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.