Book Reviews

The Roles of Man and Nature

Black Sand. Prehistory of northern Arizona. Harold S. Colton. University of New Mexico Press, Albuquerque, 1961. viii + 132 pp. Illus. $4.

One of northern Arizona's prominent landmarks is the cinder cone known as Sunset Crater, a label inspired by its red-tinged rim. It stands as a relic of the Southwest's most recent volcanic activity. Declared a National Monument in 1930, it is admired annually by thousands of visitors and climbed by the hardy few. The convulsion of nature that formed it happened just before A.D. 1070. In addition to the 900-foot-high cone, the then-prevailing winds, out of the southwest, carried the ejected material northeasterly to blanket 800 square miles with black ash. It is this feature of the landscape which gives the book its name.

By all odds, the most fascinating episode in *Black Sand* is the narrative of the human experience before and after the ash fall, as reconstructed from the archeological record: of how man faced this cataclysmic event and adapted his life to the conditions of this near-unique microenvironment, and then of how, at least in part, by his own exploitation he brought on decreasing productivity of the soil which forced his eventual withdrawal from the area.

The rank and file of archeological reports are dust-dry and carefully plotted reviews of the data brought to light by the shovel. Only after many of them have been written can a book like *Black Sand* emerge. Its author, Harold S. Colton, founder and until recently director of the Museum of Northern Arizona in Flagstaff, bases this synthesis on 42 years of experience as an archeologist in the San Francisco Peaks region of northern Arizona. The depth of this experience clearly comes through as the book's pages recreate a thousand years of history of an unlettered people. The reader, not familiar with the ways of the archeologist, will find help in the early chapters: the multidisciplinary approach, for example, employed in determining the time of the eruption of Sunset Crater, the method used to erect the tree-ring time scale, and the manner of relating this all-important dimension to the cultural vestiges as a basis for understanding human progress.

The principal characters in this story are the Sinagua, the archeologist's label for a people, taken from a characteristic of the country (Spanish for *without water*). The Sinagua were a dry-farming, pit-house-dwelling, rural folk who changed little from A.D. 500, when their presence is first detected, to the time of the volcanic eruption in the 11th century. The widespread mantle of black ash ejected from the volcano changed all of that, however, because it insulated the ground against the usual quick loss of soil moisture in a region where evaporation is high. Corn, beans, and squash could now be planted in many places previously impossible to cultivate.

A land rush followed, bringing new people, notably the Hohokam from the desert, and new ideas, skills, and crafts. For a century, all was well; masonry homes sheltered the expanding population in larger and larger, tightly packed communities, and there were related gains in cultural richness. But by 1300 the tide had changed, and the region was almost depopulated. Colton makes a good case for this shift in Sinagua destiny by attributing it to the gradual loss of farming capacity from wind erosion of the black ash, to increasing aridity in the terminal decades of the 13th century as recorded in tree-rings, and to a deteriorating health level arising from crowded living and deficient diet. But the Sinagua retreat at this time was not unique, for the entire northern frontier of Pueblo Indian territory was being badly shaken up, too. The principal force may well have been climatic.

Black Sand also reviews interestingly the neighbors of the Sinagua and ancient commerce and farming; it also has a brief but challenging chapter on population density and trends. It is something of a shock to learn that between the 110th and 112th meridians in northern Arizona the population in 1950 was only a shade higher (4000) than it was 1350 years before (3000) and that the population peak (23,000) came at A.D. 1000.

A brief chapter, entitled "Drawings on rock," I heartily recommend to those countless correspondents who want to know the meaning of the petroglyphs found in the Southwest.

Certain risks inevitably accompany attempts to popularize one's work. Omissions, whether substantive or otherwise, are often demanded by simplification. *Black Sand* is not free of these. Most difficult to understand is why the bibliography was not updated to include contributions of the past decade. Nonetheless, Colton has produced a useful and exceptionally readable book about a colorful part and period of the American Southwest.

EMIL W. HAURY
Department of Anthropology, University of Arizona, Tucson

Plant Physiology in Russia

Wintering of Plants. I. M. Vasil'yev. Jacob Levitt, editor of the English translation. Translated from the Russian by Royer and Roger, Inc. American Institute of Biological Sciences, Washington, D.C., 1961. xiv + 300 pp. Illus. Members, $8; nonmembers, $9.

As noted in the foreword, this is the first in a contemplated series of translations of recent contributions to plant science published in the Russian language. A committee appointed by the American Botanical Society selected the book to be translated, supervised the translation, and edited the final form. The first part of the book deals with injury to and the death of plants during the wintering period, the second with the physiology of winter resistance, and the third with the development of winter-resistant forms of plants. The table of contents provides an extensive outline of the book, and each chapter is terminated by a succinct summary.

The first two sections represent, in general, comprehensive and scholarly