great (less than 35°), and one must be careful not to increase the moment of inertia of the stick by the addition of a heavy cup at C. The prop PR should be so placed that it does not impart an upward motion to AB when struck.

The motion offers an interesting problem of analysis to the student of mechanics. In the case of a uniform stick where the center of percussion for axis A is at P (AP = 2/3 AB) the acceleration of P along its circular path is g cos θ; therefore the tangential acceleration of the end B is 3/2 g cos θ. The *vertical* component V of the end B is 3/2 $\cos^2\theta$; hence when $\cos^2\theta$ is greater than 2/3 the vertical component of end B is greater than *g*. This condition is satisfied for all angles θ less than 35°, in which case a ball placed at B will not fall so rapidly as the stick and the ball may be made to plummet directly into the cup. Obviously, in the case of a tall chimney, the heavy construction of the lower portions brings the center of percussion P closer to the base and exaggerates the effect which is demonstrated in this simple case of the rotating stick.

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ORIENTAL PLANE TREE DISEASE

IN a study of the Hyphomycetes in North America[1] I called attention to a species of *Acrosporium* (Oidium) attacking the leaves of *Platanus orientalis* L. in Pittsburgh. Without specific name, the following description was given: Amphigenous, white, effused, forming a dense stratum on the leaf; mycelium branched, interwoven; sporophores erect, single, septate; spores smooth, ellipsoid, granular within, 25–27 × 40–50 μ.

During the past three years, I have collected the same plant on the same host in Philadelphia, Atlantic City and near Gettysburg. The plant attacks both the young and the older leaves. The leaves are disfigured and made unsightly. A white floccose stratum covering the entire leaf or part of the leaf readily distinguishes the fungus. When the plant is once known it can be recognized at a distance of several hundred feet. It may become a dangerous shade tree disease. The fungus belongs to the genus containing the conidial stages of the Erysiphaceae. I have not been able to find the perfect stage of this particular plant.

Mr. John A. Stevenson, mycologist in the Department of Agriculture, Washington, D. C., to whom specimens were sent, has compared the specimens with material in the Washington Herbarium. It seems to agree with a plant described from Louisiana on *Quercus* and also from West Virginia on *Platanus* under the name *Oidium obductum* Ellis and Langlois.[2] Mr. Stevenson also calls attention to the fact that Salmon combines *Oidium obductum* with *Phyllactinia corylea*, as variety *angulata*.[3]

The name of this fungus is still uncertain. Specimens of the conidial stage to determine its distribution and of the perfect stage, if found, will be gladly received.

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PIGMENTS OF THE OAT COLEOPTILE

THE light-growth and phototropic responses of *Avena sativa* coleoptiles are evoked almost exclusively by wave-lengths below 550 mμ.[1,2] The spectral sensitivity rises sharply at about 500 mμ and appears to possess at least two maxima, at 430–440 mμ and at 465–480 mμ.[2] It is probable that light influences initially a pigment, the absorption spectrum of which exhibits similar properties. This type of spectrum is characteristic of carotenoids.

In oat seedlings of the "Victory" strain (Siegeshafer), grown in darkness, the first leaf is yellow, due to carotenoid pigments, while the coleoptile appears to be quite colorless. Ethanol or ethanol-ether extracts of several hundred coleoptiles, however, are light yellow. Their pigments, partitioned between 90 per cent. methanol and benzine, separate into the familiar epiphasic carotene and hypophasic xanthophyll fractions. Estimated colorimetrically, from 0.5 to 0.9 γ of xanthophyll, and from one seventh to one third as much carotene, were obtained per 100 coleoptiles, 1.5 to 3 cm in length.

In groups of seedlings which had been exposed intermittently to red light, chlorophyll developed in the first leaf. In these cases small quantities of chlorophyll were found also in the coleoptile.

The *Avena* coleoptile therefore possesses the same pigments as the leaf, though in much lower concentrations. Its photosensitive system, like those of all other plant and animal organs so far investigated, is associated with the presence of carotenoids.

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FLOOD CONTROL IN CONNECTICUT

MUCH serious thought has been given to the matter of preventing destruction by floods in the Connecticut Valley, especially since the bitter experience of 1936. One plan of control, a study of which has been di-

[1] *Mycologia*, 5: 58–59, 1913.
[2] *Jour. Myc.*, 6: 35, 1890.
[3] *Ann. Mycol.*, 3: 493–505, 1905.
[1] A. H. Blaauw, *Rec. trav. bot. néerl.*, 5: 209, 1909.
[2] F. Bachmann and F. Bergann, *Planta*, 10: 744, 1930; E. S. Johnston, *Smithsonian Misc. Collec.*, 92: 11, 1934; C. Haig, *Biol. Bull.*, 69: 305, 1935.

rected by Colonel Mason J. Young, of the Army Engineers, is of particular interest in that it looks down stream for relief and not to the hills, as is usual.

Due to the work of glaciers in the region of Middletown the Connecticut River has left its former channel and now follows for a distance another course never intended for its use. This results in three bad features: (1) A lengthened course; (2) an impeding curve; (3) the constricted channel, the "Narrows." These act as a veritable dam at this point in the river, causing the water to back up at Middletown, Portland, Hartford and even to Windsor Locks, a distance up stream of some twenty-five miles. Throughout most of this length the river had a fall in the recent flood of less than three inches per mile, while at the place where it is retarded it had a potential fall of more than three feet per mile.

It seems a simple thing, therefore, both in theory and in the execution to restore the river to its ancient channel with the expected results of, first, a quicker disposition of all flood waters, second, some five feet less flood at Hartford and, third, the saving of millions of dollars of property from destruction.

It is not our privilege here to discuss other plans for flood control, some of which certainly have their place in any scheme for protection. Some of these projects are expensive in view of the benefits expected; many of them are of decreasing effectiveness with increasing flood height; most of them carry with them hazards that, beyond a certain point, may add to the destructiveness of the flood. A spillway such as we contemplate would be the more effective the greater the flood. Floods can not occur when there is adequate drainage down stream.

It is believed that the restoration of the river to its proper course could be accomplished most expediently by opening up a mere trench east of the Portland Hill, where indeed the river itself came within a couple of miles of achieving the desired results; then we would leave the main excavating work to the flooding waters themselves. One good flood—and the water rises to twenty feet at Hartford three out of every four years—might thus be turned to a useful purpose and to its own disadvantage.

A better appreciation of the setting of this project may be had from an examination of the Middletown Quadrangle of the United States Geological Survey.

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SCIENTIFIC BOOKS

A SCIENTIFIC ENCYCLOPEDIA

Hutchinson's Technical and Scientific Encyclopaedia. Edited by C. F. TWENEY and I. P. SHIRSHOV. Macmillan Company, New York. No date (published during 1935–36), 4 volumes, 2468 pages.

A MONTH'S use of this four-volume compendium has left the reviewer with mingled feelings: chiefly those of gratification that so useful a work is now available and of awe at the size of the completed task, but also of regret at the numerous minor faults which are present.

Before deciding on the worth of such a work, one must first of all decide as to what needs it is to satisfy and as to what sort of people will use it most. In covering a field as broad as the whole of modern technology and science, many choices must be made between different methods of exposition, and many subjects must be omitted completely. A work which is useful as an expanded dictionary, giving mostly definitions and short descriptions in semi-technical language and serving as a starting point for further reading in more detailed texts, will serve a quite different purpose than an encyclopedia for the general layman, giving the fundamental facts and principles of each subject in simple language. Choices of this sort had naturally to be made by the editors; and it is only fair to them, and to the reader, to judge their work from the point of view of their decisions.

Ordinarily, the editor's purpose could be determined from the preface; but in the present case there is no preface, so their purpose must be ascertained from the text itself. In the reviewer's judgment, the Encyclopedia is really an expanded dictionary of technology and science, primarily defining and describing technical terms and usages, and only secondarily elucidating general concepts. As such, it is an excellent and much-needed contribution and should be extremely useful to librarians and to scientific and technical workers wishing to study in fields somewhat outside their own.

The selection of material has been almost wholly from the point of view of the practical engineer; very little pure science or scientific theory is included. For instance, the article on sedimentary rocks takes up but 14 lines; and there is no mention of the polar front theory of meteorology. The whole subject of atomic theory is dismissed in the following surprising manner: Under the item "Quantum Theory" is simply the reference "See Wave Mechanics"; and there is no item "Wave Mechanics." Those theoretical discussions which do appear are rather fragmentary, and, in a few cases (under Pyrometers, for instance), are misleading.