

dealing with the Pigeons, the scarcity of biographical detail, to which attention was called in our notice of this part, we find was due to the fact that almost nothing is yet known of the life histories of the species thus seemingly neglected. The present Part indicates that the work is to be emphatically revisionary as regards questions of nomenclature and the status of forms belonging to the Australian Avifauna.— J. A. A.

**Pearl on the Relative Conspicuousness of Barred and Self-Colored Fowls.**<sup>1</sup>— In this paper are presented statistics of the fowls killed by natural enemies at the Maine Agricultural Experiment Station in 1909. The fowls were Barred Plymouth Rocks, Cornish Indian Games and crosses of these forms. Both the games and crosses were practically self or unicolored birds. The author comments on a note by Davenport<sup>2</sup> to the effect that of 24 chicks killed by crows in one afternoon at Cold Spring Harbor, Long Island, all but one were unicolored. Davenport's conclusion on the acknowledged fragmentary data was that the self-colors of poultry tend to be eliminated by the natural enemies and that pencilled birds are relatively immune from attack because relatively inconspicuous. Doctor Pearl agrees with the final phrase of this conclusion and presents four reproductions of photographs which strikingly illustrate the greater conspicuousness of the unicolored birds, at least under ordinary circumstances.

Davenport's conclusion will comfort those who believe in the protective value of color patterns which render animals inconspicuous to the human eye, but it is based on a single observation which for many reasons may have been misleading. Doctor Pearl however gives the proportions of barred and unicolored fowls among a total of 325, captured in one year by natural enemies from a flock of 3,343 at the Maine Agricultural Experiment Station. The natural enemies were rats, skunks, foxes, crows, hawks, and cats. Of the total number of birds 10.05 per cent were self-colored. Of all the eliminated birds 10.77 per cent were self-colored.

Of the self-colored birds 1.79 per cent were eliminated by recorded enemies (chiefly rats). Of the barred birds 2.26 per cent were eliminated by recorded enemies.

Of the self-colored birds 8.63 per cent were eliminated by unrecorded enemies (chiefly predaceous birds).

Of the barred birds 7.38 per cent were eliminated by unrecorded enemies. In other words, barred and self-colored chickens were captured by natural enemies about in proportion to their total numbers in the flock.

The author concludes that for the time and place under consideration, the relative inconspicuousness of the barred color pattern afforded its possessors no great or striking protection against elimination by natural enemies.

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<sup>1</sup> Am Nat., XLV, No. 50, Feb., 1911, pp. 107-117.

<sup>2</sup> Nature, Vol. 78, 1908, p. 101.

Evidence is accumulating that in the end will overthrow belief in the efficiency of what has been called protective coloration in speculative writings of the past 150 years. Like many other attractive theories that of protective coloration has been unduly elaborated, and facts opposed to it have been ignored. Those who have studied the food of birds, mammals, reptiles, and other groups constantly have the impression forced upon them that the so-called protective adaptations do not protect. Doctor Pearl's results go to confirm the belief that we have been unable to avoid and have often asserted that the influence of natural enemies taken as a whole, is indiscriminate. In other words their food is obtained from the various species they prey upon practically in proportion to the abundance of those species in the state of nature.—W. L. M.

**Economic Ornithology in recent Entomological Publications.—**

In 'The hothouse milliped as a new genus'<sup>1</sup> O. F. Cook says "Prussic acid and other corrosive secretions may aid in the precipitation of colloidal substances in the humus, in addition to the protection that they give by rendering the millipeds distasteful to birds and other animals that might otherwise feed upon them." This statement implies that millipeds have no natural enemies, an Utopian condition probably no organism enjoys. Millipeds are the chief food of certain beetle larvæ, and are greatly relished by toads. They are eaten by armadillos and skunks at least among mammals and the brand of protection their secretions give them against birds is not exactly what men would choose to insure comfort and peace of mind. Records in the Biological Survey show that millipeds are eaten by no fewer than 83 species of United States birds, 36 of which are known to take considerable numbers of them.

Walter E. Collinge begins a new series of economic publications in his 'First Report on Economic Biology'<sup>2</sup> and as usual includes references to the food of various birds. Crane fly larvæ, well known pests of root and cereal crops, are recorded as doing serious injury to bulbs. The bird enemies of these insects include the starling, lapwing, pheasant, various gulls, and the rook. It is of particular interest that one of the shorebirds should be assigned great economic value, as the whole group has recently received that distinction in this country. Collinge says: "All the species of crane flies have increased enormously with the decrease of the lapwing and the same holds true with regard to wireworms and other soil pests."

Mr. Collinge presents a summary of his investigation of the rook, which has previously been reviewed,<sup>3</sup> and a note on the injurious budding of fruit trees by bullfinches. The stomachs of 176 birds collected in April and May, contained nothing but fruit buds, and there is evidence to indicate that damage to young fruit continues through June and July. Aggressive

<sup>1</sup> Proc. U. S. Nat. Mus., 40, 1911, p. 625.

<sup>2</sup> Birmingham, England. 1911, 78 pp.

<sup>3</sup> Auk, XXVII, No. 3, July, 1910, pp. 359, 360.