can malts are longer grown. In the June malt of India the plumule is less than one third the length of the kernel. It seems inconceivable that the normal changes of endosperm would take place with a subactive embryo, as the starch-converting enzymes are secreted by the epithelial layer of the scutellum. The conversion is, however, quite good. A comparison of the June and December malts is given below.

	June	December
Starch per cent.	43.07	39.69
Reducing sugars as invert per cent.	2.64	3.31
Reducing sugars as maltose per cent.	4.83	5.89
Sucrose per cent.	3.71	2.72
Diastatic capacity on Lintner's scale	51.10	56.90

The explanation of this behavior must rest in the fact that the optimum temperature for the germination of barley is fairly low and that its germination vigor decreases rapidly at temperatures higher than the optimum. The enzyme secretion must not be retarded to the same extent as growth. Maltsters in India believe that the local barleys do not germinate well until the winter season approaches and that the viability begins to wane by May. In June the percentage of germination is much reduced. Tests made in Washington from a sample of the barley which germinated weakly in India the previous June show its vitality to be unimpaired when grown at temperatures such as exist in India in December.

If saturated burlap were used to lower the temperature of the malting rooms and increase the humidity in India, it is probable that the June malt would behave more nearly like that of December.

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A FABLE

THE following fable was found in an old palimpsest of obscure origin, but probably derived from both English and French sources. A critical study suggests that the work of the original author has been supplemented by the copyists, especially in the addition of adjectives. I transcribe it, however, as it came to me. Since truth is eternal, the fable may even yet have a bearing on modern speculation.

The Genealogy of Theory

A Fable

Suggestion, an eager Boy, met a winsome Maid, Credulity by name, and begat Plausibility, an enchantress.

She mated with a chance acquaintance, Coincidence, and bore him Belief, a stalwart Youth who set out to conquer the World.

But across his shield was blazoned the bar sinister. Reason had not consecrated either union.

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AMANITA MUSCARIA IN MAINE

Amanita muscaria in the coastal woods of eastern Maine is frequently found with pitted upper surface and indented edges, the pits and indentations bearing tooth marks apparently of rodents. The common red squirrel has twice been seen by the writer, holding bits of this mushroom in his fore paws and eating them. A friend, a geologist, says that he has a number of times observed the red squirrel's habit of eating this mushroom. Are these observations of any interest to students of mushroom poisoning?

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SCIENTIFIC BOOKS

A Text-book of General Botany. By WILLIAM H. BROWN. Ginn & Company, pp. xi + 484, 1925.

Laboratory Botany. By WILLIAM H. BROWN. Ginn & Company, pp. xiv + 168, 1925.

ON opening this most recent of the textbooks of botany one is surprised to find the author writing from a university in the tropics, the University of the Philippines. One's interest is at once aroused as to how the subject will be presented by one teaching in a tropical country, and whether a text so written is applicable to classes in temperate zone countries. We will let the book answer for itself.

There are two outstanding features in Professor Brown's text: first, its universality in the selection and presentation of subject-matter, and second, its excellent illustrations.

The first is the natural outgrowth of many unsuccessful attempts to adapt texts written by botanists in temperate zone countries for temperate zone students, for the use of students in tropical countries. The author states in his preface: "In this book an attempt has been made to treat botany from the standpoint of general principles rather than as illustrated by special plants used as types, and from a world point of view rather than from a local one." The author proceeds to carry out this purpose by discussing each topic in a general way; defining, describing and locating, whether it be a sieve tube or a starch grain, without mentioning what specific plants may be used to illustrate the point under discussion. This method gives the experienced instructor entire freedom to choose his sieve tubes from squash or sugar cane and his starch grains from potato or rice, hence meets the needs of the teacher in temperate and in tropical countries alike. The beginning instructor, on the other hand, will be aided by the complete labeling, including the name of plant used, of the many cuts used to illustrate the points discussed in the text. This feature will appeal to many botanists and is needed to counteract the seeming tendency to illustrate all botanical principles by the use of a few familiar plants.

The author emphasizes the similarity between botanical features in temperate zones and in the tropics and furthers his idea of the universal viewpoint in botany by his method of presenting such topics as leaf fall and annual rings connected with growth. He presents them as being the effects of adverse conditions rather than as due to a winter season. The necessity of stressing this method of presentation is easily seen when one remembers that even some recent textbooks of botany state specifically or leave the inference that all trees have annual rings of growth.

The illustrations, of which there are 518, are the most attractive feature of the book and are its most valuable contribution to the teaching of botany. Done directly under the author's supervision by assistants racially and temperamentally fitted for the most painstaking accuracy, they represent an enormous amount of patient work and study. And the result is worth the effort! The text is unique in the large number of original drawings. Of the 465 cuts (there are 53 half-tones) only 28 are redrawn wholly or in part from the works of others. The drawings certainly ought to be "an inspiration to the student and an incentive for him to make good ones himself." Considerably over half of the species used for illustrating various principles are of universal distribution, available in both temperate and tropical countries.

The plan of the book follows even more closely than recent texts the idea of the inseparability of structure and function. After a chapter on the plant and one on the cell, the leaf is discussed and, in the same chapter, such physiological topics as hydration, photosynthesis, respiration and transpiration. This is followed by a chapter on the stem, including responses, movement of materials and growth, and a chapter on the root, including absorption, growth and a discussion of soils. Each chapter ends with a discussion of specialized leaves, stems and roots, respectively. Chapters on the flower, heredity and evolution, and the fruit and seed follow; and under these headings the functions of pollination, digestion and germination are taken up. The divisions of plants, discussed under the headings Thallophyta, Bryophyta, Pteridophyta and Spermatophyta, cover only 128 pages, the greater part of the book being devoted to the structure and functioning of the higher green plants. The author believes that the greater importance of the higher plants in the students' environment justifies a greater amount of space being devoted to them. A final chapter on plant geography covers the various types of vegetation of the world as determined by environment, such as tropical rain forests, cold temperate deciduous forests, tundra, deserts, fresh-water vegetation and others. Several pages are devoted to succession and climax vegetation.

Controversial matter is avoided, but several of the newer phases of botany are considered, such as colloids, hydration and the effect of light on growth. Certain points are discussed somewhat more fully than is usually the case in elementary texts; as movement of stomates, trichomes, phyllotaxy, arrangement of mechanical tissues, soils, Mendelism, plant breeding, evolution and the kinds of food stored in plants.

Care is taken to avoid using an undefined term, hence the first part of the text may seem cumbersome because of the definitions of terms given as the discussion proceeds. These terms are later however more fully explained in their proper place.

The laboratory botany follows the text closely and gives a series of 185 exercises, headed drawing, experiment, observation; or combinations of these depending on what is required in the exercise. The directions in the early exercises are very full, but as the student gains familiarity with the subject they are shortened. The author prefers that the student secure information not obtainable by observation of the specimen or the experiment from the manual rather than from the instructor. Likewise few questions are asked of the student, the author believing that "too many questions hinder rather than encourage independent thought and observation." The exercises, as is the case with the text, are written in a general way so as to be "applicable to average plants rather than to a particular species," thus furthering the author's emphasis on general principles of botany. The two books are intended to cover a year's work with beginning classes in botany but have been used for semester classes by omitting many of the laboratory exercises and portions of the text. Even in a year's course some of the material may be omitted at the discretion of the instructor. This applies particularly to the lower forms of plants.

Representing as it does the views of another botanist as to how the subject should be taught, the book is likely to be of interest and value to those engaged in teaching.

The publishers deserve credit for the excellent work done in reproducing the line drawings and the halftones.

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THE POSSIBLE ORIGIN OF THE ANGIOSPERMS

DR. H. HAMSHAW THOMAS, lecturer in botany of Downing College, Cambridge, has just published an important paper under the caption: "The Caytoniales, a new group of angiospermous plants from the Jurassic rocks of Yorkshire."[1] The origin of the

[1] Phil. Trans. Royal Soc. London, Series B, vol. 213, pp. 299–363, pls. 11–15, Feb. 21, 1925.