moves several long scales of the inner involucre by a clean cut close to the receptacle, thus exposing the plumed akenes, and then seizes a mouthful of these between the plumes and 'seeds,' lopping off the plumed pappus and swallowing the 'seeds.' The mutilation of the involucre by the sparrow's beak can be seen until the flower stalk dries and falls. Fully three-fourths of the dandelions that bloomed on the Department grounds during April and May, 1898, were mutilated by birds.

The English sparrow, in spite of the services it renders in consuming weed seed, is a pest because of its despoiling buildings, and because of its extensive pillaging of fruit and grain. The native sparrows, on the contrary, have no such noxious habits, and are much more efficient as weed-seed destroyers.

The several species of goldfinches are equally beneficial. The American goldfinch confines its attacks almost entirely to the *Compositæ;* the thistle, ragweed and dandelion being its favorites. Last October I observed a flock of fifty on a New Hampshire farm. A bird would alight on a bull thistle and the pappus would float away as it feasted. Under a thistle head I found over a hundred empty akenes that had been split open on one side and had their seeds removed. These goldfinches alighted, several at a time, in a single ragweed plant and fed so busily that I could approach within a few feet of them. On another day this flock of birds fed upon the evening primrose. According to Mr. H. C. Oberholser the goldfinch also feeds upon beggar ticks (*Bidens frondosa*) and milkweed (*Asclepias syriaca*).

Dr. E. V. Wilcox has observed American goldfinches in Montana feeding in flocks of fifteen to twenty on the wild sunflower, which is a very bad pest in the West. In the same State he observed Juncos and red poll linnets eating the seeds of the Russian thistle.

The goldfinches and native sparrows are more beneficial to agriculture than a number of other species, such as the English sparrow and blackbirds, which at times injure grain and fruit, but there are, however, in the work of weed-seed destruction some fifty species of birds engaged, and the number of species of weeds which they tend to eradicate amounts to more than three score.

Sylvester D. Judd.

Department of Agriculture.

THE BIOLOGY OF THE GREAT LAKES.

Science for July 1, 1898, contained a notice by Dr. H. M. Smith, of a proposed Biological Survey of Lake Erie to be carried out under the auspices of the United States Commission of Fish and Fisheries.

Unfortunately, none of the work of the season of 1898 could be entered upon until the middle of July, and it was discontinued about the first of September. Since the work outlined in the second paragraph of Dr. Smith's notice is of such a character that it must be carried on continuously, it must wait for the establishment of a permanent biological station on the lakes.

The work that could actually be undertaken was that outlined in the third paragraph of the notice. The shortness of the time (4–6 weeks) did not permit results to be reached in many of the problems under investigation; so that the results of the summer's work so far published are contained in three papers by Dr. Jennings, a brief notice of the occurrence at Put-in-Bay of *Trochosphæra solstitialis*, contained in Science, October 21, 1898, and two papers on 'The Motor Reactions of *Paramœcium*' and the 'Laws of Chemotaxis in *Paramœcium*' in the *American Journal of Physiology*, May 1, 1899. Progress was, nevertheless, made in all the other lines of work. Some of the results are now awaiting publication

and others will be ready for publication during the coming autumn.

During July and August, 1899, work will be continued at Put-in-Bay. The party will consist of the writer, as director; Professor H. B. Ward, of the University of Nebraska; Dr. H. S. Jennings, of Dartmouth College; Dr. Julia B. Snow, and Mr. R. H. Pond, besides a number of assistants. The members of the party will continue the work undertaken last summer, and referred to in Dr. Smith's notice, except that Mr. Pond, who takes the place of Mr. Pieters, will undertake an experimental investigation of of the nutrition of the larger aquatic plants.

The entire party will work at Put-in-Bay during July. During August it is intended to divide the party. Those engaged in experimental work will remain at Put-in-Bay. The writer and Professor Ward, together with a number of assistants, to act as collectors, will make a tour of the lake for the purpose of making collections, and in order to study the distribution and constitution of the plankton in the different parts of the lake.

The locality at Put-in-Bay affords a variety of conditions and is rich in aquatic fauna and flora. The occurrence of the huge infusorian *Bursaria truncatella* and of *Trochospæra* are of especial interest.

During August it will be possible to offer the facilities of the laboratory to a limited number of investigators. The United States Commission of Fish and Fisheries will furnish all apparatus, glassware and reagents and place the entire resources of the laboratory at the disposal of such investigators without charge. Those who wish to take advantage of this opportunity should communicate with the writer at Ann Arbor, Michigan, before July 1st; at Put-in-Bay, Ohio, after July 1st.

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THE INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE.

GEOLOGY AND GEOGRAPHY.

THE schedule of classification of writings relating to Geology and Geography which it is proposed by the International Catalogue Committee to adopt appears, on the whole, to have been well considered, though, as regards its details, it is evidently open to certain criticisms. Thus it will be noted that there is no recognition of any subdivisions of the Archæan. The matter of soils, clearly of much importance, finds no place in the list. It is hardly to be grouped under the heading of Denudation and Deposition. So, too, the matter of shore lines appears to have fairly a share in a scheme where glacial geology is ranked by itself apart. It may also be remarked that the whole field of economic geology is not suggested by any of the headings, and surely deserves recognition in any catalogue. Were this heading adopted it would naturally include a large part of the papers concerning veins and other ore deposits. As it is, these phenomena appear not to have been thought of.

Under the heading of Geography is a schedule of classification on a topographic basis, which is probably intended to serve also for the distribution of a portion at least of the works on geology, though this is not clearly stated. As a whole, the topographical classification which has been adopted commends itself to the reader. In places, however, the meaning is not clear, as in '*K* Arctic: Greenland and the area north of the Arctic Circle, or all the coasts of Continental America, Asia and Europe, *whichever is farther north*' (the italics are ours). It is possible, by systematic exegesis, to arrive at some conception of what the writer meant, but at first sight it seems to imply a variable *northness* of these several areas. It may also be noted that the category denoted by *ea.*, viz., Asiatic Russia, is much too