

notable volume and everyone interested in game farms and in wild life conservation should read it in its entirety. The numerous illustrations add greatly to its value. There are several color plates by Kalmbach and some sixty-five halftone plates, beside numerous text figures. Mr. Stoddard and his associates, as well as the Committee which made the investigation and publication possible, deserve the thanks both of ornithologists and sportsmen. Such scientific investigations as this are what we need before policies or regulations can be intelligently formulated. Too often those in charge of game preservation, ignorant of the problem, rush in and destroy valuable wild life for the extermination of which future generations will hold them responsible.—W. S.

Leopold's 'Game Survey of the North-Central States.'—There are several agencies interested today in the preservation of game: the hunters who find in its pursuit sport and recreation; the naturalists who in its species find interesting subjects for scientific study; the conservationists who stand firmly against the extermination of any species; and the firearms and ammunition makers whose business will be wiped out if game disappears or becomes so scarce as not to be worth pursuing.

Until recently the only measures for preventing extermination of game by the constantly increasing horde of gunners have been the close season and the bag limit, enforced by law, and the sale of hunting licenses to secure funds for game law enforcement.

Lately the possibility of breeding game birds and liberating them, primarily on privately owned or leased land, or on reservations, has been recognized and practised with some success, but the difficulty of meeting all of the problems that present themselves has demonstrated the need of far more extensive knowledge of the habits of game, its relation to its environment, and to man's various activities.

Some of the sportsmen have made an important move in this direction in their Quail investigation and Mr. Stoddard's volume on Bobwhite presenting the results of the research has just been reviewed. Unfortunately the majority of hunters have been willing to go ahead with their hunting so long as any game at all is to be found, with little or no thought of the future and with assurance that conditions will improve. The arms manufacturers, to whom game extinction means more in dollars and cents than to any of the other groups, have recently become thoroughly alarmed at the decrease in game. They are fully awake to the situation and have sponsored a careful and exhaustive survey of the whole problem. Their first report,¹ a game survey of the north central states by Aldo Leopold, a well equipped authority on the subject, is now before us.

¹ Report on a Game Survey of the North Central States Made by Aldo Leopold for the Sporting Arms and Ammunition Manufacturers' Institute under direction of its Committee on Restoration and Protection of Game. Madison, Wisconsin, 1931. Pp. 1-299. Price \$1.00 from American Game Association, Investment Bldg., 15th and K Sts., Washington, D. C.

In it we have one of the most reliable summaries of the subject that has yet appeared. Arms manufacturers can hardly be charged with any desire to distort facts, as their whole object is obviously to produce more game, while such an investigation as they have sponsored is not dependent upon government or state appropriations and is therefore free from political influence.

Mr. Leopold's work has been well done and his report is crammed with valuable information which will require time to fully digest, but which should be carefully studied by all interested in conservation. He does not pretend that it is exhaustive and he points out many questions which are still unsolved. He has made use of various published reports but has checked most of their findings, while he has gathered a vast amount of first-hand information. His chapters cover Bobwhite, Rabbits, Ring-necked Pheasant and Hungarian Partridge, the Game Cycle, Ruffed Grouse, Prairie Chicken, Big Game (Turkey and Deer), Water-fowl, Predators, Game Lands and Administration, and the Conservation Movement.

In the case of the Bobwhite he tells us that from a "pre-settlement" stage of its abundance there came a period of definite increase with the first rough agricultural activities of the pioneers. Then came a period of decrease as agricultural activities were intensified, when wire fences replaced the old fence rows and guns and dogs took the place of primitive trapping, and finally a time of further decrease as greater leisure was enjoyed by the population, hunters increased in number and improvements were made in guns and ammunition, while automobiles made it possible for individual gunners to cover vastly greater territory. Finally came the posting of lands and the removal of the Quail from the game bird list in several states in an effort to save it from extermination.

Now come the possibilities of Quail as a crop and the problem of interesting the farmer in restoring some of the more primitive conditions which formerly made for Quail increase. Clean farming, as Mr. Leopold says, is the main destructive agency in the decrease of game birds, but if the farmer is to allow Quail cover to grow up on the farm he must be directly compensated for the labor and sacrifices which it involves. Our author contends that the average expense of the hunter in license fees etc., show that he could well afford compensation to the land owner for game production, while the average citizen should help to carry on the cost of conservation as a public welfare activity.

While this is perfectly logical it may be a difficult thing to persuade conservationists to assist in the production of game for hunters to kill. That public funds might be used for the purpose as they now are in restocking with imported or bred birds is much more probable.

Mr. Leopold shows that grazing in wood lots is a serious detriment to game birds as it destroys their cover and calls attention to further complications involved in the discussion, when he cites the farmer's loss of interest in his wood lots owing to his use of oil instead of wood for fuel,

while the destruction of injurious insects, encouraged by the entomological bureaus, demands the clearing up of all brush.

Mr. Leopold is very logical in his discussion of birds of prey and predators. He says that it is foolish to kill Crows in their winter roosts in order to protect nests and young where Crows are migratory since the Crows leave the neighborhood for elsewhere long before nests are built.

It is interesting to note that this investigation and that of Mr. Stoddard in the Southeast are in substantial agreement on the history of the Bobwhite although they approach the subject from different angles and treat of quite different regions, Mr. Stoddard dealing with a poorly cultivated area available for reservations and breeding farms, and Mr. Leopold largely with a high grade agricultural area where successful farmers have to be dealt with.

In the chapter on Wild-fowl we are sorry to read that in all but one or two duck clubs studied, the Federal limit of 25¹ rather than the state limit of 15 is observed and Mr. Leopold "gathered that the practise met with the acquiescence on the part of both State and Federal wardens!"

Mr. Leopold certainly deserves great credit for the mass of data that he has brought together and which must be considered by both gunners and conservationists if game is to be saved from extermination. We only regret that lack of space prevents us from placing more of the information before our readers.—W. S.

Hornaday's 'Thirty Years War for Wild Life.'—Having in the preceding pages noticed the recent contributions to the game problem by the advocates of Quail raising and restocking, and by the arms manufacturers, we turn to quite a different aspect of the subject as presented by Dr. Hornaday in his 'Thirty Years of War for Wild Life.' Dr. Hornaday has long been the militant advocate of wild life conservation, fighting vigorously for what he considers right and sparing no one who opposes him, and in every campaign for game preservation he has occupied a conspicuous position in the front line of attack.

He opens his book with the statement that it is "a book of pertinent facts and useful history. Many of its records are of the ugly and disagreeable kind that our opponents carefully do not print, . . . some of our logical conclusions are just as ugly and disagreeable as the game slaughter conditions on which they are based." He attributes the decrease in game birds to the increase in gunners, of which there are in the United States today 7,500,000, the equivalent of an army of 7500 regiments of full strength. Of these 6,493,454 are legally licensed while about 1,500,000 hunt legally on their own lands or are hunting illegally. His remedy is still lower bags and shorter seasons and throughout he voices an urgent appeal for the passage of the McNary-Haugen bill to reduce the season to eight weeks with no shooting on baited waters.

He continues his campaign against the pump gun and urges that no

¹ Lately reduced to 15 for next season.