be easier not to seek precision—not to "bother," even about "short" and "single" hyphens? And yet, as any reader of these musings who knows the work of Korzybski[4] will already have reminded himself, "Hyphens allow us in principle to make compound words structurally similar to the non-elementalistic world we happen to live in."

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WEATHERBY in a recent note[1] says that "The English language is rapidly acquiring a facility in forming compound words comparable to that possessed by ancient Greek and contemporary German." It should not be difficult to convince writers who wish to be understood that they might follow better models than classical Greek, which has now become a "dead" language, or modern German, which has never been known especially favorably either for clarity or ease of reading. Moreover, I question whether the language really *is* changing. *Unit modifiers* always have been used, especially by scientists who were poorer writers than researchers. What is now happening is that we are losing our critical faculties in writing English; the result is that technical writing is full of errors that any one well grounded in the proper use of English would notice immediately. Weatherby cites a few examples of "present-day" English to prove that the language is changing; he is merely proving that it is possible to write poorly and "get away" with it. For instance, he says that thirty years ago no one would have put forth such a title as 'Cost Analysis of Scholarly Periodical Printing." It is still true that no one would write such a title if he hoped to be understood perfectly. Does that title mean, as Weatherby suggests, "An Analysis of the Cost of Printing Scholarly Periodicals?" Perhaps so, but rather it seems to mean "An Analysis of the Cost of Printing Periodicals Scholarly" —a cost (one feels sure after reading much of the current scientific balderdash) that would be much more than that of printing scholarly periodicals. Maybe Mr. Weatherby is right, and in the somedaydistantfuture we shall all be compoundedlyunitmodifying, but if this mentalepidemicurge he speaks of ever truly possesses us, Heaven help our desiringtounderstandusreaders.

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[4] A. Korzybski, "Science and Sanity," Science Press Printing Company, pp. 31, 243; "General Semantics," Arrow Editions, p. 34.

[1] SCIENCE, May 5, 1939, p. 413.

GRANTED that at best hyphenation is a bothersome subject, your correspondent, H. J. Conn, editor of *Stain Technology,* does not seem to be aware of two common rules which simplify the matter somewhat. One is the rule followed by the Chicago University Press and many other people: "Hyphenate adjectival phrases formed of two or more words when preceding the nouns modified, where ambiguity might result." Mr. Conn's phrase "safranin-orange G-crystal violet technic" would become "safranin orange-G crystal-violet technic." The other rule from the same source: "Where one of the components of a compound adjective contains more than one word, an en dash should be used in place of a hyphen." This would make "the Great Northern–Northern Pacific railway system" a manageable term and could be applied also to the "safranin" phrase if preferred.

Mr. Conn has further complicated his problem by not having discovered that the current unabridged Webster (1935) omits the hyphen after non- as a prefix and has made one word of "sporeformer." "Nonsporeformer" is a good example of the very trend Mr. Conn has been desiring.

MARJORIE FULLER
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THE TECHNOLOGY REVIEW

VALUE OF CHARACTERS OF THE UNDEVELOPED SHOOT IN IDENTIFYING PLANTS

IN many cases foresters and range workers find they must identify woody plants such as forest trees or shrubs in winter condition. In range surveys or quadrat studies it often becomes necessary to ascertain the name of a grass in the early season before the appearance of the inflorescence. Various keys and description are available for this purpose, but very often a positive specific identification can not be made, due to the very nature of the material. Where the plant can be studied again later in the season, this difficulty is not serious. Often this later check can not be carried out. It is the purpose of this article to call attention to the characters of the undeveloped shoot as an aid to the immediate identification of such material.

The leaves and flowers inside the winter buds of woody plants can be so studied. In grasses information gained by dissecting out the small inflorescence which lies in the sheath tube about at ground level may allow for a more definite determination.

The technique of this dissection is not intricate. In woody plants the bud scales can be removed and the shoot exposed for study. In order to have both hands

free the writer uses a dissecting microscope equipped with a foot-focussing device. This machine was described in SCIENCE[1] and is now for sale by the Spencer Lens Company of Buffalo, N. Y. However, even with a good hand lens leaf characters, such as vernation, general shape, type of base and apex, kind of margin and venation, can usually be made out. In addition, the buds may inclose flowers far enough along so that floral characters such as number and type of sepals, petals, stamens and pistils can be ascertained. In many cases unknown species can actually be run through the keys of manuals based on floral and leaf characters.

In grasses the sheath tube of a large vigorous culm can be split longitudinally and the incipient inflorescence exposed. The type of inflorescence can be determined, in most cases the florets of a spikelet can be counted and many of their characters can be made out.

In many instances these undeveloped, concealed characters in woody plants and grasses are definite enough to actually allow for identifying the plant in ordinary manuals. However, in most cases their greatest value will probably be in helping decide between several possibilities or in allowing for a positive check on what otherwise might be an uncertain identification.

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CYSTINE AND METHIONINE REQUIREMENTS FOR GROWTH AND LACTATION

RECENT studies have shown that the sulfur-containing amino acids promote lactation in rats when fed with rations in which the protein is derived from casein or alfalfa leaf meal. Since these proteins are deficient for growth in their combined contents of cystine and methionine, it does not necessarily follow that cystine and methionine should be regarded as lactation stimulants merely because they promote lactation when fed with these proteins.

We have recently determined the growth and lactation responses in rats fed alfalfa leaf meal proteins supplemented with various levels of cystine. We have also determined the growth and lactation responses to cystine and methionine when fed with peanut meal protein. Cystine does not significantly improve the growth- and lactation-promoting properties of peanut meal protein. Methionine improves both properties. Our results indicate that the combined requirements for cystine and methionine and the conditions governing the interchangeability of cystine and methionine are of essentially similar orders for growth and lactation.

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SCIENTIFIC BOOKS

THE THEORY OF NUMBERS

An Introduction to the Theory of Numbers. By G. H. HARDY and E. M. WRIGHT. The Oxford University Press. Octavo: xvi + 403 pp. $8.00.

MATHEMATICS undergoes continuous revitalization through two main currents of thought: the one flowing from the inexhaustible supply of simple conundrums concerning the positive integers; the other flowing out of new conceptual ideas necessary for the comprehension of natural laws. For example, to quote Cajori,[1] "in the study of the right triangle there arose questions of puzzling subtlety. Thus, given a number equal to the side of an isosceles right triangle, to find the number the hypotenuse is equal to. . . . The problem may have been attacked again and again. . . . In some such manner arose the theory of irrational quantities"—as a byproduct of the attempt to solve an arithmetic problem without rational solution. Similarly the imposing edifice of Euclidean geometry grew out of the physical concepts based on exact spatial measurement.

In the fascinating volume by G. H. Hardy and E. M. Wright under review here we find a remarkably happy and varied selection of important arithmetic problems treated with consummate clarity and distinction. The book will appeal to the many non-professional devotees of number theory and to professional mathematicians generally. As a basis for an attractive and profitable first course on the theory of numbers one could not find a better text. The title is the same as that of a well-known volume by our great American number-theorist, L. E. Dickson. But there is little overlapping, and no real confusion will be caused.

It will enhance the value of the work to mathematicians that one of the two distinguished authors (Hardy) has not only contributed greatly to the advancement of the subject on the side of the so-called "analytic theory of numbers" but also has long been one of the most inspiring mathematical figures in the world. We recall too his close association with the short-lived genius, Ramanujan of India, with the lamented Landau of Göttingen and with his remarkably gifted colleague Littlewood at Cambridge, all of whom have done so much for number theory.

Although the pages of the book treat a large variety

[1] H. D. Harrington and R. W. Poulter, SCIENCE, 79: 368–369, April 20, 1934.

[1] "History of Mathematics," second edition, pp. 56–57.