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ON THE OCCURRENCE, SITES AND MODES OF ORIGIN AND DESTRUCTION, OF PRINCIPLES AFFECTING THE COMPENSATORY VASCULAR MECHANISMS IN EXPERIMENTAL SHOCK[1,2]

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THE possibility was recognized by Cannon, Bayliss *et al.*[4] during World War I that positive deleterious principles might arise during hemorrhagic and traumatic shock, in consequence of the reduction in blood volume or tissue damage, and contribute to the fatal outcome. However, since little direct evidence has been forthcoming in support of this concept, there has been a growing tendency during recent years to emphasize the primary importance of the reduction in the effective blood volume and its direct circulatory consequences, to the exclusion of other factors.[5]

[1] The major portion of this material was presented at a conference on shock held under the auspices of The Josiah Macy, Jr. Foundation at Boston, May 14, 1945. Submitted for publication October 1, 1945.

[2] The work described in this paper was done under a contract recommended by the Committee on Medical Research, between the Office of Scientific Research and Development and Cornell University Medical College. It was also aided by a grant from The Josiah Macy, Jr. Foundation to New York University. During the past summer, additional support and the facilities of the Lilly Research Laboratories, Woods Hole, Mass., were made available through Dr. G. H. A. Clowes, of the Eli Lilly Company.

[3] With the technical assistance of Mathilda Fischl and Leon Dziorney.

[4] W. B. Cannon, "Traumatic Shock," D. Appleton and Co., 1935.

[5] A. Blalock, "Principles of Surgical Care; Shock and Other Problems," C. V. Mosby Co., 1940.

serious error. Carter states that the earliest Basket Maker corn is uniformly flint in kernel texture, yet of the 33 ears found at the earliest-dated Basket Maker site, only 18 were classified by G. N. Collins, a maize expert, as flint. The evidence from the cucurbits is, in the final analysis, scarcely mere convincing —it is easily susceptible of more than one interpretation. The treatise suffers also from a failure to distinguish always between conjecture and fact—there is a tendency for the tentative hypothesis of one page to be treated as an established fact on another.

The archeologist is inclined to criticize even more severely. To him it seems that Carter has not only treated the published literature in archeology in a highly selective manner to create an impressive and forceful "one-way" argument in support of his hypotheses, but that he has also made some rather conspicuous errors. The assumption that "Basket Maker agricultural beginnings must lie either to the South, *i.e.*, among the Hohokam, or derive from some eastern source . . ." seems unwarranted on the basis of the known evidence. There is a great deal more than the Hohokam to the south of the Anasazi country as Carter defines it. Indeed the Hohokam cultures are largely restricted to the Gila Basin in Arizona and have only a limited spread.

Carter's discussion of geographical factors will seem peculiar to archeologists. In presenting his argument that agricultural plants and practices diffused into the Pueblo area from the Mississippi Valley he seems to ignore the known trade routes of Coahuila and the valleys of the Rio Grande, Pecos, Colorado of Texas and the Brazos; all covered in archeological discussions of prehistoric shell trade. In this same connection it seems unwise to ignore the cave material from Coahuila, the Upper Gila and Upper Salt, and other southern areas, which many students consider to be related, at least, to Basket Maker. On this point the archeologists must bear a share of the blame for slowness in publication.

The theory of the route through the Mississippi valley seems to be weakened also by the negative evidence of the Ozark caves. Carter presents the Ozark Bluff Dweller culture as representing the earliest agricultural stage in the eastern United States. Then he states that Basket Maker agriculture could not have derived from that.

In brief, his conclusions run counter to all archeological theory and evidence, and must therefore stand entirely on the botanical evidence.

Carter makes a strong point of the presence of ditch irrigation in the Hohokam area and its absence in the Pueblo region to the north. Here he is merely following careless statements in the general archeological literature of the Southwest. Ditch irrigation was practised in the Pueblo area and as far north as the Mesa Verde region of the San Juan in southwestern Colorado and southeastern Utah. Reservoirs and ditches were first noted in that country by Nordenskiold in 1893, and have since been described by others.[1]

The last section of the book is devoted to an argument for a great age of human cultures based upon the evidence from plant domestication. Here Carter makes use of a technique which he apparently denies to archeologists. In criticizing Gladwin's early dating of the Snaketown culture he says, "Gladwin's early dates are based on the theoretical time necessary for cultural developments which took place. This is obviously a risky means of arriving at a date." Archeologists will think that it is also a risky means of arriving at botanical dates.

Despite the criticisms which can be made of it the book still remains an important contribution and one which both botanists and archeologists will read with interest.

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[1] *Cf.* Guy R. Stewart and Maurice Donnelly, *Scientific Monthly*, 56: 1 and 2, pp. 31–44, 134–144, 1943.

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