an investigation carried on by him in the Department of Biology of the University of Toronto of the fluctuation in numbers of the Ruffed Grouse (*Bonasa umbellus*) with special reference to Ontario. We have read the report through and seldom have we found a more or less technical report presented in such a clear, readable, style.

Mr. Clarke has searched the literature for data on possible fluctuations in the past and has issued a number of questionnaires through which to gather present day data. He finds that notable diminutions in the numbers of the Grouse have occurred approximately every ten years, from 1874 to 1934, and doubtless earlier; that these diminutions, preceded by comparative abundance and followed by comparative scarcity, are not simultaneous throughout the country and that they differ as much as three years at different localities; and finally that the diminution is due mainly to the failure of the young birds to reach maturity. As an example he takes ten "territories" each with its pair of birds; the normal number of young should theoretically be ten per pair but is actually less, so that the number of young and adults at hatching is 108 while in the fall it is 72 and the number of adults next spring will be 30, the decrease in the year's crop being due to shooting, and other causes. In years when the diminution takes place the number of young and adults at hatching is the same i. e. 108 but by autumn there are but 36 left and only 15 adults the next spring. These are actual counts and show clearly the nature of the decrease. As to the cause of the diminution Mr. Clarke found a number of parasites and disease germs affecting the Grouse but only one "significantly associated with the cyclic diminution and compatible with its characteristics was a blood protozoon, *Leucocytozoon bonasae*," belonging to a genus which moreover has been found to be peculiarly pathogenic to young birds. The secondary host of related species of this protozoon has been found to be a fly of the "Black Fly" group and it is possible that this is the carrier in the case of the Grouse. There is much more of interest in this carefully prepared report which is of the greatest importance in connection with investigations in North America and also in Europe with other species of Grouse. As regards the claim advanced by certain game protective publications that predators are responsible for the diminution in Grouse, Mr. Clarke finds that no such claim has any basis from a scientific standpoint for any resident or regularly migrating predators, but suggests the possibility of irregular migratory species such as the Goshawk or Snowy Owl being a factor. Investigation, however, showed that the diminution preceded the arrival of these species! It should be read by all officials of State Game Commissions where Grouse occur.—W. S.

Are Arsenicals Dangerous to Game?—An interesting investigation[1] of this subject in France should be brought to the attention of ornithologists as definite data in this vexed field are scarce. In laboratory tests, the minimum lethal dose of three arsenicals for the Common Partridge was determined: lead arsenate 60.6 mg. of arsenic per kilogram of live weight; calcium arsenate 13.8 mg.; and Paris green 10.6 mg. It was found that a smaller quantity of arsenic sufficed to kill when divided into several daily doses than was required for a single fatal dose. The Partridge is rather susceptible to arsenical poisoning compared to the Domestic Fowl which has extraordinary resistance. However, an adult Partridge can scarcely devour enough poisoned potato beetles or their larvae to obtain a lethal quantity of arsenic. The young are somewhat more in danger but it would require an improbable combination of circumstances to result in poisoning even them. The risk of Partridges being killed by the usual insecticidal treatment for potato beetles is regarded as slight. Analysis

[1] Chappellier, A. et M. Raucourt, Les traitements insecticides arsenicaux sont-ils dangereux pour le gibier et pour les animaux de la ferme? Ann. Ephiphytes etc., Ministry Agr. France, N. S., 2(2) 1936, pp. 191–239, 27 tables.

of carcasses of animals collected in the field showed that none had died of arsenical poisoning.—W. L. M.

Birds against the Potato Beetle.—Resulting from the same investigation as the previously cited paper, this account[1] gives some results of experimental feeding of potato beetles to the Gray Partridge. France is now experiencing the surge of a newly established pest and is interested as was the United States at a corresponding period in every agency that might reduce the invasion. The American literature on bird enemies of the potato beetle is imperfectly reviewed. Considerable attention is given to various kinds of poultry in relation to the insect, but only two wild birds of France are recorded as enemies, the "Red Partridge" and the Gray Partridge. The authors conclude: "Despite all our desire, under the circumstances, to magnify the rôle of birds, we cannot recommend that the farmer give up the sole means of safety remaining to him, namely, insecticides employed methodically and with care."—W. L. M.

Robinson and Chasen on 'Birds of the Malay Peninsula.'—The third volume[2] of this notable work has appeared and, owing to the death of the senior author, it is largely the work of Mr. Chasen, who has admirably maintained the high standard of the preceding issues. In accordance with the original plan, by which each volume is devoted to birds of a different category, the present one deals with "Sporting Birds and Birds of the Shore and Estuaries."

As the habitat or geographic arrangement of the volumes does not indicate their contents from a systematic standpoint, it may be well to state that the present volume contains accounts of fifteen Gallinaceous birds, two Bustard Quail, twelve Rails, twenty-one Pigeons, sixteen Gulls and Terns, forty-nine shore birds, twenty-six Herons, Ibises etc., five Ducks and twelve Cormorants, etc. There are twenty-five full page colored plates from paintings by Grönvold. The text, as heretofore, consists of full descriptions and measurements and a brief statement of range and habits. There are also keys for each of the groups to facilitate the identification of the species, and an introduction discussing the geography of the peninsula with a map.

We congratulate Mr. Chasen upon the way in which he has carried on this publication and are glad to know that the two remaining volumes will be prepared by him and the work completed according to the original plan.—W. S.

Thomson's 'Birds of Cape York Peninsula.'—This important contribution[3] to Australian ornithology is a report upon the results of three expeditions into this wild and extremely interesting part of the continent which covered in all about three years. The investigations were carried on under the auspices of the University of Melbourne and were primarily concerned with anthropology although much zoological work was also carried on especially with regard to geographical distribution. The author suggests, very logically, that a proper study of the Aboriginals should be accompanied with a study of the general natural history so closely are the two related.

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[1] Chappellier, A. et M. Raucourt, Les oiseaux contre le doryphore, op. cit., pp. 241–252, 1 table.

[2] The Birds | of the | Malay Peninsula | a General Account of the Birds | Inhabiting the Region from the | Isthmus of Kra to Singapore with | the Adjacent Islands. By The Late Herbert C. Robinson and Frederick N. Chasen. Volume III: Sporting Birds; Birds of the Shore and Estuaries with Twenty-five Full-Page Plates in Colour Issued by Authority of the Federated Malay States Government. H. F. & G. Witherby, Ltd., 326 High Holborn, London, W. C. i. 1936. Pp. i–xix + 1–264. Pll. 1–25. Price 35 shillings net.

[3] Birds of Cape York Peninsula Ecological Notes, Field Observations, and Catalogue of Specimens Collected on Three Expeditions to North Queensland. By Donald F. Thomson, D.Sc., Research Fellow, University of Melbourne. Pp. 1–82. Pll. I–XV. Price one shilling six pence. Angus and Robertson, Sydney, Australia.