

prison tremendous quantities of soil and keep it dry, when plenty of water is available. Roots, stems of plants, and other organic objects act as innumerable air-shafts to let this trapped air escape and permit down-soaking water to seep in behind it. Very little attention has as yet been paid to this function of roots and stems, said Dr. Lowdermilk, and a great deal of careful study is therefore needed to understand it and take practical advantage of it.

Upstream Engineering Needed

Engineers no less than biologists and earth scientists must look upstream, declared Dr. Cooke, himself an engineer. Largely because of immediate business demands, but partly through lack of vision, engineers have always concentrated on enormous works on the big waters and they have let the little waters go unheeded and untamed. This policy, quite understandable but none the less dangerous, has contributed to historic flood disasters. Engineers have frantically thrown up higher and higher levees—and the great rivers have eventually met and broken all their challenges.

Now engineers are realizing more and more the necessity of taming the little waters before they become too great to tame. Engineering begins to look upstream.

Business for Health

Such widespread attack on the origins of the problem that masters all human effort if permitted to concentrate in the great valleys must involve a different economic outlook from that which has always governed engineers and their private employers, Dr. Cooke pointed out. Businessmen say they are "not in business for their health," and they are justified in saying so. But the community at large is not in business for anything else but its health, and for this reason intangible values must be taken into account when the cost of a given large-scale project in control engineering is being reckoned. Engineers must become accustomed to looking out over a terrain that is nation-wide, and to seeing things in the large. Piecemeal engineering is doomed to be beaten piecemeal by the unbridled forces of nature. But engineering conceived and executed in regional and national terms has a chance to conquer.

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Half a million acres of Arkansas land have been added to the Ozark National Forest.



America's Own

TODAY is the day when, according to the tradition of the Fathers of this Republic, the American eagle screams his proudest. The bald eagle, chosen by our early statesmen to be our national crest, is a truly noble-appearing bird, with his stern, piercing eye glancing out from a pure white head. For the term "bald" is a puzzling misnomer; the only explanation that can be guessed is that it is due to these snowy feathers, a feature unique among eagles. The bald eagle's tail also is white, but the rest of the body and the wings are clothed with feathers so dark brown that they are sometimes said to be black.

Another eagle found in America, which has by inadvertence replaced the bald eagle on at least one American coin, the half-dollar, is the golden eagle. He is an even larger bird than the bald eagle, for his wing-spread averages seven feet or more, and the spread of the bald eagle is a little less than this, as a rule. This eagle also is brown, but his tail is white-and-black instead of all white, and the feathers on the back of his head and neck have a yellowish tinge, which accounts for his name. The outstanding mark of distinction between the two species, however, is the "trousered" leg of the golden eagle, as contrasted with the total absence of feathers on the shank of the bald. Only the young of the bald eagle have these leg-feathers, and this sometimes causes juvenile bald eagles to be mistaken for the golden species.

Since we have settled upon an eagle to be our own bird, it is perhaps more appropriate for us to take the bald eagle, since it is strictly American in its habitat, whereas the golden eagle is known from Europe and Asia as well as from this continent.

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ECOLOGY

Shade of Trees Measures "Ripeness" of Timber

WHETHER a stand of timber is "ripe" enough for cutting can be judged by measuring the degree of shade the treetops cast, W. G. Morris of the Society of American Foresters indicated before the meeting of the Ecological Society of America, at Seattle.

The method is very simple. The forester walks through the forest, carrying in his hand a pocket-size electric photometer, of the type used by photographers to gauge the light they have to work by. This shows the amount of sky light passing through the forest canopy, in terms of figures on a dial. From time to time he notes down the readings, and at the end of his trip he averages them up. The density of the forest canopy thus measured is an expression of the maturity and harvest-readiness of the forest.

They Don't Like It Hot

Desert-dwelling reptiles are no fonder of the hot sun than are any other cold-blooded animals. The old-time notion that rattlesnakes and Gila monsters like to bask on a hot rock—the hotter the better—was shattered by Dr. Walter Mosauer, University of Southern California zoologist.

"Diurnal lizards and nocturnal snakes alike are killed by a short exposure to desert sunlight," he said, "especially if they are placed on the sand which reaches temperatures of 70 degrees Centigrade and over, around noon during the spring months. But even if they are suspended freely five feet above the ground, the direct insolation alone is lethal."

Northwest Forests Mapped

Forests of the states of Oregon and Washington, among the most important of surviving American timber stands, have been accurately mapped by the U. S. Forest Service, and the maps are now being lithographed by the U. S. Geological Survey. This work, important both scientifically and economically, was outlined before the meeting by T. T. Munger of the U. S. Forest Service.

Twenty-six distinct types of forest are to be represented on the finished map, each type shown in a distinctive color. Logged-over and burned-over areas will also be shown.

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California oranges now reach Alaska five days after picking.