

differences *are* at the bottom of some of the observed cultural differences, this fact would not necessarily mean, then, that the *average* ability of the inferior races is less, but only that extreme variations of an advantageous character occur less frequently among them."

The field student of primitive peoples knows that not only do extreme advantageous variations occur less frequently among primitive peoples than among the more cultured groups numbering millions of men, but he knows that among primitive peoples artificial selection weeds out those superior individuals, who now and then appear and try to put over a new idea. The conclusion seems to me to be inevitable that this ruthless selection in time affects the racial hereditary abilities of such peoples—just as the Inquisition is known to have affected the Spaniards and Poles.

The author's conclusion in the chapter entitled "Culture and Environment" seems to me entirely too sweeping and to need many conditioning phrases:

"Environment can not explain culture because the identical environment is consistent with distinct cultures; because cultural traits persist from inertia in an unfavorable environment; because they do not develop where they would be of distinct advantage to a people; and because they may even disappear where one would least expect it on geographical principles." The discussion to a certain extent limits the sweeping reach of this conclusion.

In regard to "Determinants of Culture" Dr. Lowie truthfully says: "Psychology, social differences, geographical environment, have all proved inadequate for the interpretation of cultural phenomena. The inference is obvious. Culture is a thing *sui generis* which can be explained only in terms of itself." His conclusion is that culture is a closed system. Explanations of culture must remain on the cultural plane. "There are ultimate, irreducible facts, special functioning relations, and principles of wider scope that guide us through the chaotic maze of detail" in the science of human culture, as in all other sciences. Any particular cultural phenomenon is in a meas-

ure at least unique; and, in consequence, "its explanation will consist in referring it back to the particular circumstances that preceded it." One by one, then, cultural inventions must be studied primarily with reference solely to themselves; while the study of the growth of culture by diffusion from people to people, with accompanying modifications, will yield the larger volume of new data in the field of cultural research.

The last chapter, "Terms of Relationship," occupies eighty-two pages, or slightly less than one half the volume. By the time I had read the chapter two thirds through I turned to the conclusion for relief and light—and I was reassured of my powers of comprehension. This is Dr. Lowie's conclusion: "I am content with calling attention to the tremendous ethnological significance of kinship terminologies, with combating premature confidence in generalizations based on sheer ignorance, and above all with suggesting that the most rigorous logical formulation of problems is possible in this too long neglected domain of the science of culture." I was relieved to find that the often long-drawn arguments, the partial agreements with or refutations of, conclusions of other students of primitive culture, and the suggested relationships between kinship terminologies and cultural facts, were not intended to get the reader farther than Dr. Lowie's sane conclusion. I question the proper appearance of this chapter in a book intended primarily for laymen.

The book, on the whole, is a genuine asset to our anthropological literature, and will interest and enlighten the scientific student as well as the layman.

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SPECIAL ARTICLES

NEZARA VIRIDULA AND KERNEL SPOT OF PECAN

THE following is intended to serve merely as a preliminary note. The work to be done on the problem far exceeds what has been accomplished but the results obtained thus far are so striking that it has seemed worth while to

bring them to the attention of both entomologists and pathologists who might be interested.

Kernel spot has been reported by Rand¹ as a communicable disease. The same author isolated a fungus which he recorded as the causative agent, and described it as a new species (*Coniothyrium caryogenum* Rand). Otherwise little or nothing has been published on the disease. As the name implies, the disease affects only the kernel of the pecan and its presence can only be detected by removing the shell. The spot on the kernel is irregular in outline, dark brown or black in color and usually somewhat sunken. It varies from one eighth to one half inch in diameter. When the kernel is cut the brown area is found to extend into the meat to a depth of perhaps one eighth of an inch. The affected spot is bitter and imparts a bitter flavor to the rest of the meat.

The disease appears to be of general occurrence throughout the pecan belt, though ordinarily only a small percentage of the nuts are attacked. Occasionally, however, as in 1916, it becomes of very serious economic importance, causing the loss of thousands of dollars to the growers.

The green soldier bug, *Nezara viridula* (Linn.), is present throughout middle and southern Georgia, being of common occurrence every year and occasionally, as in 1916, becoming exceedingly numerous. The bug appears to attack cow peas in preference to all other plants, either cultivated or wild, when these are available. In the fall, when the pea vines begin to dry up, the bugs leave them and gather on any other plants or trees which they may find in the vicinity.

A very common practise among pecan growers is to sow peas in the groves during the early summer, the vines to be turned under, later, as a soiling crop. As a result, when the vines begin to dry up, usually in September or early October, the bugs leave them and collect on the pecans.

It was noticed, during 1916, that there oc-

curred both a severe infestation of *Nezara viridula* and a severe outbreak of kernel spot. While it was entirely possible that this was a mere coincidence several growers noticed it, together with the fact that the disease appeared to be serious only in the groves in which cow peas had been sown. Moreover, in at least one case, bugs were observed feeding on the nuts.

As a result, during the past season preliminary experiments were conducted in which specimens of *Nezara viridula*, taken on cow peas, were confined on pecan nuts. The bugs fed on the green nuts, living on them for as much as a month, in three cases. Examinations made after the nuts had fully ripened showed that every nut in the several cages was severely infested with kernel spot, as many as five distinct spots occurring on a single kernel. Of several hundred nuts from the same tree, not confined in cages, only two or three had spotted kernels.

It has not been possible, thus far, to determine whether the fungus, *Coniothyrium caryogenum*, is present in the spotted areas, or not. In any case the data obtained are strongly indicative of the fact that *Nezara viridula* is an important agent in either the actual production or the dissemination of this disease. This is of particular interest since it is another of the observations, becoming more and more frequent during recent years, on the economic importance of a large group of insects (several families of the Heteroptera and the Cicadellidæ and Aphididæ among the Homoptera). Formerly these insects were recorded as injuring vegetation only when abundant, through the purely mechanical process of removing sap from the tissues. Of late, however, we are beginning to realize that many of them are of far greater importance than had been realized, both as the primary causative agents of specific plant maladies and as vectors and intermediaries in the dissemination of other specific maladies of bacterial or fungoid origin.

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¹ Rand, F. V., *Jour. of Agr. Res.*, Vol. 1 (1914), No. 4, pp. 330-334.