

feet without water-soaking. Similarly, tobacco may be greatly predisposed to *B. angulatum* and *B. tabacum* Wolf and Foster, by the same method, resulting in large necrotic lesions comparable to those often noted under field conditions. Water-soaking as a consequence of water sprays or storm effects has recently been emphasized by Clayton,¹ and while the significance of this relation is not questioned, it lacks certain essentials as a satisfactory explanation in all cases of the epidemiology of the diseases in question. Infection through water-soaking by root pressure furthermore confirms Clayton's contention that the water-soaking is of greater consequence to infection than epidermal wounding.

Similar, though less striking, results have been secured through increasing root pressure by means of the simultaneous exposure of plants to a high soil temperature and a low air temperature, with the evaporation power of the air at a minimum. It should be emphasized that great differences between individual plants may exist with respect to the ease with which they become water-soaked, this being in part influenced by the ratio of the size of the root system to the leaves. High root pressures under field conditions, resulting from a particular sequence of weather conditions, are a fairly well-known phenomenon. That conditions of this type precede epidemics of disease in tobacco has been noted by the writer, whereas apparently more favorable external environmental conditions, including severe storms, in the presence of pathogens, have in many instances failed to result in expected epidemics of disease.

A more extensive account of the experiments bearing upon this problem will be presented later.

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A STUDY OF THE EFFECT OF DROUGHT ON TREES

THE 1936 drought is one of the most serious and widespread the nation has ever experienced. Not only have there been untold suffering by the local residents and terrific losses in crops, but other forms of life over considerable areas are showing the effects of abnormally high temperatures and deficient precipitation. Just how serious some of these effects are remains to be seen.

In forestry and plant ecology, droughts are of considerable significance because of their effects on survival, growth and behavior of trees and shrubs. Some species or individuals may be killed, others suffer

severe injury, while still others may show remarkable ability to withstand the most adverse conditions. In times of severe drought, forest plantations suffer severely, especially those composed of species not native to the locality or those badly abused as by grazing. In addition many native species that have been slowly invading drier sites or localities may be eliminated over large areas.

As information on drought resistance of trees and shrubs is sadly lacking, the present affords an unusual opportunity to obtain data of outstanding value. Consequently, it is hoped that those who are in a position to do so will take notes on the reaction of various plants to the drought. Such information is not alone of scientific interest but has great practical value in many current operations, such as the reforestation program of the CCC, cultural operations in the forest, erosion and flood control, etc.

The Forest Service is undertaking the collection of data on the drought damage. In this it is seeking the aid of botanists, agronomists, foresters, meteorologists and other interested individuals throughout the drought area. Consequently, any one with observations on species behavior should communicate them to the Division of Silvics of the Forest Service at Washington, D. C. Data are desired especially on such features as the nature, extent and character of the damage, the relative resistance of trees growing on different sites, the comparative ability of native and exotic trees to withstand drought and the nature and extent of the damage to stands or to shade or ornamental trees, shrubs, etc. A questionnaire covering these points has been drawn up to aid observers in reporting the effects of the current drought.

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REMARKABLE LIGHTNING BOLT

ON the evening of July 27, 1936, an exceptionally severe and spectacular electric storm passed over the Washington area, traveling very rapidly in a northwest-southeast course. The center of the storm kept somewhat west of the writer's position at Clarendon, Virginia, and at a point in the southwest, only a few miles away, there appeared a most spectacular frequency of discharges earthward. Some appeared as mere single sparks, but the majority were of the repeating or of the stream type of discharge of exceptional size, appearing like ribbons of flame searing the darkness.

One of these, which seemed almost to hang in the sky only a few miles away, appeared to ignite something high in its course, leaving wisps of flame which per-

¹ E. E. Clayton, *Jour. Agr. Research*, 52: 239-269, 1936.

sisted momentarily, detaching themselves from the stream and drifting eastward from the path of the discharge as if carried by the wind. This phenomenon was observed at several points along the discharge, and was also witnessed by my son, Howard F. Allard, who was observing the lightning beside me. A portion of the path of the discharge, at and below these points,

was also indicated by a train of sparks persisting momentarily after the streak had gone. Although I have made it a special point to observe the electrical displays of storms since a child, this phenomenon has never presented itself to me before.

H. A. ALLARD

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SCIENTIFIC BOOKS

MAN AND HIS ENVIRONMENT

Deserts on the March. By PAUL B. SEARS. University of Oklahoma Press. 1935, \$2.50.

IN the small compass of 231 pages of easy reading, Professor Sears gives an integrated picture of the relation of man to his environment as seen through the eye of a trained ecologist and publicist, who brings science, experience and history to bear on the interpretation of this relationship. He pictures the continents before disturbed by man, and then step by step through the centuries with population increase, land cultivation, destruction of natural forest or plant cover, bringing on erosion by wind and water, dust storms and floods with destruction of life and property.

Against a background of what has taken place in China, India and Egypt, he presents the picture of the course of events in the North American Continent due to the destruction of our forests, the wasting of our soils, the destruction of the food resources of our streams, lakes and oceans. Looking at these events from the view-point of the naturalist, he views man and his affairs not only as causes, but as reacted upon for good or ill by the changes he brings about. A wealth of scientific fact is presented as an aid in understanding the deeper causes and meaning of the intricate phenomena involved in man's relation to nature. Technical language is avoided.

The book will be of intense interest to men of affairs everywhere, as well as to scientists. The citizens of the world must enlarge their thinking to rightly understand their relation to the environment in which they live and upon which their welfare and that of future generations depends. This book will help greatly to that end.

The writer is an ecologist in the broader use of that term. In his own words the book, speaking broadly, is "an attempt to interpret the relations and adjustments of man as they appear to the ecologist, with due regard for the many intangibles which enter the human setting. If these chapters have told their story the importance of ecology to plant and animal industry and to any program of land utilization, should be obvious." I may add that the social value of such training is also obvious.

A. F. WOODS

CYRUS GUERNSEY PRINGLE

Life and Work of Cyrus Guernsey Pringle. By HELEN BURNS DAVIS. Burlington, Vermont. Paper, 756 pp., 2 portr. For sale at the Pringle Herbarium, Williams Science Hall, University of Vermont; price \$1.50. 1936.

THIS book is a useful and appropriate memorial to a great botanical explorer. The title may be somewhat misleading; the work is not at all the usual biography. It is, indeed, prefaced by a brief account of Pringle's life; but the bulk of it consists of transcripts from his diaries, comprising every passage relating to his travels and his collecting in Mexico from 1885 to 1909, and of two lists of his collections, one arranged systematically and one by numbers, both giving determinations of his specimens and recording their presence or absence in the herbaria which contain the first three sets—his own at the University of Vermont, the Gray Herbarium and the United States National Herbarium. In addition, there is a partial bibliography of his published writings, reprints of some of them from "Garden and Forest" and indices of persons and places mentioned and of plant names.

Pringle ranks among the foremost botanical collectors. A man of singular uprightness and conscientiousness, he spared no effort toward the perfecting of his work, and in his many journeys to Mexico acquired a knowledge of its flora which enabled him to collect with unusual intelligence. His sets were not only of high technical quality, they were actually of selected material, containing a large proportion of novelties and species otherwise of particular interest. They found a ready market; they are represented in nearly all the great herbaria of the world. They have, in consequence, great reference value in addition to their intrinsic scientific worth; they are classic in their field. Therefore a book like this, which enables one readily to place any given number and to obtain the complete itineraries and other collateral information often much to be desired in regard to any collection so important, is very welcome to the taxonomist. The compiler has done her work faithfully and well. One feels that Pringle himself, who earnestly desired to be serviceable to science, would have chosen just this useful sort of memorial.