to be independent of it. The feature of primary interest is that the spindle is clearly unipolar and all the chromosomes are "attached" by spindle fibers to this pole, even though some of them move away from it instead of toward it.

Those which move toward it exhibit the ordinary characteristics of behavior, while those which move away from it are reversed and otherwise give clear indications of being subject to a pulling or retarding force acting in the direction of the pole.

Without attempting a detailed discussion of the mechanics of this division it may be noted that to the writer the figures give convincing evidence of the presence of two forces acting in opposite directions, the one, represented by the spindle fibers, "pulling" toward the pole as just mentioned, the other, indicated by the movement of the four chromosomes, acting in the opposite direction and carrying these particular chromosomes bodily away from this pole. These chromosomes look as if they were anchored by flexible fibers to the pole and yet were being carried away from it by a radiating current. This is, of course, a purely descriptive statement, and not intended to suggest that such a current is actually present. The behavior of the chromosomes makes it more probable that the spindle fibers represent currents (as appears to be generally true of the astral rays, from the work of numerous observers) while the opposing force is of a different nature, possibly electrical (R. S. Lillie, and others). On the latter view the six chromosomes going to the visible pole would have the opposite electrical charge from the others, so that on them the action of the two forces would be coincident instead of antagonistic.

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SOCIETIES AND ACADEMIES

THE AMERICAN PHYSIOLOGICAL SOCIETY

THE thirty-eighth annual meeting of the American Physiological Society was held on December 28, 29 and 30 at the Western Reserve University School of Medicine, Cleveland, Ohio. The attendance was

large, practically all the laboratories in the United States and Canada being represented by one or more members. Western Reserve University and its medical school both extended unusual hospitality and courtesy so that the meeting was one of the most successful and pleasant in the history of the society.

At the annual business and council meetings the following reports were made and actions taken:

Announcement was made of the continuation of the Wm. T. Porter Fellowship for physiological research, which is administered under the auspices of the American Physiological Society. The present incumbent is Mr. W. H. Finney, who has elected the laboratory of Dr. John Tait at McGill in which to continue his investigations.

President A. J. Carlson, who represents the society on the National Research Council, made a report covering the administration of the medical fellowships. These are proving decidedly helpful to a number of the younger men who wish to get advanced training in the field of physiology.

Dr. C. W. Green and President A. J. Carlson, who represent the society on the council of the Union of American Biological Societies, reported on the completed plans for *Biological Abstracts*. As assistant editors in this undertaking the Physiological Society appointed Drs. E. N. Harvey and D. R. Hooker.

The annual editorial and financial reports of the *American Journal of Physiology* and *Physiological Reviews* showed these publications to have had a successful and profitable year. The council made definite plans to build up a permanent reserve fund for the journals. It is hoped that the income from such a fund may eventually make possible a more liberal treatment of authors in regard to illustrations and tables. Dr. D. R. Hooker was elected managing editor of the *American Journal of Physiology* for the year 1926. The following now constitute the editorial board of *Physiological Reviews* for the year 1926: William H. Howell, *chairman,* J. J. R. Macleod, W. J. Meek, D. R. Hooker, C. W. Edmunds, L. J. Henderson and E. B. Krumbhaar.

The Physiological Society voted that an invitation be extended to the International Physiological Congress to meet in America in 1929.

The officers elected for the year 1926 are: Joseph Erlanger, Washington University, St. Louis, *president;* Walter J. Meek, University of Wisconsin, *secretary;* Alexander Forbes, Harvard University, *treasurer;* C. J. Wiggers, Western Reserve University, councilman for 1926–1929; A. B. Luckhardt, councilman for 1925–1928.

The scientific program throughout was one of interest and excellence. For the first time two simultaneous sections were run. This resulted in focusing the attention on certain topics and proved a satisfactory way to place papers which otherwise could only have been read by title. There were seventy-three papers presented and thirty read by title. The demonstrations were more numerous than usual and of very great interest.

The following resolution of appreciation was passed at the closing business session:

> The American Physiological Society desires to place on record its appreciation of the many courtesies extended to it by Western Reserve University and the Western Reserve University Medical School. Its thanks are particularly due the local committee, consisting of Drs. Karsner, *chairman,* Wiggers and Rogoff. The splendid arrangements made the Cleveland meeting one of the happiest and best in recent years.

WALTER J. MEEK,
Secretary

THE AMERICAN SOCIETY FOR PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS

THE seventeenth annual meeting of the American Society for Pharmacology and Experimental Therapeutics was held at Western Reserve University Medical School and Hotel Statler, Cleveland, Ohio, on December 28, 29 and 30, 1925.

The first meeting was a joint session of the four societies which conjointly form the Federation of American Societies for Experimental Biology. Two members of the Pharmacological Society appeared on the joint program.

Sessions of the Pharmacological Society were held on the afternoon of the same day and during the two days following. A large number of interesting papers were presented which brought out a lively discussion. It would be impossible to comment on any one or more at this time without doing injustice to the authors of many others which were of equal merit.

At a business session of the society the same group of officers were reelected to serve another year:

President—Dr. John Auer, St. Louis, Mo.
Secretary—Dr. E. D. Brown, Minneapolis, Minn.
Treasurer—Dr. A. L. Tatum, Chicago, Ill.

Western Reserve University, the local committee and the students of the Medical School, are to be commended for the able manner in which they had prvoided for our comforts during our stay in Cleveland. It was unanimously conceded that their efficient service contributed materially to the success of the meeting.

E. D. BROWN,
Secretary.