Dr. Casey A. Wood's "Introduction to the Literature of Vertebrate Zoology" (Oxford Univ. Press, London: Humphrey Milford, 1931, foliopost 4to [8½ x 11 inches], pp. xx + 643, frontispiece) pertains so extensively to ornithology that no working ornithological library can afford to do without it. The result of laborious bibliographic research, this work becomes at once useful to active students through the various classifications it gives—chronological, by groups of animals dealt with, by subject, and, exhaustively, by author. Of readable and extremely informative character are chapters on such subjects as Linnaean literature, travelogues of explorers, the literature of zoogeography, periodicals and serials, and rare and unique works. We congratulate Dr. Wood on the final completion of this monumental undertaking.—J. G.

Mr. John R. Pemberton got back on February 10 from a ten weeks' cruise along the west coast of Mexico, visiting the many islands from the head of the Gulf of California south to Socorro. Dr. William H. Burt and Mr. A. J. van Rossem were guests of Mr. Pemberton on his yacht, collecting vertebrates in the interests of Mr. Donald R. Dickey of the California Institute of Technology.

CURRENT DISCUSSION

GAME AND WILD LIFE CONSERVATION

This is a reply to Mr. T. T. McCabe's well written and persuasive *exposé* of two recent manifestations of the sportsman's movement: my "Game Survey of the North Central States," and the several publications issued by "More Game Birds in America." Both are, I take it, inclusively condemned as "a framework of pernicious doctrines, too often speciously glossed over."

Mr. McCabe's attitude raises what seems to me a fundamental issue. I hope that it may provoke some badly needed cerebration among both protectionists and sportsmen, and especially among those intergrades like myself, who share the aspirations of both.

There are many sportsmen who laugh at any attempt to embody the protectionist point-of-view in any game program. "Whatever you do the protectionists will be against it." Mr. McCabe's paper furnishes scant comfort to those of us who have been holding out against this attitude, because we see in it the indefinite continuation of the present deadlock, from which the sharpest pens gain much glory, but the game gains nothing except a further chance to disappear.

"More Game Birds" on the one hand, and the "Game Survey" (as further developed in the "American Game Policy") on the other, represent the opposite wings of the sportsman's camp. From their very inception they agreed to disagree on the very issues with respect to which Mr. McCabe presumably finds them both "pernicious," namely: predator control, exotics, degree of commercialization, and artificial propagation. This divergence, great enough to seem fundamental to two groups of hardened sportsmen, would, I had hoped, be perceptible to readers of the *Condor*.

I do not imply that Mr. McCabe should agree with either "More Game Birds" or myself on these moot questions. I ask, though, whether it is good for conservation for him to dismiss both, with one breath, as equally subversive of what he considers sound policy. (I think this is not too strong a statement, since Mr. McCabe says "these proposals are an offer . . . to the nation, for its game birds," to which he would reply, "Not for sale.")

Of course, no disagreement is ever as simple as it looks on paper. A partial explanation of this one lies, I think, in the fact that Mr. McCabe's game policy, whether he realizes it or not, consists of a system of *personal wishes* which might be realized if America consisted of 120 million ornithologists, whereas mine is a system of *proposed public actions* designed to fit the unpleasant fact that America consists largely of business men, farmers, and "Rotarians," busily playing the national game of economic expansion. Most of them admit that birds, trees, and flowers are nice to have around, but few of them would admit that the present "depression" in waterfowl is more important than the one in banks, or that the status of the blue goose has more bearing on the cultural future of America than the price of U. S. Steel.

Now if Mr. McCabe and I had the courage to challenge this universal priority for things material and things economic, we might consistently hoist the banner "Not For Sale" and die heroically under the heels of the mob. But have we not already compromised ourselves? I realize that every time I turn on an electric light, or ride on a Pullman, or pocket the unearned increment on a stock, or a bond, or a piece of real estate, I am "selling out" to the enemies of conservation. When

I submit these thoughts to a printing press, I am helping cut down the woods. When I pour cream in my coffee, I am helping to drain a marsh for cows to graze, and to exterminate the birds of Brazil. When I go birding or hunting in my Ford, I am devastating an oil field, and re-electing an imperialist to get me rubber. Nay more: when I father more than two children I am creating an insatiable need for more printing presses, more cows, more coffee, more oil, and more rubber, to supply which more birds, more trees, and more flowers will either be killed, or what is just as destructive, evicted from their several environments.

What to do? I see only two courses open to the likes of us. One is to go live on locusts in the wilderness, if there is any wilderness left. The other is surreptitiously to set up within the economic Juggernaut certain new cogs and wheels whereby the residual love of nature, inherent even in "Rotarians," may be made to recreate at least a fraction of those values which their love of "progress" is destroying. A briefer way to put it is: if we want Mr. Babbitt to rebuild outdoor America, we must let him use the same tools wherewith he destroyed it. He knows no other.

I by no means imply that Mr. McCabe should agree with this view. I do imply that to accept the economic order which is destroying wild life disqualifies us from rejecting any and all economic tools for its restoration, on the grounds that such tools are impure and unholy.

With what other than economic tools, for instance, can we cope with progressive eviction of game (and most other wild life) from our rich agricultural lands by clean farming and drainage? Does anyone still believe that restrictive game laws alone will halt the wave of destruction which sweeps majestically across the continent, regardless of closed seasons, paper refuges, bird-books-for-school-children, game farms, Izaak Walton Leagues, Audubon Societies, or the other feeble palliatives which we protectionists and sportsmen, jointly or separately, have so far erected as barriers in its path? Does Mr. McCabe know a way to induce the average farmer to leave the birds some food and cover without paying him for it? To raise the fund for such payment without in some way taxing sportsmen?

I have tried to build a mechanism whereby the sportsmen and the Ammunition Industry could contribute financially to the solution of this problem, without dictating the answer themselves. The mechanism consists of a series of game fellowships, set up in the agricultural colleges, to examine the question of whether slick-and-clean agriculture is really economic, and if not, to advise farmers how they can, by leaving a little cover and food, raise a game crop, and market the surplus by sale of shooting privileges to sportsmen. This mechanism is, I take it, specious. Have the protectionists a better one to offer?

Another mechanism which I have tried to build is the committee of sportsmen and protectionists charged with setting forth a new wild life policy. Has Mr. McCabe read it?

These things I have done, and I make no apology for them. Even if they should ultimately succeed, they will not restore the good old days of free hunting of wholly natural wild life (which I loved as well as Mr. McCabe), but they may restore something. That something will be more native to America, and available on more democratic terms, than "More Game Birds" pheasants, even though it be less so than Mr. McCabe's dreams of days gone by.

Let me admit that my cogs and wheels are designed to perpetuate wild life to shoot, as well as wild life to look at. This is because I believe that hunting takes rank with agriculture and nature study as one of three fundamentally valuable human contacts with the soil. Secondly, because hunting revenue offers the only available "coin of the realm" for buying from Mr. Babbitt the environmental modifications necessary to offset the inroads of industry.

I admit the possibility that I am wrong about hunting. The total cessation of it would certainly conserve some forms of wild life in some places. Any ecologist must, however, admit that the resulting distribution and assortment of species would be very irregular and arbitrary, and quite unrelated to human needs. The richest lands would be totally devoid of game because of the lack of cover, and the poorer lands nearly so because of the lack of food. The intermediate zones might have a great deal of game. Each species would shrink to those localities where economic accident offered the requisite assortment of environmental require-

ments. That same condition—namely the fortuitous (as distinguished from purposeful) make-up of wild life environments—shares, with overshooting, the credit for our present deplorable situation.

The protectionists will, at this point, remind me of the possibilities of inviolate sanctuaries, publicly owned, in which habitable environments are perpetuated at public expense. Let us by all means have as many as possible. But will Mr. Babbitt vote the necessary funds for the huge expansion in sanctuaries which we need? He hasn't so far. It is "blood money" which has bought a large part of what we have. Moreover, sanctuaries propose to salvage only a few samples of wild life. I, for one, demand more. I demand of Mr. Babbitt that game and wild life be one of the normal products of every farm, and the enjoyment of it a part of the normal environment of every boy, whether he live next door to a public sanctuary or elsewhere.

Mr. McCabe taxes me with omitting any mention of game production on public lands, where the one-gallus hunter will have free access to it. I can only infer that he has not read the American Game Policy. Has any group ever proposed a larger public land program, and called for more wild life production thereon? The Policy admits, to be sure, the unpleasant fact that lands must be cheap in order to be public. It advocates the paid-hunting system only for those lands too expensive for the public to own.

Finally Mr. McCabe taxes me with too much interest in exotics. Modesty forbids me to refute this charge in detail. I have persuaded two states to go out of the pheasant business, and several others to limit it to half their area. I devised the "glaciation hypothesis" which seems to exclude pheasants from about a third of the United States. On the other hand, I have recommended the continuation of pheasants and Hungarians in certain regions where economic changes have so radically altered the environment as to make the restoration of native game prohibitive in cost. Just what native species would Mr. McCabe recommend for east-central Wisconsin, or for northern Iowa, or for farm land in Massachusetts?

Let it by no chance be inferred that because I speak as a sportsman I defend the whole history of the sportman's movement. Hindsight shows that history contains any number of blunders, much bad ecology, and not a few actions which must be construed as either stubbornness or hypocrisy. For every one of these, one could point out a counterpart in the history of the protectionists, only there has been no "Emergency Committee" with either the means or the desire to compile and advertise them. Fifteen years ago, for instance, the protectionists closed the prairie chicken in Iowa, and then sat calmly by while plow and cow pushed the species almost to the brink of oblivion. Was this a blunder? Yes—but what of it? Is there any human aspiration which ever scored a victory without losing to some extent its capacity for self-criticism? The worthiness of any cause is not measured by its clean record, but by its readiness to see the blots when they are pointed out, and to change its mind. Is there not some way in which our two factions can point out each other's sophistries and blunders, without losing sight of our common love for what Mr. Babbitt is trampling under foot? Must the past mistakes of each group automatically condemn every future effort of either to correct them?

To me, the most hopeful sign in the sportsman's movement is that several little groups have publicly avowed that the old program is a failure. Each is struggling to devise a new formula. I am conceited enough to believe that the formula my little group is trying to put together comes as near meeting the ugly realities of economics on the one hand, and the ideals of the protectionists on the other, as any yet devised. Mr. McCabe's paper will neither help nor hinder its future acceptance or rejection among sportsmen, but it may hinder its thoughtful consideration by the protectionist camp, and thus prevent what I had devoutly hoped for: their active participation in its development, modification and growth.

Lest this be construed as an idle boast, let me point out that as chairman of the Game Policy Committee, I asked the A. O. U. to appoint a representative to sit on or with the Committee, and to pull the reins whenever the Committee got into proposals subversive of the protectionists' point of view. He has not yet pulled. I hereby invite Mr. McCabe to sit with him.

In short, I beg for a little selectivity in weighing the new departures proposed by the other fellow. I also pray for the day when some little group of protectionists will publicly avow that their old formula of restriction is not the whole

Alpha-to-Omega of conservation. With both sides in doubt as to the infallibility of their own past dogmas, we might actually hang together long enough to save some wild life. At present, we are getting good and ready to hang separately.—ALDO LEOPOLD.

PUBLICATIONS REVIEWED

PICKWELL ON THE PRAIRIE HORNED LARK.*—This thin volume is apt to prove, in the history of ornithology, one of the first and best fruits of the new life which has been infused into the old science of bird-watching.

It is to be expected that the new understanding of certain principles of bird behavior—if not of their nature or history—will be tested first and most thoroughly in studies of easily-observed birds, and that these studies will dominate the science for a long time. Examples are Selous's colonial sea-birds, Verwey's herons, A. A. Allen's blackbirds, Friedmann's cowbirds, Miller's shrikes, and the present volume. All represent brilliant pioneer opportunities, but none more than the Prairie Horned Lark. A bird with a deep-seated abhorrence of cover is a great ornithological convenience; and one which devotes six months of the year to breeding simply trebles, for the time-being, the life of the ornithologist. When to these practical advantages are added a list of startling peculiarities—the semi-precocial nature of the young, the hopping stage, the towering flight-song, the nest-digging and -paving, the endurance of spectacular weather conditions, the great historical extension of range—the problem takes on prismatic color.

About half the book is devoted to the long section on reproduction. The bird "selects the bleakest barrens available in every locality in which to nest" and through the long season retreats before the single intolerable factor of *verdure*. The season of song in the species extends from mid-January in Kansas for *praticola* to at least August 29, near Great Slave Lake, for *hoyti*. At Evanston, Illinois, for *praticola*, it extended from January 10 to July 14, 1926. "There is probably no other passerine bird that can equal this record." May is the month of most frequent song, and frequency may be affected by weather. The flight-song, strangely ignored in comparison with the related exhibition of the Skylark, is delivered at heights of between 270 and 810 feet, and is responsive to certain obvious stimuli such as the repulse of an invading male, or human disturbance. The author believes the song a proclamation of territory, and not intended for the ears of the female. At Evanston, territory was delimited and fought for by a male on February 7, 1926, and at Ithaca subsequent nestings were found as nearly on the original territories as increasing vegetation would permit. Territories are compressible in size under pressure of numbers, though impalpable boundaries, wider but still definite, exist when competition is lacking.

Both sexes make journeys afield, but feed for most of the time in the territories. Combat is invariably aërial and involves strange rules and conventions. Four February nests are recorded in the literature, and "March nests are the rule from Kansas to Manitoba, from Manitoba to the Atlantic", though with a somewhat low average of successes. This is earlier, in an absolute sense, than even the southern *giraudi* or *chrysolaema*. A temperature of from 40 to 45 degrees Fahrenheit, usually extending for two days, is an initial requirement, but great resistance to ensuing severe weather is shown. "This seems to have more than a little of prescience in it"—namely, "that of more than thirty nests, nearly all should have the protection [usually a tuft of grass] on the west and northwest." But the reviewer must apologize for being led so far into mere sampling of this fine material.

A heavily documented historical section of twenty pages is largely devoted to the story of the northward extension of range, for the most part since 1870, with a parallel, drawn from Gätke and criticised by Naumann, in the problematical recent northern extension of *O. a. flava* in Europe. Both the northern extension of *praticola* and its possible genetic derivation from a southern race are suggested as throwing some light on the grotesquely early breeding—a hypothesis not likely to find favor, especially in the light of other well-supported evidence of a dependence upon temperature rather than upon a rigid physiological cycle, but which we must in fairness admit is hardly more than suggested.

The most interesting parts of the con-

*Transactions of the Academy of Science of St. Louis | Volume XXVII | The Prairie Horned Lark | Gayle B. Pickwell | Issued August, 1931. | Post octavo (125 x 228 mm.), pp. 153 + Table of Contents and Index (unnumbered), Plate I (frontispiece) + Plates II to XXXIV (bound at end), 18 figures and 24 tables in text.