pairs has been encountered, and none, so far, with 20 pairs. Among approximately 275 plants examined, 12 were apparently natural hybrids. During meiosis these plants exhibited chromosome behavior typical of hybrids.

Of forms usually referred to *Sphaeralcea* but not belonging to the subgenus *Eusphaeralcea,* the writer finds that *S. rivularis* (Doug.) Torrey has 33 pairs of chromosomes and that *S. umbellata* (Cav.) Don and *S. abutiloides* (L.) Don, have 17 pairs. Six species and 2 subspecies of the related genus *Malvastrum* (subgenus *Malacothamnus*) were found to have 17 pairs of chromosomes.

The subgenus *Eusphaeralcea* is unique in that it presents the lowest basal chromosome number and the first highly polyploid group detected in the Malvaceae. In view of the occurrence of several 5-paired species, Davie's suggestion[2] that 7 is the ancestral basic number for this family can hardly be accepted.

The chromosome number of the California species of *Malvastrum* (the genus *Malacothamnus* of Greene) clearly separates this group from *Sphaeralcea.* The chromosome numbers, considered in relation to the morphological evidence,[3] indicate that Greene's genus *Iliamna,* represented by *S. rivularis,* Zuccarini's genus *Meliphlea,* represented by *S. umbellata,* and Desvaux's genus *Phymosia,* represented by *S. abutiloides,* may be well founded.

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SCIENTIFIC MEN AND THE NEWSPAPERS

I LEARN from a letter which my friend Howard W. Blakeslee, of the Associated Press, publishes in SCIENCE for June 14, 1935 (p. 591) that scientists should "speak the language of the newspapers" and that they should be more emotional. This implies that newspapers are thoroughly satisfactory in their methods of appeal.

A community gets exactly the kind of a newspaper that it can digest—no better, no worse. Editors are aware of this and present the news accordingly. If their readers all wore Phi Beta Kappa keys they would remold their policies.

I see no particular reason why the scientist should become emotional and talk in the vulgate because the newspapers will then give his utterances more space.

It is the business of the journalist and not of the scientist to present the discoveries of the laboratory so that the many will understand. But heaven forbid that the popularizer should rely too much on emotion. We have passed the stage when gasping wonder can pass for popularization. We need more journalists trained in science and not more scientists with a flair for popular writing.

Since newspapers are published to meet the needs of the people by men who know their business it follows that it is the school and the college that are at fault. If we had a public adequately educated in science it would not be necessary to explain the meaning of elementary technical terms and principles or to resort to the literary devices of the primary school reader to drive home the facts about a new discovery. The question that Mr. Blakeslee raises is one that must be solved not by laboratory workers or newspaper editors but by the faculties of our colleges and universities. To think that at this late day it is possible to print in only one American newspaper the simple equation that expresses the mass-energy relation of Einstein in a popular article on atomic physics with the realization that it will be understood by enough readers! If an educated Greek in the time of Pericles could discuss geometry at the dinner table it must have been because science was taught as a cultural subject. Give us high-school and college graduates with a broad knowledge of science and the newspapers will respond to their demands rapidly enough.

WALDEMAR KAEMPFFERT,
Science Editor, The New York Times

SCIENTIFIC BOOKS

QUANTUM MECHANICS

Principles of Quantum Mechanics. By P. A. M. DIRAC. Second Edition. Oxford, Clarendon Press. 1935. xi + 300 pp. $6.00.

THE first edition of this book (1930) contained an absolutely reliable and authentic account of the foundations of quantum dynamics, its main methods and results. Naturally, it soon became an indispensable aid both to independent workers in this field and to advanced students preparing for independent work. The systematic use of the symbolic transformation theory, largely developed by Dirac himself, made the presentation in the larger part of the book concise, elegant and simple. It had, however, one serious drawback: the highly abstract character of the introductory chapters. In the first place, the notion of observables (see below) was introduced in a manner so detached from experiment that the reader may have remained unconvinced that their measurement is in all cases possible. In the second place, a rather

[2] J. H. Davie, *Jour. Genetics,* 28: 33–67, 1933.
[3] T. H. Kearney, *Univ. Calif. Publ. Bot.,* 19: No. 1, in press.