common knowledge that Strasburger (Archiv mikroskop. Anat. *23*: 246–304. 1884) proposed the terms prophases, metaphases and anaphases, 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 prophases (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 prophases 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 valuable 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,

1924, presumably on the Twentieth Century Limited. The date makes it appear possible that the apparatus may have belonged to someone who attended the meeting of the British Association for the Advancement of Science in Toronto. The instrument was manufactured by Schall & Son, of London.

Inquiries should be directed to the undersigned who will take the necessary steps to have the instrument returned to its owner.

PAUL E. KLOPSTEG

CENTRAL SCIENTIFIC CO.,
CHICAGO, ILL.

SCIENTIFIC BOOKS

Applied Entomology—an Introductory Text-Book of Insects in their Relations to Man. By H. T. FERNALD, Ph.D. New York, McGraw-Hill Book Co., 1926, 395 pp., 388 illustrations. [Second edition.]

THE first edition of Dr. Fernald's excellent introductory text-book was published in 1921, and has been used extensively by teachers of applied entomology. There has been much progress in applied entomology in the last five years, and a text-book must keep up with the times. The result has been that, while a revision was probably desirable three years ago, it has become a necessity after five years.

It has been the obvious attempt of the author and publishers to confine the volume to about the same size, and the new edition covers only ten pages more than the first edition, and no new illustrations have been added to the 388 of the first edition. Three hundred and eighty-eight illustrations for a book of 382 text pages is a large number, but this is a subject that not only lends itself to illustration but demands illustrations. A good figure is better than three pages of description. These illustrations have been derived from all possible sources, perhaps the majority of them having been borrowed from previous publications of one kind or another; but, as Dr. Fernald says in his introduction, "Where satisfactory illustrations are already available it is questionable whether new ones are any gain, particularly when all are new to the student." While approving strongly of practically all of the illustrations used, the writer of this review regrets that in the five years since the first edition was published Dr. Fernald did not find time to substitute one of his own excellent photographs for the figure of a Tachinid fly, as published on page 329. The average student will instantly in his mind compare this figure to a house fly crushed on a window pane. Perhaps in his next edition he will accept this friendly suggestion from one of his friends and admirers.

The arrangement of the material of the book is that which is generally adopted in courses of study or lectures in most of the colleges in the country; that is to say, it follows in the main the classification of the insects rather than the classification of crops affected and other human interests. There is, for example, no grouping of the injurious Lepidopterous larvae of a certain crop, like apples, but the apple caterpillars will be found in their proper systematic place in the chapter on the Lepidoptera. In the same way the Diptera that affect human beings are found in their proper taxonomic families, and not in a chapter on medical entomology. This arrangement is quite different to that in Professor Herrick's book reviewed by the writer in SCIENCE of May 21, last. It is for the teachers themselves to say which is the best method. The writer, never having been a teacher, is not competent to judge.

In this new edition the Hymenoptera have been rearranged in accordance with more recent classificatory views, and a short chapter has been added on "Animals not insects, with which the entomologist is expected to deal." This chapter covers only five pages, and the new edition as a whole is, as we have stated, only ten pages longer than the original edition.

As a matter of fact, it is almost as impossible to keep a text-book up to date with the progress of economic entomology as it is to keep up with the year to year spread of imported pests. A text-book writer must do the best he can under these circumstances, and if his publishers will not allow him to prepare a revised edition every six months, or at least once a year, the text-book is bound to be always a little bit behind the time. But then the teacher can refer his students to the latest state or government bulletin or leaflet, and so relieve himself of the possible criticism that he does not know everything that is to be known about his subject. Dr. Fernald himself is an up-to-date man and a thoroughly good teacher. He was in his earlier days more broadly trained in zoology and general biology than most of the present teachers of entomology. He was associated for many years at the Massachusetts Agricultural College with his father, the late Charles Henry Fernald, an inspiring teacher. Between them the Fernalds have trained many of the strongest of the workers in applied entomology of to-day.

The entomologists accept with respect everything that comes from the present author, and doubtless this new edition of his text-book of applied entomology will not only be found to be widely useful, but the publishers will remain in a contented frame of mind and will back him up by issuing the frequent revisions which will doubtless be necessary on account of the rapid march of our fight against injurious insects.

L. O. HOWARD