

REVIEWS

They Need Not Vanish. Edited by Helen M. Martin. 294 pp. *Illus. Michigan Department of Conservation, Lansing.* 1942. \$1.

This volume represents an earnest effort to convey a "conservation background" to the citizens of Michigan. It traces the evolution of the state's flora and fauna through geological time, and on this background sketches briefly the present status of the principal plant and animal groups, and of the state's efforts to conserve them.

The fatal weakness of most early conservation propaganda was geographic diffusion. Most things that can be said to a layman cease to be true when spread over a continent, or else they become so heavily encumbered with ifs and ands as to be unreadable. Michigan is one of several states recently attempting to write a localized account. This is it.

The book leaves me with the strong impression that even a localized account covers such an immense range of subject matter that it is impossible to sketch it adequately. The Michigan forest problem fares not so badly with 40 pages, but who can cover pollution in 5 pages? Flood control in 1 page? All upland game, big game, and fur bearers in 14 pages? Waterfowl in 4 pages? Or "land birds" in 3 pages? To point the moral still more sharply: Most would agree that the "educated" layman should be given some crude notion of the grouse-rabbit cycle, one of the great unsolved mysteries of wildlife ecology. What the cycle actually gets in this volume is three lines. Soil conservation and erosion get one page. The ruffed grouse, the very spirit of Michigan, is not mentioned.

I predict that encyclopedic interpretations of conservation for laymen will one day be given up as impracticable. We shall fall back on very small, localized "samples" of subject matter, fragmentary in scope, but treated thoroughly enough to convey "principles" by implication. The famous "Cornell leaflets" have come close to this idea from the outset.

They Shall Not Vanish presents an interesting problem in literary style. The evolutionary his-

tory of resources is, appropriately enough, written in semi-biblical cadences, but there is no restraint in the employment of this device, which eventually cloy.

In its physical trappings, this book is made up with extraordinary care. It has an index! The photographs are good; the typography pleasing.

One wonders, though, about the somewhat sententious title. In actual fact "they" (the resources) do not vanish when the dice of economics, legislation, and plant succession fall favorably on the table of time (witness Michigan deer, which need to do some "vanishing" for their own good). Otherwise "they" shrink, in Michigan as elsewhere; witness the white pine.

Barring its crusading title, this volume is notable and praiseworthy for the fact that it does *not* glorify the institutions which produced and published it. When will all bureaus and departments learn, as Michigan has, to avoid the lethal effects of self-laudation? A 4-H girl recently said to me, after a dose of "educational" movies emanating from another state: "If all departments are that perfect, how can there be any conservation problem?"

ALDO LEOPOLD,
University of Wisconsin.



Burning an Empire. By Stewart H. Holbrook. 229 pp. *Illus. Macmillan Co., New York.* 1943. \$2.50.

In 1942 Japanese airplanes, supposed to have been released from submarines, are reported to have made three attempts to touch off Oregon coastal forests with incendiary bombs. One can imagine the newspaper furor, the public horror, had they been successful.

But in a typical year, some twenty thousand incendiary forest fires are set, not by enemy bombing, not by saboteurs, but by United States citizens.

What is wrong with our social consciousness, our respect for property rights, our attitude toward this great forest resource, that permits such things? The answer, simply, as the author shows,

is that woods burning is an ingrained American custom.

In writing this book, Stewart Holbrook has done the cause of conservation notable service. In his customary vivid style, he tells the stories of the great forest fires of the past century, documenting his reports with contemporary newspaper accounts and enlivening them with recollections of living persons who survived the holocausts. It makes fascinating reading.

One of the first catastrophes to become history was the fire that swept the Miramichi Valley of New Brunswick in 1825, a settlers' fire. The Peshtigo disaster of 1871 in Wisconsin, the author believes, was "by far the worst, the most deadly, of all the great forest fires, before or since." A total of 1,152 people lost their lives and 1,280,000 acres of woodland were burned.

Other great fires described are those at Hinckley, Minn., in 1894; the Douglas fir region fires of 1902; those in Montana and Idaho in 1910, footnoted by the heroism of Ranger Pulaski; Cloquet, Minn., in 1918; and the Tillamook burn of 1933. But these are only the highlights, so to speak. The book is replete with numerous records of other conflagrations, no less important though less spectacular than these major examples.

Appropriately, the author concludes with observations on the effects of fire on American wildlife, forests, and soil. His chapter "A Long, Hard Row" tells of the fight against fire through organized fire control and public education. One wishes that he had devoted more time and space to this interesting phase so that the general public might obtain better knowledge of technical progress in this important field.

For there is more to this book than interesting reading. It will be apparent to the thoughtful forester that all his professional training and technical skill are of little practical application without fire control. Our silvicultural research, our management plans, our cutting practices, are dependent for their results on organized fire control. This is not to say that fire control is the end of all forestry, but it is certainly its beginning, and the United States is still tragically short of even partial accomplishment.

One effect of this book, it is hoped, will be to help awaken America to awareness of the disgrace, the losses, the waste of fire, and to make this a fire-conscious nation. As Colonel Greeley sums up in his foreword, "The annals of these

conflagrations with their burden of human suffering will be a powerful force in public education on the duty every one of us shares to keep fire out of the woods."

Stewart Holbrook has a reporter's eye, an ear for woods lore, and a gift of expression which make for absorbing, fast-paced reading. His sentences move, so that when you have read one of his chapters you get the feeling of having gone somewhere and seen something. Action is the essence of most Holbrook writing, and *Burning an Empire* fairly sizzles. I commend it heartily to all foresters.

Memo to foresters' wives: Ideal as a Christmas gift for husbands.

HENRY CLEPPER.



Forest Practices in Oregon. By W. F. McCulloch. *Oregon State Board of Forestry Bul. 7. 71 pp. Illus. Salem, Oregon. 1943.*

This is a popularly written, well-illustrated, pocket-sized booklet crammed full of silvical observations and silvicultural suggestions for Oregon's principal forest types. Though a miniature textbook on local forestry, it avoids statistics and tables, but gets its message across by crisp, almost oversimplified statements. Its purpose is to help landowners and logging operators understand how they can keep their lands continuously productive and achieve the objects of the "Oregon Forest Conservation Act," a regulatory measure passed in 1941 and improved in 1943.

THORNTON T. MUNGER,
U. S. Forest Service.



Some Ecological Aspects of Afforestation and Forestry in Great Britain. By Roy L. Robinson. *Forestry 16:1-12. 9 pl. 1942.*

As has been the case in many plantations in the United States, the establishment and early growth rate of various conifers used in mixtures in the British Isles exhibit striking and oftentimes unexplained variations. Sir Roy Robinson, chairman of the British Forestry Commission, recognizing the important bearing of ecology on silviculture, has attempted "to interpret certain well-defined phenomena in the growth of mixed plantations in the light of the theory of the natural succession of vegetation. . . ."

Admitting at the start that "we are not yet thoroughly acquainted with the ecology of our

native vegetation, and still less with the natural places which exotics will occupy in it," the author advances two working hypotheses, as follows:

1. *Accelerated succession.*—In the natural afforestation of difficult sites some species are pioneers and some successors. It is not feasible by artificial means to bring in the successors in advance of the pioneers. It is possible, however, to accelerate the natural succession by mixed planting of pioneers and successors, and by appropriate thinning treatment to complete the succession in the course of a single rotation.

2. *The silvicultural stream.*—In the silvicultural treatment of woodlands the most effective methods are those which proceed in the direction of a natural succession of vegetation.

Under the first hypothesis, interest centers on the possibility of accelerating the development of the final crop species (the successors) by planting them in mixture with temporary species (the pioneers). In this country, the ordinary practice has been to plant at once the species desired for the final crop.

The author's observations have to do with "difficult" sites, where grazing and burning have gone on for long periods. Heather moors in particular have given trouble in afforestation; also bare chalk downland. These two extremes, "the acid soils of the older rocks and the lime soils of the chalk," are used as sources of the examples on which the first hypothesis is based.

Plantations of Douglas fir, Sitka spruce, and Norway spruce planted on heather ground went into check and remained so until Scots pine was introduced, either by planting or by natural seeding. Similarly, where mixtures of pine and spruce were set out adjoining pure spruce on "precisely similar ground," the spruce in the mixtures exhibited "normal vigorous development" while that in the pure stand continued in check (in one case for 16 years after planting, the trees "only a foot or two in height with yellow short needles," as compared to 10 to 12 feet for the spruce in mixture).

Scots, lodgepole, and mountain pines have all been used in mixture with Norway and Sitka spruces. In every case there has been a marked response, though the different pines vary in efficiency.

On open chalk downs, pure ash and pure beech checked almost as badly as pure spruce did on heather ground. Pine played the same part in

stimulating the growth of hardwoods here as in the mixtures with spruce. "Unexpectedly, also, Norway spruce will serve the same purpose as pine on chalk."

Scots pine and birch are the most prominent native "pioneers"; and European and Japanese larches are prominent among the exotics. On the other hand, there is good evidence that Norway spruce, Douglas fir, hemlock, and beech are "successor" species.

In completing the succession of birch woods to spruces, Douglas fir, hemlock, and beech, "All that is required is to underplant the desired species and kill the birch by ringing. The same is true of tall oak coppice. The successor crop develops far better than it does when the birch or oak is clear-felled, nor with gradual ringing does heather develop as is so often the case after clear felling."

The second hypothesis, "The Silvicultural Stream," is another way of expressing the philosophy of working in harmony with nature, to which a growing number of American foresters adhere.

The author gained from Tansley's¹ explanation of the natural processes the "impression of a great stream moving slowly and relentlessly in a set direction." If, in undertaking silvicultural treatments, "the point of entry into the stream of succession and the direction of flow could be determined accurately, the prospects of failure could be eliminated." Apparently, there is an accompanying progressive improvement in soil fertility as one stage succeeds another. Even heather sites improve if not burned or grazed. Pines planted in heather exhibited variations in rate of establishment, but "the improvement of the sites by pines is self-propagating," that is, improvement spreads from the spots occupied by the thriffter trees to those where the pines are still in check.

"The most obvious effect of pine on heather sites is the opening up and aeration of the soil. . . ." Tansley is quoted as stating that there is a deepening of the soil and enrichment by organic material, thus increasing its water-holding capacity and favoring the more exacting successor species.

Once the plantation closes, the whole ecology of the site is modified. "There is an obvious development of fungi, and earthworms and other

¹Tansley, A. G. British islands and their vegetation. 1939.

animals make their appearance." Beyond this point, growth increases, but finally diminishes as the (pure) crop grows older. Robinson sees the possibility of devising silvicultural methods of continuing these growth processes at their maximum. "Clearly it would have to be of the nature of a selection system under which single trees or small groups only were felled, because this is the only way in which one can conceive the succession proceeding uninterrupted." Thus the stimulating influence of one species on another would be maintained by periodically reestablishing the proper proportion and arrangement of each in the mixture.

American silviculturists and forest ecologists will profit by reading the full text of Mr. Robinson's paper. It has important bearings on the whole field of silviculture and particularly, at this time, on postwar projects for reforestation and growing-stock improvement, including those of Great Britain. (See *Post-War Policy*, reviewed by C. Edward Behre in the *Journal of Forestry* for September, 1943.)

A. C. CLINE,
War Production Board.



Edible Wild Plants of Eastern North America. By Merritt Lyndon Fernald and Alfred Charles Kinsey. *Gray Herbarium of Harvard University Special Publication.* xiv + 452 pp. 25 pl., 129 fig. *Idlewild Press, Cornwall-on-Hudson, N. Y. 1943. \$3.*

In this book, which its authors describe as "An illustrated guide to all edible flowering plants and ferns, and some of the more important mushrooms, seaweeds and lichens growing wild in the region east of the Great Plains and Hudson Bay and north of Peninsular Florida," more than a thousand kinds of wild plants fit for food are discussed. Even at that, the list is not complete, for only a few of the easily recognized mushrooms are treated and, as the authors say, they have not attempted to evaluate the food value of the fresh or dry leaves of the hundreds of nonpoisonous grasses.

Information on palatability of the edible portions—roots, stems, bark, leaves, flowers, fruits, seeds, or sap—of hundreds of plants, and on methods of preparing or cooking them, is derived from the authors' own experience during many years of camping. For the others, they

have drawn upon a large number of sources, which are listed in a 7-page bibliography.

As for nutritive values they say (pages x-xi): "At the time of preparation of the original manuscript we had not heard of calories: and the designation of vitamins was still in the future . . . Although we are not now able to state the caloric value of most of the wild food-plants nor what vitamins they contain, it is certain that there is abundant nourishment in a plate of sautéed inky mushrooms, with cooked, fresh young cat-tail spikes, salad of dressed, chilled cat-brier sprouts or young milkweed, bread made of wild grains, acorn-flour or seeds of cow-lilies, spread with a butter of beechnut-oil or oil of hickory-nuts, while there is real refreshment in a cup of cassina-tea, served with marmalade of squaw-huckleberry, topped off by a dessert of pudding made of dried persimmons, with confections of candied wild ginger or root of elecampane, with a cordial, if wished, from any of several wild berries or aromatic herbs. After such an early-summer meal one will not ask about calories or vitamins, he will be perfectly content."

Of especial interest is the opening chapter, in which the plants are classified according to their food uses, under the captions: "Purees and Soups"; "Starchy or Root Vegetables, Cereals, Nuts, and Breadstuffs"; "Cooked Green Vegetables"; "Salads"; "Nibbles and Relishes"; "Pickles"; "Condiments and Seasoning"; "Drinks"; "Rennets"; "Syrups, Sugars, and Confections"; "Fresh or Preserved Fruits, Jellies, and Marmalades"; "Table Oils and Butters"; "Masticatories and Chewing Gums"; "Emergency Foods."

How many readers can tell how to use such plants as crab-grass, bracken, jack-in-the-pulpit, skunk-cabbage, thistles, burdock, goldenrod, nettles, water hyacinth, sumac, and reindeer-moss? The authors assure us that all of these may be used for food, although their recommendation of skunk-cabbage goes only so far as to say that it is "not wholly unpalatable."

The discussion of edible plants is supplemented by a brief but useful chapter on poisonous flowering plants that are likely to be mistaken for edible species.

The excellent line drawings, by Edwin J. Haertl and Helen P. Schiefer, and the plates, mostly from photographs by the authors, will be helpful in identifying some 140 species of edible and 19 species of poisonous plants. Perhaps the

only criticism of these will be that there are not more of them.

Drs. Fernald and Kinsey have produced a book which can be exceedingly useful, not only to foresters and others who spend long periods in the backwoods, but also to others who might like to supplement their conventional diet with easily obtained and appetizing, but less usual, plant foods. Even a swivel-chair forester will enjoy reading it for the many interesting items with which it is crammed—for example, the reply of the little girl on the Gaspé Peninsula when a tourist protested the high price of wild strawberries (p. 233): "It's hard work. You see the little berry in the grass, you stoop down, pick the little berry, then bite off his tail, then put him in the cup. Then you see another, stoop down, pick the little berry, bite off his tail," etc.

W. N. SPARHAWK.



A Handbook of Plant Tissue Culture. By Philip R. White. 277 pp. *Illus. The Jacques Cattell Press, Lancaster, Penn.* 1943. \$3.75.

Many well-known scientists have commented favorably on the excellent contribution made by White in presenting under one cover such a comprehensive survey of plant-tissue culture. The presentation is so complete that those interested in specific research problems can find the basic information and techniques described in sufficient detail to enable them to select the method best adapted to their needs and available equipment. This book has much of value to those engaged in fundamental investigations in silvics and should form an integral part of a well-balanced forestry library.

Following an introduction broadly outlining various concepts of growing portions of biological material apart from their host, White develops the history of plant-tissue culture in a manner that reads almost like an historical novel. The next chapter contains a discussion of the living materials that may be suitable for growing in culture, and the conclusion is reached that those which possess a fundamentally meristematic character are best adapted to this type of handling. Chapters 4 to 7 inclusive are devoted to the practical details of technique from the initial laboratory set-up through the final procedures of culture for indefinite periods. A critical discussion follows on the application of these

techniques to recognized problems in the general physiology and pathology of plants, and ends with a well-balanced chapter on morphogenesis. A useful bibliography of 457 titles is segregated according to the numerous subjects pertaining to plant tissue culture.

ALBERT G. SNOW, JR.,

Southern Forest Experiment Station.



The American Land. By William R. Van Dersal. 215 pp. *Illus. Oxford University Press, New York.* 1943. \$3.75.

This book is a history of land subjugation in the United States, followed by a series of "biographies" of the principal land crops, including range, forest, and wildlife crops.

The author's purpose is evidently to give, in simple popular form, an account of this wide field from the viewpoint of conservation. The popular form is well sustained; the style is light and readable, statistics are used but skillfully camouflaged, and the argument stays well within the grasp of the nontechnical reader. The conservation thesis, however, often lapses, especially in the crop biographies.

Perhaps the most notable feature of this volume is its excellent account of the wild ancestry of agricultural plants. Here Van Dersal conveys to his lay audience a vivid picture of the technical processes by which improved crop plants have been created. I know of no equally good popular history.

The reader, however, is given no equally vivid picture of the ecological and economic processes by which the land resource has been worn down. The results of land abuse are made clear, but the interplay of forces producing those results is seldom elucidated. This defect is, in my opinion, shared by all other books on conservation so far written, whether technical or popular.

In his style, the author conveys color without daubing,—an achievement by no means common among translators of technical thought. He lapses frequently into whimsical or even salty humor, but this is never overdone, and hence never cloy.

In format, *The American Land* leaves nothing to be desired. There is a fair index. The photographs are superlative, the typography pleasing.

ALDO LEOPOLD,

University of Wisconsin.

Meeting the Mammals. By Victor H. Cahalane. ix + 133 pp. *Illus. The Macmillan Company, New York. 1943. \$1.75.*

It is an enjoyable experience to "meet the mammals" with Victor Cahalane in his most recent book. He introduces you to each mammal and gives you intimate glimpses of its family life. It is not a scientific treatise of the mammals but follows standard zoological classifications in order of presentation. To a large extent cold figures are replaced by easily visualized comparisons familiar to everyone. Occasionally figures might help the uninformed reader where comparisons are not readily available. "Mighty antlers" for the elk does not convey much information nor does "a large, heavy deer" give one an idea of the relative size of the blacktail deer. Distinguishing characteristics are emphasized in the excellent illustrations prepared by Walter Weber.

It is evident from the large number of species that are nocturnal in habit that the night activities within the mammal group are much more varied and interesting than their daylight movements. This would seem to be in direct contrast to bird life where very few species appear to be more active at night. The reader who is interested in wildlife cannot help but feel that he misses a great deal of the activity of mammals

because of his inability to see at night.

In spite of the fact that the book is published by a commercial house it is still a National Park Service bulletin and is directly related to the lands under the jurisdiction of that service that are located west of the Mississippi River. The occurrence, relative abundance, and valuable hints as to the best locations for observation are given for all the species of jack-rabbit size or larger in each of the thirty larger areas. The only mention of any other occurrence of these species is in a few broad regional ranges. The distribution of these mammals within the national forests is not mentioned, and the same is true for the game refuges of the Fish and Wildlife Service and the unreserved public domain.

The general form of the book makes it a valuable handbook for a person traveling through the parks. Unfortunately it is of standard size and not suited for the pocket or convenient for auto trips. Inasmuch as the tourist normally travels many miles outside the parks to one mile within them, it seems regrettable that so excellent a publication as this should not be more generally applicable to the needs of the normal traveler in the western United States who is interested in "meeting the mammals."

ALBERT E. MOSS,
Storrs, Conn.



A STATEMENT of the Selective Service System policy affecting the induction of workers in the logging, lumbering, and related industries has been released. The pamphlet contains information on deferment, authority of local selective service boards, manning tables, etc., and is designed to serve as an authoritative guide for the woods industries.

Copies are available on request from all WPB field offices and from the Lumber Division in Washington.