

November 30, Dr. L. R. G. Crandon, Boston, Mass.; December 3, Dr. Walter F. Prince, Boston Society for Psychic Research; December 4, Professor F. C. S. Schiller, Oxford University, England; December 7, Dr. Gardner Murphy, Columbia University; December 8, Mr. Frederick Bligh Bond, British Society for Psychical Research; December 9, Mrs. Margaret Deland, American novelist; December 11, Professor Hans Driesch, president, British Society for Psychical Research. Manuscripts by Sir Arthur Conan Doyle, of England, Professor William McDougall, of Harvard University, Professor John E. Coover, of Stanford University, Mrs. Mary Austin, American novelist, and others will be read.

SMITHSONIAN Radio Talks, arranged by Mr. Austin H. Clark, are being given as follows from Station WRC, Washington: December 1, at 6:45 p. m., "Early American Animals—Elephants and Others," Mr. James W. Gidley, U. S. National Museum; December 8, at 6:45 p. m., "Shooting Stars," Dr. Willard J. Fisher, Harvard College Observatory; December 15, at 6:45 p. m., "An Observatory among the Hottentots," Dr. Charles G. Abbot, assistant secretary, Smithsonian Institution.

### UNIVERSITY AND EDUCATIONAL NOTES

TULANE UNIVERSITY will receive about \$1,000,000 by the will of the late William Ratcliffe Irby.

FIVE gifts totaling \$650,000 from members of the Vanderbilt family to be applied to the \$4,000,000 building and endowment fund being raised by Vanderbilt University for the College of Arts and Sciences and the School of Engineering have been announced. An additional gift of \$150,000 has been made by the General Education Board.

WESTERN RESERVE UNIVERSITY has received a grant of \$975,000 from the General Education Board. The sum of \$750,000 is to be used to build an institution of pathology for the school of medicine of Western Reserve and its affiliated hospitals. The board is giving the university the sum of \$75,000 a year for the next three years, beginning on January 1, 1927, for the budget of the entire school of medicine. Work will start shortly on the erection of the new pathology institute. The plans call for a four-story building, a hundred and fifty-seven feet long by fifty-five feet wide. The new institution will be under the direction of the school of medicine. It will combine the work of the department of pathology of the school with the pathology of the university hospitals, focusing the whole in one spot and under Dr. Howard T.

Karsner, professor of pathology at the school of medicine, who will head the institute.

GENERAL KALEVRAS, the governor-general of Greek Macedonia, on October 15 opened the new University of Salonika, of which Professor Sotiriades is the rector.

THE *Proceedings* of the Washington Academy of Sciences announce that Kirk Bryan and G. M. Hall, of the water resources branch of the U. S. Geological Survey, have left Washington to assume their new duties on the teaching staffs, respectively, of Harvard University and the University of Tennessee.

NORMAN W. KRASE, formerly of the department of chemistry at Yale University, has been appointed assistant professor in the department of applied chemistry at the University of Illinois.

AT the Harvard Medical School, Dr. William Carter Quinby has been promoted to be a clinical professor of genito-urinary surgery, and Dr. Karl M. Bowen to be assistant professor of psychiatry.

SIR THOMAS OLIVER has been elected to succeed Sir David Drummond as president of the University College of Medicine at Newcastle. Sir David Drummond has been a member of the council of the college for forty-seven years, and became president in 1918.

DR. G. VON HEVESY, professor of physical chemistry at the University of Freiburg, has been invited to succeed Professor Bodenstein in the chair of physical chemistry at the Technische Hochschule at Hannover.

DR. EGON SCHWEIDLER, professor of physics at the University of Innsbruck, has been called to the chair of physics at the University of Vienna.

### DISCUSSION AND CORRESPONDENCE

#### WHAT IS "METAPHASE"?

THIS question has been rather pointedly brought to the attention of the writer by the discovery of the fact that until recently Rutgers students were learning one definition of the term "metaphase" down-stairs (in the zoological laboratories) and another definition up-stairs (in the botanical laboratories). A survey of over a dozen text-books of botany and of zoology shows that such diversity is bound to occur, for the term has been variously defined by different writers, and even by the same writer at different times. The chief divergence is between the view that metaphase refers essentially to the stage during which the chromosomes split, and the view that metaphase is equivalent to the equatorial plate stage. It is a matter of

common knowledge that Strasburger (*Archiv mikroskop. Anat.* 23: 246-304. 1884) proposed the terms prophase, metaphase and anaphase, using each of them in the plural, and defining metaphases thus (p. 260): "Ich werde, im Gegensatz zu den Prophasen die mit der Längsspaltung der Segmente in der Kernplatte ablaufen, die Stadien vom beginnenden Auseinanderweichen der Tochtersegmente bis zur vollendeten Trennung und Umlagerung darstellend, als Metaphasen zusammenfassen." At least as late as the publication of the first edition of his *Lehrbuch* (1894), Strasburger defined the phases in the same manner, but somewhat later he shifted his ground and transferred the idea of separation of the chromosomes to the stage which he then called anaphase (singular), thus: "Das Stadium der Kernplatte ist die *Metaphase*. Das Auseinanderweichen der Tochterchromosomen erfolgt in der *Anaphase*." (*Lehrbuch*, neunte Auflage, 1908, p. 71.)

It is important to note that Strasburger adhered to his original definition of the prophase (or prophase) as including the longitudinal splitting, and consistently drew a sharp distinction between the splitting and the separation of chromosomes. Some more recent writers however have not hesitated to define metaphase as including the splitting, thus taking what would seem to be an unwarranted liberty, or at all events paying scant attention to the definition of the terms as proposed by their originator. Shull indeed considers that "the metaphase is a brief phase covering no more than the period of splitting of the chromosomes" (Shull, A. F., *Principles of Animal Biology*, 2nd edition, p. 67). If "metaphase" is taken to include the period of splitting of the chromosome, it is pertinent to inquire what becomes of "prophase," in view of the early appearance of doubling of the nuclear filament in some organisms. In spite of the unquestioned significance of the splitting in relation to biological theory, this overlapping of the defined fields of prophase and metaphases can lead to nothing but confusion in the mind of the student.

At least one writer has expressed the opinion that the question of terminology is unimportant, and probably there are many who agree with this view. But would it not be advisable to altogether discontinue the use of the terms, if we do not know what they mean when they are used? Allen (*SCIENCE* 64: 138-140. 1926) suggests that we use each of the four terms in the plural, and retain the original significance of "metaphase." But such usage disregards the mature judgment of the originator of the terms, as expressed in the later writings of Strasburger. Except for the use of three of the terms in the plural, the latest edition of Wilson's classic work conforms to Strasburger's later writings, while Sharp's valu-

able book also conforms to Strasburger's later definition of the terms. It would accordingly appear to be in good taste for text-book writers and others to either follow this good example or else to abandon the use of the terms.

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#### THE RECEPTION OF THE "ORIGIN OF SPECIES"

MAY I add a postscript to Professor Osborn's letter of November 12?

Professor Osborn tells us that the first edition of the *Origin of Species* (an edition, by the way, of a thousand copies) was published on November 24, 1859, and was sold out on the day of issue. I happen to have a copy of the fifth thousand (1860) whose first owner has inscribed it February 24, 1860. Over four thousand copies had been disposed of between November 24, 1859, and February 24, 1860.

E. B. TITCHENER

#### PLASTICINE MODELS

"PLASTICINE models in teaching mitosis," reported in a recent number of *SCIENCE* by Dr. Black, of Connecticut College, was helpful and I intend to profit by her suggestion.

For several years I have constructed in class demonstration models of the metaphase and anaphase stages, using wires with the plasticine, and I have found that the students grasp the idea of the polar view much more quickly than from a flat drawing. In our course in general zoology we have each student use plasticine frequently in their study of the smaller forms, such as *Paramecium*, *Hydra*, *Obelia*, etc. We find it additionally helpful in understanding the cleavage process.

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#### LOST X-RAY SPECTROMETER

In the hope that we may be able to restore a piece of lost property to its owner we would greatly appreciate if you would publish the following facts.

Recently the New York Central Railroad had an auction sale of unclaimed baggage. One of the pieces of baggage contained what appears to be a simple X-ray spectrometer with a fluorescent scale for visual observation. The purchaser brought the apparatus to us for identification, and he is willing to restore it to its owner if we can locate him.

The instrument was sent as baggage on the New York Central Railroad from Albany, N. Y., to Chicago, where it arrived at 10 A. M. on October 21,