THE following promotions have been made in the department of physics of the University of California: From assistant to associate professor, Frederick S. Brackett and Leonard B. Loeb; from instructor to assistant professor, J. J. Hopfield and V. F. Lenzen.

DR. WOLFGANG KOEHLER, professor of psychology in the University of Berlin, as has already been stated in SCIENCE, has been appointed visiting professor of psychology in Harvard University for the first semester of the year 1925–26. He, however, remains during this period visiting professor in Clark University, where he has been since February of this year.

DR. HAROLD A. WILSON, F.R.S., professor of natural philosophy in the University of Glasgow, has accepted reappointment to the professorship of physics which he held at the Rice Institute from 1912 to 1924 inclusive.

DISCUSSION AND CORRESPONDENCE

PHOTOGRAPHING THE SHADOW BANDS

PREVIOUS to the recent solar eclipse great interest was displayed in the problem of photographing the shadow bands. The conditions were unusually favorable, and very many persons must have made attempts to photograph the bands. It was therefore to be expected that many such photographs would be taken and that some of them would find their way into the newspapers and magazines. However, up to the present moment I have neither seen such pictures nor seen in print any mention of their having been secured. It may therefore be of interest to know that a photograph of the shadow bands was secured by a photographer of this locality.

The negative is four by five inches in size and shows in the foreground five shadow bands on a plane snow surface. Unfortunately, the exposure was too short and the picture is therefore "thin." It could scarcely be reproduced for magazine or newspaper printing, but photographic copies are sufficiently clear to be of scientific interest. The only object in the picture serving to fix the size is a footprint in the snow. It is therefore difficult to estimate the size of the bands. Each shadow appears to be about eighteen inches long, three or four inches wide and separated from its neighbor by about ten or twelve inches. This agrees with the observations made by the writer at a point not much more than a mile from the photographer's station.

In all characteristics the photographs appear to represent wave phenomena. In length, width, relative position and shading, the shadows in the picture exactly imitate a water surface rippled by the wind. In fact, in looking at the picture one can not escape the feeling that the surface of the snow is thrown up in waves, so perfect is the illusion of wave form. This agrees well with the suggestion that the shadow bands are caused by the light shining through a rippling surface of contact between two layers of air of differing density. This is supported by the observation made by the writer that the bands were moving in the same direction as the lower air currents (northeastward) and at approximately the velocity of the air movements.

The gentleman who made the photograph is Mr. Glen Lowry, a professional photographer, of Stroudsburg, Pa. He kindly supplies the following photographic data:

Location, three miles north of Port Jervis, N. Y., on road leading to Huguenot. Graflex camera, Eastman super-speed film, F 4.5 aperture, 1/1000 second exposure, exposure made just one minute after close of totality. The exposure might well have been five to ten times longer.

W. L. EIKENBERRY

STATE NORMAL SCHOOL
EAST STROUDSBURG, PA.

THE GERMINATION OF BARLEY UNDER LATE SPRING MALTING CONDITIONS IN INDIA

THE malt houses of India are not equipped with the elaborate control apparatus found in many of our American plants. The summers are very hot and no malting is done in midsummer. To secure a longer malting season malt houses have been established in the hills at some elevation. I visited one of these at the time the last malt of the spring was on the floor. The temperature at this season is high and the air dry. Some peculiarities of germination under these conditions seem worthy of noting.

The barley is a very fine grade of grain with an unusual uniformity of development and soundness. In midwinter practically perfect germination is secured. The best malting conditions probably obtain in December. At this time the temperature of the malting floor is about 60° F. and the air sufficiently humid to grow the grain with no additional water after the soak. In June, however, when the last malting is done, the floor is actually hot to the touch. Daily sprinklings are given the grain. Yet at this time with high temperature (74° F.) the grain remains on the floor for twelve days or longer. Under fast malting conditions in the United States the plumules are often protruding in five or six days. The plumule of the high temperature malt of India has hardly started at the end of twelve days. The Royal Pilsen malt of Austria, which is commonly regarded as the world's best, is characterized by a growth of plumule two thirds the length of the grain in practically every kernel. The plumules of Ameri-

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.

H. V. HARLAN

U. S. DEPARTMENT OF AGRICULTURE

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.

BAILEY WILLIS

STANFORD UNIVERSITY

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?

MAYNARD M. METCALF

NATIONAL RESEARCH COUNCIL

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.