leaf-mining sawfly during the last three seasons and probably have been as important as all other predators combined." (P. 343).—W. L. M.

Mendall on Fish-eating Birds in Maine.—Howard L. Mendall reports[1] on two summers' field observations and on the examination of the contents of stomachs or regurgitated material illustrating the food habits of four species of birds. Their names and the percentage of individuals eating various types of food are given in the following table:

Name of Bird	Fish	Young Lobsters	Berries and other Vegetation	Echinoderms	Insects
Common Tern.....	45.8	1.9	1.9	1.3	10.9
Laughing Gull.....	37.5	5.0	——	15.0	30.0
Herring Gull.....	36.3	13.9	16.8	16.6	11.8
Double-crested Cormorant.....	80.0 (or more)	——	10.0	——	——

The food items listed are not all that were found but are those upon which estimates of economic value are based. The fish taken are said to have been chiefly herring and mackerel except in the case of the Cormorant which had eaten sculpin, cunner, flounder, eel, herring and tomcod. The first two species have no commercial use and are said to prey upon economically important fishes, while the last four are food fishes. The percentage of Cormorants taking fishes may be larger than 80 but the total is not given. The Cormorant is exonerated from serious blame and its protection is urged.

Although the Herring Gull ranks lowest in the tabulation as a consumer of fishes it is considered a menace to the fishing industry. It is regarded as materially destructive also to young lobsters and to blueberries. The Common Tern and Laughing Gull are excused for taking only a small share of commercial fishes amd appear to capture very few young lobsters. The Laughing Gull is given considerable credit as a consumer of insects and echinoderms although apparently being surpassed by the Herring Gull as a predator upon the latter animals which do some damage to shellfish. The destruction of blueberries by Herring Gulls is regarded as serious and feeding upon fish distributed as fertilizer also is charged against this bird. The species is considered a menace to other birds as a predator upon their eggs and young.

The accusations as to agricultural damage have been investigated from time to time by the Biological Survey, usually found less serious than reported, and considering the wary nature of the birds, apparently susceptible of some relief through the use of frightening devices.

In the reviewer's opinion the investigation reported upon would have been improved by use of the volumetric system of showing the consumption of food and by closer identification of food items particularly of insects than is shown in the published account. It is evident that the economic ratings announced for the three Laridae, at least, are a function of the relative numbers of the birds rather than of significant differences in their food habits. The Herring Gull is overabundant, from man's point of view, but if the other species attained equal numbers they would probably be considered injurious, at least to fisheries.

The increase in the numbers of Herring Gulls since the practical abolition of

[1] The relationship of certain sea birds to the fishing industry of the State of Maine, Bul. Dept. Sea and Shore Fisheries, apparently repaged 1–28, illus., 1935.

traffic in the plumage of native birds has often been commented upon, and has resulted ere this in complaints of damage. Most problems of economic injury by birds result from overabundance. Often something should be done to correct the trouble and such a need is now apparent in the case of the Herring Gull on the Maine, if not on the entire New England, coast.

When it comes to judging how many eggs and young of other birds (of similar economic tendencies) Herring Gulls should be allowed to consume we get into the deep waters of ecological relationships wherein we are so inexpert as only to flounder about, not knowing really what course to follow. We can extend preferential treatment to species as we please (better, as we are able) but we should not pretend that such treatment is based on knowledge of what the relative numbers of those species should be under natural conditions. We simply do not know what if any numerical relationship may be normal, nor do we know what range of fluctuations the species may tolerate without threats to the continued existence of any of them.

It is good to have food habits research carried on anywhere as it is essential to the proper solution of all problems in economic ornithology, but one could wish to have it done chiefly by one central organization, as well equipped as possible, so that the work could attain the highest possible standards. This is not intended as a criticism of the author here reviewed as he undoubtedly did the best he could under the conditions surrounding the investigation.—W. L. M.

Griscom's 'Ornithology of Panama.'—Mr. Ludlow Griscom, who has given much attention to the birds of Panama for some years past, has prepared a list[1] of the species and subspecies recorded from the Republic with their general range and their distribution in Panama. He has studied most of the collections of Panama birds in America and several of those in Europe, a total of 16,637 specimens, while on several trips to the country he has had personal field experiences with some 700 forms. He is therefore well qualified to prepare such a list as is here presented.

As an introduction Mr. Griscom presents a discussion of the life zones of the Republic. He first emphasizes the fact that Panama is sharply divided by the isthmus into two areas—Western Panama, practically an extension of the Costa Rica highlands; and Eastern Panama, the northern apex of the rain forest of Colombia with a mountain fauna similar to that of the western Colombian Andes. He then considers the Temperate, Sub-tropical and Tropical zones of each and their divisions, listing the characteristic species.

The list will be of the greatest value to those engaged in the study of middle American birds and we are much indebted to Mr. Griscom for bringing together all of the recorded information on the Panama species. The avifauna of Panama is exceedingly rich, the reviewer's list of the birds of the Canal Zone included 432 forms and the present one, covering the entire Republic, totals 1038, while 400 species are recorded from the Tuyra Valley alone!—W. S.

Pickwell's 'Bird Studies.'—One of the best of recent publications for the teaching of ornithology in schools is Dr. Gayle Pickwell's series of 'Natural History Pictures' covering the birds. There are forty-eight excellent half-tone prints 8 x 10 ins., from actual photographs, representing nests and eggs, young and adult birds of various species. Accompanying these is a booklet of seventy-one pages, giving on single pages printed on one side of the paper, a full account of each picture with details on the birds represented. These may be cut out and mounted on the backs of the pictures or both mounted on heavier guards.

[1] The Ornithology of the Republica of Panama. By Ludlow Griscom. Bull. Mus. Comp. Zool., Vol. LXXVIII, No. 3, April, 1935. Pp. 261–383.