

The Auk

reaches 3,300 ornithologists and
900 institutional libraries.

Rates and Space Dimensions for Advertisements in THE AUK

| Space | Dimensions | Per Year (4 issues) | Per Issue |
|-----------|------------|------------------------|-----------|
| Full page | 4½" × 7½" | \$375 | \$125 |
| ½ page | 4½" × 3⅝" | 225 | 75 |
| ⅓ page | 4½" × 2⅜" | 150 | 50 |
| ¼ page | 4½" × 1⅜" | 120 | 40 |

These are list prices; agencies receive the usual 15 percent commission. This price list supersedes all previous price lists.

Publication dates: 15 January, 15 April, 15 July, and 15 October.

Closing dates: Six weeks in advance of publication date.

Columns to page: One, 26 picas wide.

Column size: 4½" × 7".

Printing process: Letterpress.

Size of half-tone screen: 120.

Address inquiries and space orders to:

**Burt L. Monroe, Jr., Treasurer, The American Ornithologists' Union,
P. O. Box 23447, Anchorage, Kentucky 40223**

Publications of the AOU

All AOU publications are sent postpaid. Order from
**Burt L. Monroe, Jr., Treasurer AOU, P. O. Box 23447,
Anchorage, Kentucky 40223.**

The Proceedings of the XIIIth International Ornithological Congress.
Two volumes, clothbound, 1,250 pp. \$10.00 per two-volume set.

1971 Directory of AOU Members. Single copies, \$1.25. Two or more
copies, \$1.00 each.

Check-list of North American Birds. Fifth Edition, 1957. Clothbound,
691 pages. \$8.00 per copy.

Ten-year Indexes to the Auk. 1901-1910, paperbound only, \$4.00. 1921-
1930, paperbound only, \$4.00. 1931-1940, clothbound \$5.00, paperbound \$4.00.
1941-1950, clothbound \$10.00, paperbound \$8.00. 1951-1960 and 1961-1970,
each clothbound \$12.50, paperbound \$10.00.

Bird Collections in the United States and Canada (Auk 90: 136-170,
1973) at \$1.25 each, two or more for \$1.00 each.

**Thirty-second Supplement to the American Ornithologists' Union
Check-list of North American Birds** (Auk 90: 411-419, 1973) at \$1.00 each
in lots of two or more.

**SEE NEXT PAGE FOR LATEST INFORMATION
ABOUT ORNITHOLOGICAL MONOGRAPHS**

ORNITHOLOGICAL MONOGRAPHS

MONOGRAPH No. 1. *A Distributional Study of the Birds of British Honduras*, by Stephen M. Russell. 195 pp., 2 color plates. Price \$4.50 (\$3.60 to AOU members).

MONOGRAPH No. 2. *A Comparative Study of Some Social Communications Patterns in the Pelecaniformes*, by Gerard Frederick van Tets. 88 pp., 49 text figures. Price \$2.00 (\$1.60 to AOU members).

MONOGRAPH No. 3. *The Birds of Kentucky*, by Robert M. Mengel. Cloth-bound, 581 pp., 4 color plates plus text figures and vignettes. Price \$10.00 (\$8.00 to AOU members).

MONOGRAPH No. 4. *Evolution of Some Arctic Gulls (Larus): an Experimental Study of Isolating Mechanisms*, by Neal Griffith Smith. 99 pp., 62 text figures. Price \$2.50 (\$2.00 to AOU members).

MONOGRAPH No. 5. *A Comparative Life-history Study of Four Species of Woodpeckers*, by Louise de Kiriline Lawrence. 156 pp., 33 text figures. Price \$3.75 (\$3.00 to AOU members).

MONOGRAPH No. 6. *Adaptions for Locomotion and Feeding in the Anhinga and the Double-crested Cormorant*, by Oscar T. Owre. 138 pp., 56 text figures. Price \$3.50 (\$2.80 to AOU members).

MONOGRAPH No. 7. *A Distributional Survey of the Birds of Honduras*, by Burt L. Monroe, Jr. 458 pp., 2 color plates, 28 text figures. Price \$9.00 (\$7.20 to AOU members).

MONOGRAPH No. 8. *An Approach to the Study of Ecological Relationships of Grassland Birds*, by John A. Wiens. 93 pp., 30 text figures. Price \$2.50 (\$2.00 to AOU members).

MONOGRAPH No. 9. *Mating Systems, Sexual Dimorphism, and the Role of Male North American Passerine Birds in the Nesting Cycle*, by Jared Verner and Mary F. Willson. 76 pp. 1969. Price \$2.50 (\$2.00 to AOU members).

MONOGRAPH No. 10. *The Behavior of Spotted Antbirds*, by Edwin O. Willis. vi + 162 pp., 3 color plates, 27 text figures. 1972. Price \$6.00 (\$4.75 to AOU members).

MONOGRAPH No. 11. *Behavior, Mimetic Songs and Song Dialects, and Relationships of the Parasitic Indigobirds (Vidua) of Africa*, by Robert B. Payne. vi + 333 pp., 2 color plates, 50 text figures, 40 audiospectrographs. 1973. Price \$8.00 (\$6.40 to AOU members).

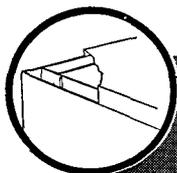
MONOGRAPH No. 12. *Intra-island Variation in the Mascarene White-eye Zosterops Borbonica*, by Frank B. Gill. vi + 66 pp., 1 color plate, 31 text figures. 1973. Price \$2.00 (\$1.60 to AOU members).

Like all other AOU publications, *Ornithological Monographs* are shipped prepaid. Make checks payable to "The American Ornithologists' Union." For the convenience of those who wish to maintain complete sets of *Monographs* and to receive new numbers immediately upon issue, standing orders will be accepted.

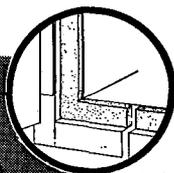
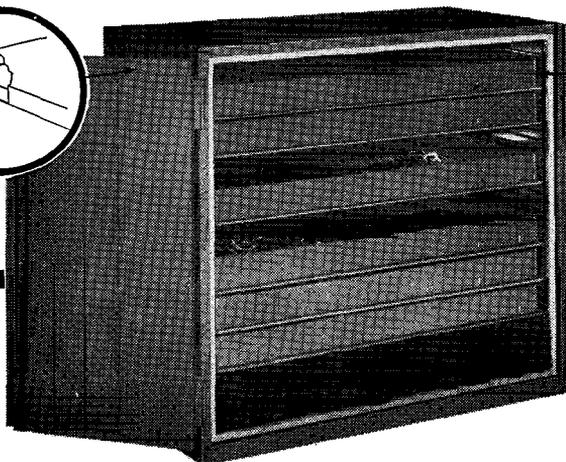
Order from: **Burt L. Monroe, Jr., Treasurer, American Ornithologists' Union, Box 23447, Anchorage, Kentucky 40223**

How many years would it take to replace your collection?
 Safe-guard your valuable specimens
PERMANENT SPECIMEN PRESERVATION

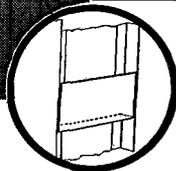
with *Lane* **ZOOLOGY AND ORNITHOLOGY
 SPECIMEN CABINETS**



Double Wall Construction



Pest-Proof and Air Tight Seal



Fumigant Compartment

- Double Wall Construction
- Pest-Proof and Air Tight Seal
- Double Panel Door
- Lift-Off Safe Type Hinge
- Fumigant Compartment
- 3-Point Locking Mechanism
- Front and Back Air Tight Seals
- Specimen Trays of Aluminum and Masonite. Lightweight, sturdy and easy to handle.

Skin Case #201 (illustrated)
 Holds large trays for larger specimens.

Skin Case # 202 (not illustrated)
 Divided for half-size trays for smaller specimens.

FOR ILLUSTRATED BROCHURE, WRITE

Lane

SCIENCE EQUIPMENT CO.
 105 Chambers Street New York 7, N. Y.

Lane Science Equipment Co. Dept. D
 105 Chambers Street, New York 7, N. Y.

Please send complete details on Lane Zoology and Ornithology Specimen Cabinets to:

Name _____ Title _____

Institution _____

Address _____

City _____ Zone _____ State _____

A FIELD GUIDE TO THE BIRDS OF MEXICO

Ernest P. Edwards

Details of identification, habitat, behavior, abundance, occurrence, and distribution of *all* 1000 birds found in Mexico. *Also* Spanish description of each bird. 450 birds illustrated in color.

300 pages.

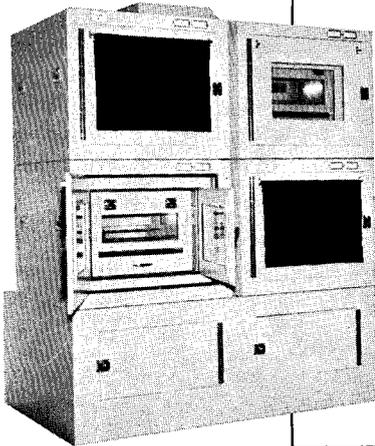
Waterproof paper cover.

\$8.50

Special combination offer—the above *Field Guide* in paper cover, and its companion book, *Finding Birds in Mexico* (a detailed guide to birdfinding in all parts of Mexico, by Ernest P. Edwards) in hard cover—\$14.75. (If bought separately—\$16.45 total.)

Order from:

ERNEST P. EDWARDS
BOX AQ
SWEET BRIAR, VA. 24595



Isolation Chambers

FOR SMALL BIRDS AND OTHER ANIMALS

Three separate $\frac{3}{4}$ " hardwood veneer plywood units are nested with a 2" air space between each. Glued and nailed rabbeted joints. Screw-attached backs for easy access. Piano hinged doors have $\frac{1}{4}$ " plate glass windows. Ventilated by remote fan. Fluorescent lighting. Two chambers shown with curtains (not furnished).

| | INNER UNIT | OUTER UNIT |
|----------------------------------|-----------------------|-----------------------|
| DIMENSIONS (Internal Dimensions) | (Internal Dimensions) | (External Dimensions) |
| Height | 12 $\frac{1}{4}$ " | 26" |
| Width | 19 $\frac{1}{2}$ " | 32" |
| Depth | 18 $\frac{1}{2}$ " | 37" |

\$800. per unit - four units on base, as illustrated, \$3200. F.O.B. Carmichael

Write or call for additional information from:

W. R. FISH CO.
7637 Fair Oaks Boulevard
Carmichael, California 95608, (916) 944-3020

—Now Available—

KIRTLAND'S WARBLER

"BIRD OF FIRE"

16 mm COLOR SOUND FILM — 10 $\frac{1}{2}$ MINUTES

SPECTACULAR CLOSE-UPS ON THE LIFE HISTORY OF THIS RARE, ENDANGERED BIRD, FROM THE BAHAMAS TO MICHIGAN AND BACK AGAIN.

PURCHASE \$140.00

RENTAL \$ 12.00

Write or Phone (517) 784-6969
BERLET FILMS
6998 Surrey Lane
Jackson, Mich. 49201

BOOKS ON BIRDS

Antiquarian colour-plate and modern reference books supplied from a comprehensive stock. Please send me your list of requirements.

Catalogues published.

DAVID EVANS

Segry Lawn, Fordingbridge, Hampshire, U.K. SP6 2HT

Bleitz Wildlife Foundation has available a new listing of the more than 100 styles, sizes, colors and types of Mist Nets, Portable Poles, Pesola Scales, etc., which are available from the Foundation. Reprints of "Mist Nets and their Use" are also available. Bleitz Wildlife Foundation, 5334 Hollywood Boulevard, Hollywood, California 90027, 463-6636.

XVI INTERNATIONAL ORNITHOLOGICAL CONGRESS AUSTRALIA, AUGUST 12-17, 1974

Cahill-Laughlin, the specialists who run the Audubon Safaris, offer four exciting tours led by top experts, planned to be the birding adventures of your life!

A. New York, London, one week in the Seychelles, Ceylon, Australia tour. **B.** New York, London, Dar Es Salaam, one week in the Comores, 10 days in Madagascar, 3-4 days on Mauritius, Australia tour. **C.** New York, Paris, 2 weeks in Madagascar, 3 days on Reunion, 3 days on Mauritius, Australia tour. **D.** U.S.A., Honolulu, Australia tour.

Australia tour includes one week in the Darwin area and rich, tropical Arnhemland, 5 days Alice Springs or at the Congress, one week in Northern Queensland; optional: one week in New Guinea, excursions to Great Barrier Reef.

For information write:

CAHILL-LAUGHLIN TOURS

20 E. 46 Street
New York, N.Y. 10017

NOTICE

Proceedings of the XIIIth International Ornithological Congress, two-volume set, now available at half price, \$10.00, from Treasurer AOU, P.O. Box 23447, Anchorage, Kentucky 40223.

THE AUK

A Quarterly Journal of Ornithology

ORGAN OF THE AMERICAN ORNITHOLOGISTS' UNION

THE AUK is edited at the Florida State Museum, University of Florida, Gainesville, Florida 32601, by the following staff:

Editor, OLIVER L. AUSTIN, JR.; *Assistant Editor*, FLORENCE A. PETTIS

Associate Editors, JOHN P. HUBBARD (Reviews) and HERBERT W. KALE, II
(Periodical Literature)

THE AUK welcomes original articles and short notes, not published elsewhere, containing significant new knowledge about birds, or new interpretation of existing knowledge. Address all articles and notes intended for publication and all books intended for review to the editor. For longer articles (ca. 10,000 words or over) a charge for all printed pages above 20 is assessed at actual costs, currently \$42.00 per page.

SUGGESTIONS TO CONTRIBUTORS.—Submit all MSS *in duplicate*. They must satisfy the following minimal requirements: *MSS should be typewritten, double-spaced (especially tables and "literature cited"), on one side of numbered sheets of standard (8½ × 11 in.) bond paper, with at least 1-inch margins all around. Tables (which should be unruled) and figure legends should be typed on separate sheets. Drawings should be in india ink on good board or drafting paper and lettered by lettering guide or the equivalent. Photographs should be clear, of good contrast, on glossy paper. Illustrations should allow (with particular regard to lettering) for reduction to their final width (usually 4½ in.). Illustrations larger than 8½ × 11 in. are not acceptable and should be reduced photographically to that size or smaller. Designate top of each illustration and identify (on the back with soft pencil) by author's name, title, and figure number. Submit a duplicate or readable copy of each figure for use of reviewers.*

Titles should be short and descriptive. MSS should follow the conventions of form observed in articles, general notes, and reviews in THE AUK, with minor variations, since 1970. Avoid footnotes. If more than five works are cited, references in text should relate to a terminal list of "literature cited" (*include no titles not cited*). Where critical matter is cited from longer works, indicate the pertinent pages, e.g. (Lack 1947: 96–97). Citations in text should be parenthetical, e.g. (Austin 1971, Families of birds, New York, Golden Press, pp. 44–49) or (Sauer 1972, Auk 89: 717). *Verify all citations from original sources unless impossible, in which case so indicate.* For spellings, abbreviations, and general conventions of form and style, Auk follows WNI, third ed.; the Columbia Lippincott Gazetteer; the CBE Style Manual, third ed.; and the GPO Style Manual.

For bird weights and measurements use metric units. Other measurements should be in the form usual to the discipline of the paper as practiced in the United States. The 24-hour clock (08:00 and 20:30) and "continental" dating (1 July 1971) are preferred. Scientific and (if any) vernacular names of birds should be given upon first mention thereof and should follow the A.O.U. Check-list, fifth ed., or the appropriate equivalent unless departures are explained and defended. Articles more than 10 pages long should include a summary that should not exceed 10 percent of the length of the article.

Proofs of all articles and notes will be sent to authors. Reprints of articles, notes, and other items are to be paid for by the author. These must be ordered from Allen Press Inc. on the blanks sent with the proof.

CONTENTS

| | |
|--|-----|
| MORPHOLOGY OF THE SUBLINGUAL POUCH AND TONGUE MUSCULATURE IN CLARK'S NUTCRACKER. <i>Walter J. Bock, Russell P. Balda, and Stephen B. Vander Wall</i> | 491 |
| CHICKADEES AT ADJACENT FEEDING SITES: THE EFFECTS OF FOOD DEPRIVATION. <i>Edward Mueller</i> | 520 |
| EFFECTS OF SEX HORMONES ON PLUMAGES OF THE BLUE-WINGED TEAL. <i>Eldon D. Greij</i> | 533 |
| OCCURRENCE OF BIRDS IN THE BEAUFORT SEA, SUMMER 1969. <i>George W. Frame</i> | 552 |
| A SPECTROGRAPHIC ANALYSIS OF BURROWING OWL VOCALIZATIONS. <i>Dennis J. Martin</i> | 564 |
| MIDDLE AMERICAN RACES OF THE EASTERN BLUEBIRD. <i>J. Dan Webster</i> | 579 |
| THE DAILY RHYTHM OF HAWK MIGRATION AT CEDAR GROVE, WISCONSIN. <i>Helmut C. Mueller and Daniel D. Berger</i> | 591 |
| REPRODUCTIVE BEHAVIOR OF THE RED-BREASTED NUTHATCH. I. COURTSHIP. <i>Lawrence Kilham</i> | 597 |
| ALTITUDINAL VARIATION IN A RESIDENT AND A MIGRANT PASSERINE ON JAMAICA. <i>A. W. Diamond</i> | 610 |
| FEMALE SPRUCE GROUSE ACTIVITIES DURING LAYING AND INCUBATION. <i>K. H. McCourt, D. A. Boag, and D. M. Keppie</i> | 619 |
| AGE-SPECIFIC CHANGES IN THE MAJOR BODY COMPONENTS AND CALORIC VALUE OF GROWING JAPANESE QUAIL. I. <i>Lehr Brisbin, Jr. and Lucy J. Tally</i> | 624 |
| FALL AND WINTER FOODS OF RUFFED GROUSE IN INTERIOR ALASKA. <i>Jerry D. McGowan</i> | 636 |
| ROBBING BEHAVIOR OF ROSEATE TERNS. <i>Euan K. Dunn</i> | 641 |
| SOLITARY SANDPIPER EARLY REPRODUCTIVE BEHAVIOR. <i>Lewis W. Oring</i> | 652 |
| IN MEMORIAM: ARLIE WILLIAM SCHORGER. <i>Joseph J. Hickey</i> | 664 |
| GENERAL NOTES | |
| Range and affinity of the Pale-bellied Mourner (<i>Rhytipterna immunda</i>). <i>Wesley E. Lanyon and C. H. Fry</i> | 672 |
| Cedar Waxwing courts White-throated Sparrow. <i>Daniel J. Loncke</i> | 674 |
| Jabiru in south Texas. <i>Harry H. Haucke and William H. Kiel, Jr.</i> | 675 |
| A mammalian convergence on the avian tarsometatarsus. <i>Pat Vickers Rich</i> | 676 |
| First record of Sooty Shearwater for Arizona. <i>Raymond J. Quigley</i> | 677 |
| First Utah record of the Baltimore Oriole. <i>Gary L. Worthen</i> | 677 |
| Unusual White-throated Sparrow nest. <i>William F. Davis</i> | 678 |
| The 1971 status of 24 Bald Eagle nest sites in east central Florida. <i>J. C. Howell</i> | 678 |
| Willetts in southern Brazil. <i>William Belton</i> | 680 |
| Ventriloquism in a Wilson's Plover. <i>Robert A. Duncan</i> | 680 |
| Unusual bird records from southeastern Oregon. <i>Carroll D. Littlefield and Eldon L. McLary</i> | 680 |
| Tail flashing display in the Whip-poor-will. <i>James A. Bruce</i> | 682 |
| Gopher snake predation on the Common Bushtit. <i>Stephen Ervin and Cynthia Rose</i> | 682 |
| First Brown Booby specimen from Texas. <i>Warren M. Pulich, Sr., and Warren M. Pulich, Jr.</i> | 683 |
| Census of Kirtland's Warbler in 1972. <i>Harold F. Mayfield</i> | 684 |
| Albinism in a population of Blue Jays. <i>Amelia R. Laskey</i> | 685 |
| Least Bittern nesting colonially. <i>James A. Kushlan</i> | 685 |
| Migrational homing by a pair of Mallards. <i>Thomas J. Dwyer, Scott R. Derrickson, and David S. Gilmer</i> | 687 |
| A possible hybrid Wattled Jacana \times Northern Jacana in Costa Rica. <i>Burr J. Betts</i> | 687 |
| The Least Bittern in Mexico and Central America. <i>Robert W. Dickerman</i> | 689 |
| Ross' Geese nesting in Manitoba. <i>John P. Ryder and Fred Cooke</i> | 691 |
| Interspecific nest parasitism by ducks and coots in Utah. <i>David E. Joyner</i> | 692 |
| First Arctic Tern recorded in Idaho. <i>Thomas D. Burleigh</i> | 693 |
| REVIEWS. <i>Edited by John P. Hubbard</i> | 694 |
| PERIODICAL LITERATURE. <i>Edited by Herbert W. Kale II</i> | 708 |
| OBITUARIES | 735 |
| NOTES AND NEWS | 740 |