through gas clouds and barrage after all other means of communication had failed. Few, we imagine, realized the extent of the 'Pigeon Service' or that the United States had a similar organization with which at least one ornithologist, Mr. F. C. Lincoln, of the Colorado Museum, was connected. Mr. Gladstone also describes the use of Canaries, which are much more sensitive to poison gases than man, as a means of detecting the presence of gas in tunnelling operations at the front, while singing Canaries were used extensively on ambulance trains to cheer up the wounded soldiers. The controversy between the farmers and the bird protective societies as to whether birds, especially pheasants, were of more value during war times as food or as crop protectors, was hotly waged and resulted in some temporary modifications in the game regulations.

Mr. Gladstone's evidence is that air raids terrified some birds but not others, while sea birds that were at first frightened by the air planes soon became accustomed to them. Neither of these factors seems to have caused any actual destruction of bird life, but the sinking of oil ships by the submarines was a source of real danger, and large numbers of ducks and other sea birds perished from their plumage becoming hopelessly caked with the oil, so that flight was impossible. On the actual battlefield in France the most reliable testimony is to the effect that the birds were but little affected by the terrific upheaval going on around them, and returned again to nest in the most devastated spots. Of course local conditions affected them to some extent, but generally speaking they seemed indifferent to the noise of battle. Mr. Gladstone in this connection cites Charles Waterton to the effect that the noise of a gun is the one sound to which birds never become accustomed, a theory which the war has pretty well disproved.

Upon migration and habits the war seems to have had little or no effect, although the destruction of large forest areas has, as in all cases of deforestation, affected the presence or abundance of species dependent upon such environment for their existence.

Mr. Gladstone has done a good work in collecting the information presented in this volume, which is not only an important record but a valuable contribution to bird behavior and an exceedingly interesting book for the general reader.— W. S.

Mathews' 'The Birds of Australia.' [1] — The latest part of Mr. Mathews' sumptuous work concludes the fifth volume and also completes the treatment of the non-passerine birds, and the author takes this opportunity to add several species omitted from various preceding parts as well as several appendices, etc.

The part opens with the completion of the account of the Coucal, which includes a description of *Polophilus phasianinus melvillensis* (p. 391), and is followed by a consideration of that typically Australian group, the Lyre-

[1] The Birds of Australia. By Gregory M. Mathews. Volume VII, Part V. July 10, 1919. pp. 385–499. + i–xii [Introduction, etc., to Vol. V.].

birds. The biographical treatment is full and interesting, and the author continues to refer the *Menura alberti* to the separate genus *Harriwhitea*, which he recently established for it.

Following this come plates with text of *Globicera pacifica, Reinholdia reinholdi, Pterodroma inexpectata*, to which by the way he refers *Oestrelata fischeri* [sic] Ridgway and *Æ. scalaris* Brewster; *Diomedia chionoptera* and *Psephotellus chrysopterygius*.

These follow right after the Lyre-birds without any separate heading or anything to show the general reader that they do not belong to that family. Indeed, in the 'Contents' the Pigeon is so included, while all the others are listed under the genus *Reinholdia*! They could appropriately have been designated Appendix I. There is also a figure of a Cuckoo on the Pigeon plate to which we find no reference whatever, and stranger still a paragraph at the end of the text of the Parrot (*Psephotellus*) marked 'Addenda,' which deals with the nomenclature of a genus of Weaver Finches, a family that will not be considered until one of the last parts of the work.

We are forced to the opinion that a lot of supplementary material has been printed just as it came to hand, without proper editing or allocation, and this opinion is strengthened by a perusal of the other appendices. That designated 'Appendix A,' while it has no heading, is apparently a list of papers containing Mr. Mathews' descriptions of new Australian birds and a list of extralimital genera, species and subspecies described by him. The first section of the latter consists of new genera proposed in 'The Birds of Australia,' followed by another entitled "Other Genera," by which is apparently meant genera proposed in other works. There are four of these lists with the names arranged in the order in which they occur, but why they were not merged into one, with the names arranged alphabetically, we are at a loss to understand.

'Appendix B' is one of the most important contributions to ornithological bibliography that has appeared for some time, being a list of over 150 important ornithological works, with exact dates of publication or references to sources where this information may be obtained. Mr. Mathews has, as is well known, devoted a great deal of time to working out the history of the publication of the older ornithological works and has here generously placed at the disposal of others the results of his labors. To make the list still more accurate, it was submitted to Dr. Charles W. Richmond for criticism and correction, but here again the lamentable lack of editorial supervision which characterizes this part of the work is again in evidence. For some reason, Dr. Richmond's corrections and comments are not interpolated where they belong, but are printed all together as 'Addenda to Appendix B,' so that unless one looks in both lists for every publication he is liable to get erroneous information. In view of the great demand for the information contained in this appendix and the comparatively few persons who will have access to it in its present location, we trust that Mr. Mathews may in the near future consider pub-

lishing it in revised form in a single list as a number of ' The Austral Avian Record,' or in some journal where it would be generally available.— W. S.

Wetmore on Lead Poisoning in Waterfowl.[1]— This is a report of especial interest to gunners and gun clubs. The birds that are affected pick up shot about the shooting grounds, where a considerable amount has naturally accumulated. In one marsh in Utah it was estimated that 75,000 shot gun shells are used each season, each of which contains about an ounce of shot, so that the accumulation is very great, and experimental sifting of the mud where the ducks fed discovered shot always present. Experiments on captive birds showed that six pellets of No. 6 shot were sufficient to cause the death of a Mallard. While magnesia sulphate acts as a cure there is apparently no way to check the poisoning, and attention of gunners is called to the lead poisoning so that the symptoms may be understood by persons finding birds so affected. The general results of this investigation have already been published in the Journal of the Washington Academy of Sciences, June 4, 1918.— W. S.

French's ' The Passenger Pigeon in Pennsylvania.' [2]— The title of this little book is slightly misleading, as fully half of the text is occupied with Indian and forest lore of Pennsylvania and accounts of the Passenger Pigeon in other parts of the United States, from Wilson, Audubon, Cooper, etc., as well as accounts of pigeons in general compiled from not very accurate sources. The portions devoted to the Passenger Pigeon in Pennsylvania are scattered through the volume, separated by chapters and paragraphs dealing with other topics, with a total lack of system or plan. They are of very unequal value, some from old pigeon hunters written in their declining years when memory is not always to be trusted, others consisting of newspaper articles reprinted verbatim and open to the usual criticism that attaches to such publications.

The best chapter is that by Col. H. W. Shoemaker on 'The Passenger Pigeon — Its Last Phase,' in which the final disappearance of the species is sketched and the last alleged observations enumerated. Even here, however, no mention is made of the last specimens actually secured in the state.

Some of the information contained in the book is absolutely erroneous, as for instance, the statement that two eggs constituted a clutch, when we have the testimony of reliable ornithologists from the time of Alexander Wilson down, that only one egg was laid.

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[1] Lead Poisoning in Waterfowl. By Alexander Wetmore. Bulletin 793, U. S. Department of Agriculture. pp. 1–12. July 31, 1919.

[2] The Passenger Pigeon in Pennsylvania. Its Remarkable History, Habits and Extinction, with Interesting Side Lights on the Folk and Forest Lore of the Alleghanian Region of the Old Keystone State. By John C. French. Altoona, Pa. 1919. pp. 1–257, numerous half-tone illustrations. For sale at the Franklin Bookshop, 920 Walnut St., Philadelphia. Price, $4.00.