around the hoof of a horse if stepped on, as well as tangling in the mane, tail or fetlock hair. The seeds are probably dispersed in a similar manner by other grazing animals.

Beaver Dam Wash in Utah contains elements of the northern-most extension of the Lower Sonoran Desert and is a most interesting place botanically. At Terry's Ranch in the Wash, a Fremont poplar growing on the bank of a small irrigation ditch has a circumference of 24 feet at a height of five feet above ground. Pomegranate trees also flourish in a small orchard and chinaberry trees shade part of the yard."

I should like to thank all the correspondents for their interesting letters for they have not only added to our knowledge but they have given us a confidence that the *Blue Jay* is read by thoughtful and well-informed people.

I hope that readers who have difficult questions in natural history will present them to the *Blue Jay*. Some reader is sure to know the answer.—*Editor.*

The Blue Jay Bookshelf

ANNUAL BIRD REPORT FOR SOUTHERN VANCOUVER ISLAND. 1970. Edited by J. B. Tatum. Published by the Victoria Natural History Society. 72 pp. $1.90 post-paid. Available from Dr. J .B. Tatum, 416-3187 Shelbourne Street, Victoria, Canada.

This is the first in what is intended to be an annual series of bird reports for an area including Victoria, Duncan and the Saanich Peninsula. It gives details of 235 species observed, and includes migration dates, census results, breeding records and authoritative accounts of rarities.

The reliability of the records is vouched for by the Ornithological Records Committee for Southern Vancouver Island, formed in Victoria in 1970. Any records for the 1970 Report that are rare, out-of-season, or difficult to identify, were handled by the committee. In order to evaluate records the committee insists on carefully documented observations but specimens are not sought. Indeed, the title page of the bulletin bears this quotation from Emerson's essay on Forbearance:

"Hast thou named all the birds
without a gun?"

Photographs are included in the report to establish the identity of two species recorded for the first time on Vancouver Island — the Tufted Duck and the Wheatear.

In order to make identification easier in the future, encouragement is being given to the building up of a photo-duplicate file in the Vertebrate Museum of the University of British Columbia and of a collection of tape-recordings of bird songs maintained in Victoria by Mrs. H. M. S. Bell. The whole activity offers an example to other natural history groups interested in preserving valid records. — *Margaret Belcher*, Regina.

STUDIES OF BIRD HAZARDS TO AIRCRAFT. 1971. By V. E. F. Solman, W. W. H. Gunn, M. T. Myres, S. R. Cannings, W. J. Richardson, J. M. Speirs, J. J. C. Kanitz, J. Novak, and H. Blokpoel. Canadian Wildlife Service Report Series Number 14, Information Canada, Ottawa. 105 pp., $1.25.

This book is the latest in a series of reports on research conducted by or in association with the Canadian Wildlife Service. A "Perspective" by V. E. F. Solman, in both English and French, introduces the reader to the comparatively recent problems caused by bird-aircraft collisions and to the development of a bird migration forecast system in Canada. The rest of the book consists of reprints of two general articles previously published elsewhere, followed by five original contributions of a more technical nature. These seven papers are as follows: Bird control and air safety, by V. E. F. Solman (pp. 7-14); A bird-warning system for aircraft in flight, by W. W. H. Gunn and V. E. F. Solman (pp. 15-22); A Canada

Goose migration through the southern interior of British Columbia, by M. T. Myres and S. R. Cannings (pp. 23-34); Radar observations of bird movements in east-central Alberta, by W. J. Richardson and W. W. H. Gunn (pp. 35-68); Numbers, speeds, and directions of migrating geese from analysis of a radar display at Fort William, Ontario, by J. M. Speirs, J. J. C. Kanitz and J. Novak (pp. 69-76); The M33C track radar (3-cm) as a tool to study height and density of bird migration, by H. Blokpoel (pp. 77-94); A preliminary study on height and density of nocturnal fall migration by H. Blokpoel (pp. 95-104).

Like other volumes in this series this book is paper-bound, inexpensive, printed in easily-read type on good quality paper, well illustrated, and apparently well researched. I failed to detect any typing or editing errors. The papers are all well-written, not only those which adopt a general approach but also those which are more technical in nature. The book presents a good spectrum of the bird-aircraft hazard problem, potential methods of overcoming it, and information obtained as a result of studies designed to reduce bird hazards to aircraft. The importance and magnitude of the problem emerge clearly from Solman's article, and the article on the bird-warning system sets the stage for the following papers. The five remaining papers are devoted largely to the study of bird movements by radar, and as such broaden the usefulness of the book to a point where I regard it as a "must" for any students of bird migration. Because of the emphasis on radar studies (clearly stating *both* the advantages *and* the disadvantages of radar as a tool in various studies), I would have preferred to see Hans Blokpoel's excellent papers discussing the technique of using radar in studies of bird movements and methods of improving the forecasting of bird flights come immediately after the two general articles. The other three papers indicate the kind of data that radar can unveil, especially if used in conjunction with data obtained in other ways. For example, Tim Myres clearly points out the advantage of comparative ground observations (in this case by Cannings) in the interpretation of radar data.

In conclusion, I feel that the Canadian Wildlife Service and the authors of the studies presented in this book are to be congratulated on an excellent piece of work. This volume will be useful not only to those concerned with the hazards of birds to aircraft, but also to all students of ornithology. For the latter, the paper by Richardson and Gunn provides one of the best reviews of bird migration studies I have encountered in a long time.—*Martin K. McNicholl*, Winnipeg.

THE WOLF: THE ECOLOGY AND BEHAVIOR OF AN ENDANGERED SPECIES. 1970. By L. David Mech. The Natural History Press, Garden City, New York. +384 pp. $11.95

I can still remember the excitement that I felt when a companion on a field trip shouted to me: "A wolf!" We saw it only briefly, and failing to obtain photos had to be content with an examination of its tracks in the deep snow. Yet that experience remains one of the most vivid and thrilling of all my encounters in nature. In his book, David Mech helps to explain the almost universal fascination that the wolf has for man. Almost everyone either loves or hates the wolf; as Mech points out in his preface, "Few are neither for the Wolf nor against it . . . ." This interest in the wolf has led to a great number of books and articles on the wolf's habits and its relationship to man. Since there has been much fanciful writing on the wolf as well as what is authentically factual, there is a need for a good account of the wolf's life history and an assessment of the books already written on the subject. Mech's book serves both these functions.

A foreword by Ian McTaggart Cowan and a preface by the author are followed by twelve chapters on the life history of the wolf. These chapters are based on Mech's own extensive studies,

supplemented by an almost complete survey of the literature and numerous reports communicated personally to the author by other authorities on the wolf. Three appendices and a bibliography complete the book.

A number of the people cited as authorities on the wolf have read and helped revise early drafts of certain chapters of Mech's work, and the whole manuscript was scrutinized by the renowned Canadian expert, Dr. Douglas H. Pimlott. Thus, omissions and errors in fact are few, and only detectable by other experts. Rutter (*Ontario Nat.* 9(2):31-32, 1971) could criticize only the sections on howling, and Pruitt (*Canadian Field-Nat.* 85: 85-86) detected the omission of one important source of fantasies. In my opinion, Mech is one of the very few scientists who have been successful in writing a well-documented scientific account in a language and style easily comprehended and enjoyed by the layman. He has carefully distinguished well-documented facts from his own opinions or theories. Sources of statements are clearly indicated, whether cited from the literature, communicated personally by others, or taken from his own notes. Although these sources are usually indicated in the body of the text, they are relegated to tables whenever they might otherwise make cumbersome reading. Thus the reader is not burdened with dull lists of source material, but has such lists readily available if he wishes to pursue some topic further. My only criticism of the citations from the literature is that page or chapter numbers are usually not given from books or other long publications.

In addition to being well-organized in its content and easy to read, the book is attractive in its format. The drawings and photographs are attractive to the eye and help to make the author's points more clearly.

I strongly recommend this book to anyone who wants a good life history of the wolf and to everyone interested in a good natural history book. In closing, I echo Russ Rutter's "Amen" to one of Mech's more personal statements (p. 348): "If the Wolf is to survive, the wolf haters must be outnumbered. They must be outshouted, outfinanced, and outvoted. Their narrow and biased attitude must be outweighed by an attitude based on an understanding of natural processes. Finally their hate must be outdone by a love for the whole of nature, for the unspoiled wilderness, and for the Wolf as a beautiful, interesting, and integral part of both."—*Martin K. McNicholl*, Winnipeg.

FAMILIES OF BIRDS. 1971. By Oliver L. Austin, Jr. Illustrated by Arthur Singer. Golden Press, New York. 200 pp. $1.95 (U.S.)

Even the casual naturalist is exposed to broad horizons these days, for natural history films and publications covering the farthest corners of the earth are now commonplace. The person with more than a passing interest in birds is often curious about the relationship between species found in distant places and those in his back yard. Knowledge of the *orders* and *families* of birds can be a big help in this respect. Most of the available literature on this subject consists of works that are large and expensive or frightfully academic. The book under review is designed to satisfy a need for something popular, attractive and yet informative.

Although only six by four inches in size, this little book is packed with information. Faunal regions of the world, the evolutionary development of birds, and bird classification are presented in appealing style. One expects that any book by Oliver Austin will be both authoritative and carefully prepared. This one seems to be. Each of 208 families in 34 orders of birds is discussed. Bear in mind that this covers about 9600 different species, including 900 fossil birds. Characteristics are given of each order and family. If the reader knows to which family a particular bird belongs, he can find some good background on distribution, characteristics, and habits.

Of course, this is generalized information, for in some cases individual species within a family are pretty diverse. Still, members of a family have some things in common; that is why they are placed in the same family, and this is the information provided. A colour illustration of one or more species is given for each family. These are surprisingly large pictures nicely done by Arthur Singer. Of course, only a few birds are shown. Of the 241 species of swans, geese and ducks of the world, for example, a mere 11 are pictured.

As a brief guide to bird classification and family characteristics, this book is a good buy. The small size is presumably aimed at reducing costs, for very few people would want to carry a work of this sort into the field. A "deluxe Goldencraft" edition in hard cover and larger format is planned (retailing at $5.95), and this will probably be preferred by many. I found the present edition hard to keep open and the print a little too small for easy reading.—*R. W. Nero*, Winnipeg.

ECOLOGICAL ISOLATION IN BIRDS.. 1971. By David Lack. Harvard University Press, Cambridge, Massachusetts. 404 pp. Price $12.00.

Each kind of animal living in a natural community must have an ecology different from every other species in that community in order to survive. Another way to put it is that species which can live together are ecologically isolated from each other. It is now believed that speciation (evolution) can only occur if the original species population is first separated into two populations which are isolated from each other. Thus when new species evolve they are separated from their closest related species. Species which are closely related, however, do live in the same community and they can do so because as a result of competition they have evolved differences in ecology. The nature of this separateness of species is important in considering how new species diversify into different ways of life, why there are so many different kinds of animals and plants, and why it is often difficult to introduce foreign species into a community.

David Lack's new book discusses ecological isolation in birds. He chooses birds because birds are the group of animals he can think most critically about and because the first field studies on ecological isolation were done on birds. His work is comprehensive, for he discusses all examples of ecological isolation between congeneric species that are well enough known for analysis. The small bulk of the book emphasizes how few of the approximately 8500 species of birds in existence have been studied.

The concept of ecological isolation is discussed in a brief introductory chapter. Dr. Lack then devotes two chapters to the widespread genus *Parus*. This genus (titmice, chickadees, and the various old-world tits) contains 45 species, 9 in Europe, 23 in Asia and 10 in Africa and 10 in North America. The European forms have been studied intensively since the second world war, primarily at the author's home institution, the Edward Grey Institute of Field Ornithology at Oxford University This is the best documented example of ecological isolation in a large and diverse genus.

The next few chapters discuss all remaining examples of congeneric species coexisting in the European avifauns. There is a separate chapter on nuthatches, which includes all species in the genus *Sitta* in addition to the European ones. Studies on ecological isolation in North American birds are reviewed in one short chapter, followed by two chapters on tropical birds. The last three chapters are on island species including the Galapagos finches, Hawaiian sicklebills, white-eyes and an analysis of ecological islation in the West Indian avifauna.

Dr. Lack concludes that closely related species occupy separate but adjoining ranges when they have ecologies so similar that they cannot exist together and when each is better adapted to its own range than the

other species is. This situation occurs rarely except for birds living on islands and fruit-eating birds.

Usually closely related species occupy the same geographic area, and most commonly they are ecologically isolated by feeding habits. This is particularly true of genera of larger birds such as the falcons or accipiters, different species of which occupy the same habitat but take different foods. In these instances differences in body size are associated with the different foods taken. Among congeneric passerine birds in Europe, however, the commonest form of ecological isolation is by habitat difference. This could be because passerines are so small that two related species can specialize, for example, either in feeding on needle-leaved trees or feeding on deciduous broad-leaved trees, and thus they can live in the same area while exploiting different habitats.

An interesting finding is that a number of congeneric European species which coexist in Europe have separate geographic ranges in Africa in the winter. This suggests that tropical communities are so ecologically filled by the native species that temperate zone migrants have difficulty finding an area in which they can live.

Chapter 8 summarizes North American studies of ecological isolation, and these will probably be of greatest interest. The Red-shafted and Yellow-shafted Flickers, and the Baltimore Oriole and Bullock's Oriole, are two examples of species which have come together recently as a result of human settlement and now inter-breed along a zone of contact in the great plains. In both cases contact between the related species was made possible by human disturbance of the habitat — in this case planting trees on the once almost treeless prairies.

The Eastern and Western Meadowlarks are two species which were formerly isolated but now make broad contact in central North America as a result of replacement of forest by cultivated grassland. Where the species meet they do coexist but the males exclude members of both species from their territories. This interspecies territoriality is probably the first stage in competition which could lead to evolution of separated ecologies.

Two other examples of ecological isolation deserve mention because they are in groups that occur in this province. There are many instances of multiple coexistence of members of the same genus among the 26 species of wood warblers breeding in Saskatchewan. The fact that many occupy the same habitat and feed in the same trees leads to the suggestion that their ecologies overlap. Detailed studies of the feeding habits of six species, however, have disclosed that they differ in the parts of the spruce trees in which they feed most frequently and in the way in which they search tree branches for food. While some overlap in feeding exists, it was concluded that the observed differences were great enough to allow coexistence. Another study showed that in some of these same species the males hunted higher in trees than the females. Thus the warblers exhibit the most complex case of ecological separation yet studied.

Four congeneric species of arctic sandpipers (Pectoral, Dunlin, Baird's and Semipalmated) studied on their arctic breeding grounds in Alaska ate many of the same species of insects, suggesting broad overlap of feeding ecology in spite of big differences in body size and length of bill. These species may be ecologically isolated outside the breeding area, either on migration or on their winter range or both, and size differences and bill differences in the group may have evolved as a result of competition off the breeding area. This is an extraordinary hypothesis and it would be most interesting if it could be shown to be true.

There is much not known about ecological isolation among the warblers and migrating shorebirds and any Saskatchewan bird student could make an important contribution to our understanding of bird faunas by undertaking to study these problems. Perusal of this book will also suggest other related species in the province which need more study. The waterfowl,

Franklin's and Bonaparte's Gulls, vireos and the many Fringillidae that occur here, provide examples. The provincial check-list will suggest many others.

The book is well written in the author's usual clear readable style. It is free from professional jargon and should be readily understood by the informed layman. Moreover, Dr. Lack has simplified the presentation by relegating the details of the ecological separation of the species discussed to Appendices.—*William J. Maher*, Saskatoon.

Letters and Notes

IN DEFENCE OF THE COYOTE

Some time ago a notice was posted by the Rural Municipality of Rocanville warning that about 10 coyote poison baits had been set out at various points. A protest to the Reeve brought the explanation that "it was the will of the ratepayers at the annual meeting." Knowing the usual small attendance at such meetings, I doubt whether such an inhumane decision would reflect the opinion of the majority of the community.

Enclosed is a letter I recently received from Alvin Griswold of Spy Hill. Alvin has spent his life in the Qu'Appelle Valley country and as a hunter and trapper in earlier years he can speak without bias.—*E. Symons*, Rocanville, Sask.

* * *

I thought it best to say a few words in defence of the coyote. There have been parts of the country where the coyote has been wiped out; two years later the fields have been overrun with mice. We had that here years ago and the damage could not be counted.

The coyote is the key to the balance of Nature in this park country. For instance, the coyote is the world's best mouser. It knows no equal. I have watched the coyote walking over the snow, ear to the snow. It can hear the mice digging tunnels under the snow. The coyote will leap up, come down with four feet tight together and crush the tunnel, dig in with its mouth and catch the mouse, throw the mouse in the air and catch it again. The coyote often catches as many as 30 mice a day.

Coyotes are blamed for killing a lot of sheep when the sheep have actually been killed by dogs. It is true that the coyote will take chicken; I can't blame him, I like chicken myself! But most people fence chicken in nowadays. If they don't, they should.

I hate poison and don't want to see it used at all. I have often seen chickadees, woodpeckers and nuthatches at the poisoned bait and wonder how many dead birds result from such poisoning.—*Alvin Griswold*, Spy Hill, Sask.

EAGLES SLAUGHTERED

On August 3, 1971, the radio carried an almost incredible report that some 800 eagles had been shot from helicopters in Wyoming. The accuracy of the report has been established, however, with the publication of a detailed article in the September, 1971 issue of *Audubon*. Granted immunity from prosecution, the helicopter pilot, J. O. Vogan, testified before Senator McGee, chairman of the subcommittee on Agriculture, Environmental and Consumer Protection to the effect that wealthy landowners and sheep breeders, in defiance of federal and state laws, were indeed hiring people to slaughter eagles, coyotes, foxes, bobcats and even some antelope, deer, elk and Canada geese.

Since the man responsible for the death of most of the 800 eagles recorded by Vogan is the father-in-law of the rancher charged with the illegal killing and baiting of antelope (*Blue Jay*, 29(3):p. 157, September 1971) which caused the death of at least 22