In an article entitled "A Series of Eagle Tarsi from the Pleistocene of Rancho la Brea" (Univ. Calif. Publ. Geol. VI, October 9, 1911, pp. 305-316), Miller describes and figures three new raptorial birds: *Morphnus woodwardi*; *Geranoaetus grinnelli* and *G. fragilis*. As in previous cases, the nearest related species are now restricted to South America. Comparison is drawn by the author not only with the nearest related forms, but with the Golden and Bald Eagles. It seems that of the fossil species the one bone most often preserved is the tarso-metatarsus. Miller points out that "this bone is so characteristic a part of the avian skeleton and reflects so readily the characters of the species" that in dealing with adequate material no hesitation is experienced in making specific determinations from this member alone.

The second paper bears the caption "Avifauna of the Pleistocene Cave Deposits of California" (Univ. Calif. Publ. Geol. VI, October 28, 1911, pp. 385-400). Thirty forms are listed, a few of these are not yet identified beyond the genus, the majority are apparently identical with existing species, while three are newly named in this paper. The latter are: a black vulture (*Catharista shastensis*), a condor (*Gymnogyps amplus*), and a great horned owl (*Bubo sinclairi*). Associated together in this ancient avifauna, as preserved in Potter Creek and Samwel caves, Shasta County, and Hawver Cave in Eldorado County, were, besides the species just named, a long-legged eagle, the turkey vulture, the sharp-shinned, red-tailed, Swainson and rough-legged hawks, the pigmy, elf, and short-eared owls, ruffed and sooty grouses, valley and mountain quails, a species of turkey, the crow, Steller jay and Brewer blackbird. It is of particular note that the little elf owl should have occurred in the Shasta region, when it is now restricted to a range far to the southward.

Miller finds that in these cave deposits, the remains of ground-dwelling birds predominate. This suggests "that their bodies were either brought in as the prey of predatory forms or else swept in by currents of surface drainage." Owls and vultures, of course, commonly resort to caverns as places of abode, and the bodies of those dying could have been carried into the more remote recesses by predaceous mammals or currents of water.—J. GRINNELL.

WOODPECKERS IN RELATION TO TREES AND WOOD PRODUCTS. By W. L. MCATEE (=U. S. Dept. Agric., Div. Biol. Surv., Bull. no. 32, 99 pages, 12 pls., 44 figs. in text; Sept. 26, 1911).

This publication of the Biological Survey, following closely after the one on the "Food of the Woodpeckers of the United States" furnishes considerable evidence as to the damage to trees, lumber, etc., by members of this group of birds. The paper is divided into two parts, "damage by woodpeckers in general," and "damage by sapsuckers", the latter being by far the most comprehensive. Under the first head, the kinds of injury to trees caused by woodpeckers are treated—holes made in digging out insects, excavation of nest and shelter cavities, attacks of tree enemies aided by woodpeckers, and damage to wooden posts and structures.

This section of the paper closes with a few paragraphs on the prevention of damage by woodpeckers, attention being called to the value of experiment along this line and to the use of nesting boxes and of tin as a protective covering when practicable. The first suggestion is an important one. Not long ago the statement was made to the reviewer that the placing of a newspaper in a hole in a building drilled by a flicker was sufficient to drive the bird away. The statement has also been made that the hanging of a looking glass on a string from the gable of a building keeps flickers away. Whether these statements be true or not they show what two men have found out, to their own satisfaction, by experimentation. Experiments like these need to be tried out; for who can tell but that some simple thing may prevent some or most of the damage done by woodpeckers.

The greater part of the paper on "damage by sapsuckers," is given over to an enumeration of the trees and shrubs attacked by the different kinds of sapsuckers. The most interesting part deals with the effect of sapsucker work on the external appearance of trees, on the health of trees, and on lumber and finished wood products. From the evidence brought forward by a separate enumeration of the kinds of shrubs and trees attacked, and the type of damage done, it is evident that the sapsucker damages much valuable timber so that it is rendered unfit for use. In conclusion this statement is made: "However, if only one percent of the number of trees attacked (ten percent of the whole number) is discarded, the annual loss for the whole United States is more than a million and a quarter dollars." A large number of illustrations furnish indisputable evidence as to the effects of sapsuckers.

The paper is particularly interesting on account of the fact that it is one of the first of the publications of the Biological Survey to bring forth so large an amount of evidence *against* a bird. Heretofore there has been a tendency to minimize the harm as compared with the good, even with such birds as the linnet and blue jay. Mr. McAtee appears to have set forth evidence impartially.

One point not emphasized seems worthy

of strong emphasis in such a paper; namely, the fact that locality and numbers of individuals have a great deal to do with the amount of damage done. In some parts of the United States sapsuckers are of such rare occurrence that the placing of the birds on the blacklist would be foolish indeed. As the study of economic ornithology progresses it will be seen more and more clearly that whereas a bird may be a pest in certain localities due to certain local conditions, yet in other localities the same bird may be a decided benefit or at least of neutral value. There is no intention of defending sapsuckers as a class, for we agree with Mr. McAtee that the sapsucker "must be included in the class of injurious species, the destruction of which when caught redhanded is justifiable"; but "circumstances alter cases" and this view is important.

The bibliography is a welcome addition in this publication of the Biological Survey. To the average farmer this means nothing, but to the scientific student it adds greatly to the value of the paper. The incorporation of reliable data by other workers in the field adds much to this type of publication. It is a pleasure to note also the elaborate set of plates and figures. To the men for whom these publications are intended such illustrations mean much more than the printed data.—H. C. BRYANT.

A MONOGRAPH OF THE BROAD-WINGED HAWK (*Buteo platypterus*) by FRANK L. BURNS [=The Wilson Bulletin XXIII, 1911, nos. 3 and 4, pp. 143-320, 10 pls.].

The scope of this work is perhaps best indicated by a recapitulation of the different heads under which the subject is treated, which, in order of succession, are as follows: Diagnosis of genus, distinguishing specific characters, description and measurements, synonymy, geographical distribution, flight, food, voice, enemies, disposition in the presence of other birds, disposition in the presence of man, disposition in captivity, migration, station, mating, nidification, incubation, young, molt and renewal, bibliography.

The assemblage of the mass of data here presented is evidently the result of a large amount of painstaking labor. Besides being a compilation of previously published literature on the subject, the paper contains much new and unpublished material, the many manuscript records in the details regarding distribution, and the careful accounts of the molt, actions and habits of young birds raised in captivity, being particularly noticeable. The illustrations are excellent and well chosen, figuring young birds, immatures, and adults, eggs and nests.

It is, therefore, an important contribution to our knowledge of the species, and a praiseworthy effort at condensing and making accessible the widely scattered information dealing with the subject. In spite of its general excellence, however, there are a few points which the reviewer (possessing a very limited knowledge of the species dealt with) feels could have been made more clear and explicit. Thus while in the definition of its geographical distribution, the southern limit in summer is given as from Florida to central Texas (page 170), farther on, under "nidification" (page 248) there is mention of the character of nests found in Central America, leaving the reader in doubt as to whether the species occurs there in summer, or breeds in winter. Then in the treatment of the Cuban bird, a new name is offered for the subspecies, *Buteo platypterus cubanensis*, but in an exceedingly casual manner, neither a type specimen nor type locality being designated; also it is impossible to determine from the text whether or not the author believes the bird he is naming is recognizably distinct.—H. S. SWARTH.

THE RELATION OF BIRDS TO AN INSECT OUTBREAK IN NORTHERN CALIFORNIA during the spring and summer of 1911. By HAROLD C. BRYANT. (=CONDOR XIII, no. 6, Nov.-Dec., 1911, pp. 195-208, figs. 67-70).

This is the first attempt, so far as the reviewer is aware, to study the behavior of birds in the presence of abnormally large numbers of butterflies. An idea of the immense numbers of these insects (*Eugonia californica*) present during the outbreak in northern California, is given by Mr. Bryant's statement that an average of 108 per minute passed between two fir trees 20 feet high and 30 feet apart, and that 150 were counted on one square foot of ground at a drinking place. From direct observation the author learned that the Brewer blackbird, the western kingbird and meadowlark fed upon the butterflies, and examination of stomachs added the Say phoebe and the blue-fronted jay. Both sources of evidence pointed to the Brewer blackbird as the principal bird enemy of the insects, and flocks of this species were seen feeding almost exclusively upon the *Eugonia*. Thus only five species of birds out of a total of 45 species observed, and of 21 of which stomachs were examined, were found feeding upon butterflies under circumstances about as favorable for that pursuit as can be imagined. Eliminating the smaller birds which could hardly be expected to prey upon *Eugonia*, it was found that the known enemies constituted only about a fifth of the numbers of species of the remaining larger birds.