

tributaries; a more western center is found near the junction of the Ohio and Mississippi Rivers, while large numbers winter farther west, along the Arkansas and lower Missouri." As Mr. Barrows implies, their winter distribution is largely governed by the food supply; an unharvested field of corn, as far north as Massachusetts, we have observed, is sure to become the winter feeding grounds for hundreds of Crows, however deep the snow or severe the weather.

The Bulletin as a whole is a most painstaking and laborious investigation, and goes far to settle satisfactorily the economic status of a bird unrelentingly persecuted for crimes that are to a large extent imaginary, or at least grossly magnified.—J. A. A.

Forbush on 'Birds as Protectors of Orchards.'—Another valuable contribution to economic ornithology is Mr. E. H. Forbush's paper on 'Birds as Protectors of Orchards,' recently published in the 'Bulletin of the Massachusetts Board of Agriculture.'¹ The paper relates largely to the destruction of the eggs of the canker-worm moth by winter birds, notably the Chickadee (*Parus atricapillus*), which also feeds in fall on the wingless females of the same destructive insect. An account is given of an attempt to protect an old and neglected orchard from insect ravages by getting winter birds to make it their haunt by suspending in it pieces of meat, bone, suet, etc. The experiment shows not only that birds can thus be attracted in numbers to a particular area, but that they prove wonderfully destructive to insect pests infesting fruit trees. Kinglets were found to have eaten largely of bark borers, while Woodpeckers appeared to confine themselves to the larvæ of borers, wood-ants, and other insects which bore into the wood of the tree. Notes are given on the beneficial work of summer birds in destroying caterpillars and other destructive insects infesting orchards. Winter birds are also shown to be great destroyers of the eggs of the canker-worm moth, and of scale insects. "No birds," it is said, "were seen to eat the eggs of the tent caterpillar, nor were any found in the stomach of any of the birds examined. It seems probable that these eggs are so protected by a hard covering that they are not eaten by most birds." While this may be true, the Blue Jay is evidently an exception, as we have found by examination of the stomachs of birds of this species taken in orchards in winter.² Mr. For-

¹ Massachusetts Crop Report for the month of July, 1895. Issued by Wm. R. Sessions, Secretary State Board of Agriculture. Series of 1895, Bulletin No. 3. Boston, 1895, 8vo, 32 pp. Birds as Protectors of Orchards, by E. H. Forbush, Ornithologist to the Board, pp. 20-32.

² Cf. Proc. Essex Inst., IV, 1864, p. 75. Also an article by the late Dr. T. M. Brewer on 'The Blue-Jay Family,' published in the Atlantic Monthly, April, 1870, p. 482, in which is given a detailed account of the usefulness of the Blue Jay in destroying the larvæ of the tent-caterpillar, on the authority of Dr. J. P. Kirtland.

bush's observations afford most conclusive proof of the protective influence of birds against orchard pests, and we trust the facts he here presents may be made widely known. — J. A. A.

Merriam on the Geographical Distribution of Animals and Plants in North America.—This paper¹ of 12 pages is “a review of the work undertaken and of the results accomplished by the Division of Ornithology and Mammalogy.” Reference is made to the economic value of a knowledge of the geographic distribution of species; the results of an experimental survey of the San Francisco Mountain region in Arizona are recounted, and of the subsequent biological survey of South-Central Idaho, the Death Valley region, Wyoming, Montana, the tablelands of Mexico, and elsewhere. The life zones of North America are recapitulated and illustrated with a map, and the “fundamental principles of animal and plant distribution” are succinctly stated, followed by a recapitulation of the work thus far accomplished respecting the general subject of geographic distribution. The paper is in the main a popular résumé of the author's previous reports and papers on the same subject, already noticed at length in previous numbers of this journal. — J. A. A.

Suchetet on Hybridity in Birds.²—Part 5, closing Mr. Suchetet's volume on hybridity among birds in a state of nature, is devoted to additions and corrections to the preceding parts, published respectively in 1890, 1891, 1892, and 1893. The present volume is largely made up of additional cases of alleged hybridity, either recently reported, or from earlier reports recently discovered by the author. As we have said in an earlier notice of this work (Auk, IX, 1892, pp. 382, 383), Mr. Suchetet has done good service by industriously bringing together in systematic order the substance of the extended and much scattered literature relating to this interesting subject, rather, however, as an amateur than as a trained investigator well equipped for his task. It is, however, a work of immense research, and will prove a valuable compendium of the subject. The work unfortunately is apparently without an index, or even a table of contents. He proposes to devote his second volume on hybridity to the classes of insects and fishes. — J. A. A.

¹ The Geographic Distribution of Animals and Plants in North America, by C. Hart Merriam, Chief of the Division of Ornithology and Mammalogy, U. S. Department of Agriculture. Reprinted from the Year-book of the U. S. Department of Agriculture for 1894, pp. 203-214. Washington, 1895.

² Les Oiseaux Hybrides | rencontrés à l'état sauvage | Par | André Suchetet | — | Cinquième Partie | Additions and Corrections | — | Lille | Imprimerie typographique et lithographique le Bigot Frères | 68, rue Nationale, et 25, Nicolas-Leblanc. | — | 1895. 8vo, pp. 473-873.