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
- 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.

FOR ILLUSTRATED BROCHURE, WRITE

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

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

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

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_________

ORNITHOLOGICAL MONOGRAPHS


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. 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).


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
OVERSEAS ORNITHOLOGICAL FIELD TRIPS

For 8 years we’ve been putting together bird observation trips in all 6 continents. They are slanted toward serious amateurs, and some tours have a side interest in botany and other forms of natural history. In fact, we try for an experience-in-depth of each country and its people. Tours are 3 weeks in length to utilize low-cost travel (2 weeks in North America), and are set up in pairs or chains of three or four.

We’d be grateful for the assistance of fellow A.O.U. members in developing meaningful itineraries, and in commending the trips to appropriate friends. Or if you enjoy field ornithology, and can find a region in which you are not already an expert, join us yourself!

We use the title “CROWDER NATURE TOURS,” but the operation is not profit-seeking, and is slated to become a world association in 1969. Do let us put you on our mailing list. Here is the program for 1968:

EUROPE
Seven European tours this year permit many fine combinations, including a thrilling North-with-the-Spring adventure:
NORTH TOUR: No. Germany, Denmark, & the length of Sweden; June.
NORWAY: Our most popular tour, and magnificent; late June.
BRITAIN: The bird highlights; June.
BALKANS: Seldom-visited Yugoslavia, Romania, Hungary areas; June.
ICELAND: Popular 2-wk. trip with Greenland extension; June or July.

JAPAN
Fine 3-week coverage of entire archipelago, Kyushu to Hokkaido, with expert local leadership. May. Optional continuation, under leadership, across Siberia to join the U.S.S.R. trip (see above).

AFRICA
We pioneered African bird trips and cover the continent in 6 fascinating regional tours, 3 of which go in 1968: South Africa in July, East Africa in August, Central Africa—Madagascar in September.

SOUTH PACIFIC
We pioneered this area, too. The 1968 program: MELANESIA from Fiji to New Guinea, Sept. AUSTRALIA, in two 3-wk. trips, Oct. NEW ZEALAND, 3 weeks for birds, followed by 2-wk. botany trip; Nov.-Dec.

ALASKA
The 1967 tours were a success beyond expectations. In 1968 we do 3 successive 2-week trips, from Ketchikan to the Aleutians, Pribilofs, and Point Barrow. Start June 1, with a break at Fairbanks for the A.O.U. meeting.

LATIN AMERICA
We operate a regular program in Middle and South America: Seven routes in Mexico, several in Central America and the West Indies, and a fine South America program. Two especially fine areas—Yucatan (2 wks.) and Colombia (3 wks.)—are visited twice a year, in February and in August.

U.S.A.
We do a bit of species-chasing at home, too: Winter in Florida, spring in Arizona and on the Texas coast, and beginning in 1969, a north-with-spring series in the West.

OTHER PLACES
There is quite a program in India, Malaysia, Indonesia, and the Philippines; next departures in early 1969. And we haven’t mentioned the Galapagos, Tierra del Fuego, or the proposed “re-enactment” of the Peterson-Fisher Wild America trip.

Unannounced tours and request tours that often materialize are a feature, too: What interests you?

ORVILLE CROWDER, Box 222-F, Harpers Ferry, W. Va. 25425
The Auk reaches 3,200 ornithologists and 600 institutional libraries.

Rates and Space Dimensions for Advertisements in THE AUK

<table>
<thead>
<tr>
<th>Space</th>
<th>Dimensions</th>
<th>Per Year (4 issues)</th>
<th>Per Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full page</td>
<td>$4\frac{1}{2}'' \times 7\frac{1}{2}''$</td>
<td>$325$</td>
<td>$100$</td>
</tr>
<tr>
<td>$\frac{1}{2}$ page</td>
<td>$4\frac{1}{2}'' \times 3\frac{1}{2}''$</td>
<td>$200$</td>
<td>$60$</td>
</tr>
<tr>
<td>$\frac{1}{4}$ page</td>
<td>$4\frac{1}{2}'' \times 2\frac{1}{4}''$</td>
<td>$130$</td>
<td>$40$</td>
</tr>
<tr>
<td>$\frac{1}{8}$ page</td>
<td>$4\frac{1}{2}'' \times 1\frac{3}{16}''$</td>
<td>$110$</td>
<td>$35$</td>
</tr>
</tbody>
</table>

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

Publication dates: January 30, April 15, July 15, and October 15.
Closing dates: Six weeks in advance of publication date.
Columns to page: One, 26 picas wide.
Column size: $4\frac{1}{2}'' \times 7''$.
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. $20.00 per two-volume set.

1967 Directory of AOU Members. Single copies, $1.25. Two or more copies, $1.00 each.


Ten-year Indexes to the Auk. 1901–1910, paperbound only, $4.00. 1911–1920, clothbound only, $8.00. 1921–1930, paperbound only, $4.00. 1931–1940, clothbound $5.00, paperbound $4.00. 1941–1950, clothbound $10.00, paperbound $8.00. 1951–1960, clothbound $12.50, paperbound $10.00.

SEE SECOND PAGE OF ADVERTISING SECTION FOR LATEST INFORMATION ABOUT ORNITHOLOGICAL MONOGRAPHS
STEEL STORAGE UNITS
FOR SCIENTIFIC SPECIMENS

* Vertebrate Zoological
* Entomological
* Herbarium
* Stainless Steel Specimen Tanks
* Paleontology—Geology
* Drying Case
* Vial Cabinets
* Map Case

STEEL FIXTURE MANUFACTURING CO.
P. O. Box 917
Topeka, Kansas 66601

Audubon...
FIELD NOTES

ONE YEAR .......... $ 5.00
TWO YEARS .......... 9.00
THREE YEARS ......... 13.00

[ Single copies of April issue—
Christmas Bird Count $3.00 ]

Subscribe Today!
1130 FIFTH AVENUE • N. Y. 10028
DATES OF ISSUE OF "THE AUK"

Vol. 86, No. 1—14 January 1969
Vol. 86, No. 2—21 April 1969
Vol. 86, No. 3—9 July 1969
Vol. 86, No. 4—30 October 1969
### CONTENTS OF VOLUME 86

**NUMBER 1**

**A NEW SPECIES OF ANTPITTA FROM PERU AND A REVISION OF THE SUBFAMILY GRALLARINAE.** George H. Lowery, Jr., and John P. O'Neill ........................................................................ 1

**TOLERANCE OF COLD AND BERGMANN’S RULE.** S. Charles Kendeigh 13

**IN MEMORIAM: ROBERT PORTER ALLEN.** Alexander Sprunt, IV .... 26

**NAVIGATION BY HAWKS MIGRATING IN SPRING.** Helmut C. Mueller and Daniel D. Berger ......................................................... 35

**MYOLOGY OF THE LEG IN SWALLOWS.** Abbot S. Gaunt .......... 41

**BIOENERGETICS OF THE BREEDING CYCLE OF THE RING DOVE.** I. Lehr Brisbin, Jr. ................................................... 54

**WEIGHT LOSS OF BIRDS DURING NOCTURNAL MIGRATION.** D. J. T. Hussell ................................................................. 75

**TAXONOMIC ASPECTS OF AVIAN HYBRIDIZATION.** Lester L. Short ... 84

**“THAYER’S” GULL IN THE NIAGARA FRONTIER REGION.** Robert F. Andrle ............................................................ 106

**PROCEEDINGS OF THE EIGHTY-SIXTH STATED MEETING OF THE AMERICAN ORNITHOLOGISTS’ UNION.** L. Richard Mewaldt, Secretary ................................................................. 110

**GENERAL NOTES**

Interspecific territoriality between Bewick’s and House Wrens. Richard B. Root .................................................................... 125

Nesting behavior of the Chestnut-and-Black Weaver. C. F. Eaglesfield 127

Notes on the Boat-billed Heron in Surinam. F. Haverschmidt .......... 130

The Roseate Spoonbill breeding in Surinam. F. Haverschmidt .......... 131

Grackle anting with a mothball. Charlotte A. Dubois .................. 131

Extra toes on the halluces of a Common Snipe. Michael J. Fogarty .... 132

Pathological changes associated with birdshot embedded in sandpiper muscle tissue. Michael Kent Rylander .................................................. 132

Hairy Woodpeckers feeding on pine seeds. Patrick L. Stallecup .......... 134

Spread-wing postures in Pelecaniformes, Ciconiiformes, and Falconiformes. George A. Clark, Jr. .................................................. 136

Mississippi Kites fledge three. Lena G. McBee ................................ 139

Dual calling by birds of paradise. James J. Dinsmore ................. 139

[iii]
White-fronted Goose specimen from Alabama. Thomas Z. Atkeson, Jr. 141
Prey in two Screech Owl nests. Paul A. Stewart 141
A Great White Heron in Great Blue nesting colony. Griffing Bancroft 141
Starvation of Alaskan Ruffed and Sharp-tailed Grouse caused by icing. Jerry D. McGowan 142
Nesting records of the Eared Grebe in Mexico. Robert W. Dickerman 144
The nest and eggs of the Chocolate Tyrant Neoxolmis ruftventris (Vieillot). Gordon L. Maclean 144
The Snowy Plover in Missouri. David A. Easterla 146
Two male House Sparrows copulating on ground with same female. Hervey Brackbill 146

REVIEWS. Edited by John William Hardy 147
PERIODICAL LITERATURE. Edited by Glen E. Woolfenden 158
NOTES AND NEWS 178

NUMBER 2

AN ENDANGERED OSPREY POPULATION: ESTIMATES OF MORTALITY AND PRODUCTION. Charles J. Henny and Howard M. Wight 188
A COMPARATIVE STUDY OF THE LE CONTE’S AND SHARP-TAILED SPARROWS. Bertram G. Murray, Jr. 199
SHAPES OF BIRDS’ EGGS: EXTANT NORTH AMERICAN FAMILIES. F. W. Preston 246
THE SOUTHERN RACES OF THE WHITE-THROATED SPADEBILL (PLATY- RINCHUS MYSTACEUS). Lester L. Short 265
FOODS OF ROCK AND WILLOW PTARMIGAN IN CENTRAL ALASKA WITH COMMENTS ON INTERSPECIFIC COMPETITION. Robert B. Weeden 271
NESTING COLONIES OF ROSS’ GOOSE. John P. Ryder 282
AVIAN DISTRIBUTION IN CENTRAL AMERICA. Thomas R. Howell 293
A STUDY OF NONFAT WEIGHTS IN MIGRATING SWAINSON’S THRUSHES (HYLOCICHLA USTULATA). George I. Child 327
GENERAL NOTES

Indian House Sparrow attacks grass snake. S. N. Sen Gupta .................. 339
Laysan Albatrosses swallow indigestible matter. Karl W. Kenyon and Eugene Kridler .......................................................... 339
Arteries in the heart region of the Greater Shearwater. Robert E. Gobeil 343
First record of Smith's Longspur in Connecticut. Walter Bulmer .......... 345
New records of wood warblers in New Mexico. Dale A. Zimmerman .... 346
Siberian Crane longevity. Malcolm Davis ........................................... 347
A test to determine if Bobwhite Quail hunt crickets by sound. J. J. Whitesell and T. J. Walker ........................................... 348
Swimming ability of Willow Warbler. Erwin R. Scherner ...................... 350
Apparent hybridization between Snow Bunting and McKay's Bunting on St. Lawrence Island, Alaska. Spencer G. Sealy ............................. 350
Extra toes on a Sooty Tern chick. Oliver L. Austin, Jr. ......................... 352
Red Crossbill breeding in Minnesota. Oscar W. Johnson ....................... 352
Notes on fossil hawks (Accipitridae). Joel Cracraft ......................... 353
A Black-capped Chickadee variant. Richard J. Low ............................ 354
Diving times of the Least Grebe and Masked Duck. Donald A. Jenni ....... 355
White-tailed Tropic-bird, an addition to the Philippine avifauna. Pierce Brodkorb, Rodolfo B. Gonzalez, and Domingo Empeso ................. 357
Survival of Ruffed Grouse eggs after 24-hour abandonment. Richard S. Stott and R. B. Brander .................................................. 357
Pygmy Owl attacks California Quail. Thomas G. Balgooyen .................. 358

REVIEWS. Edited by John William Hardy ........................................ 359

PERIODICAL LITERATURE. Edited by Glen E. Woolfenden .................. 372

NOTES AND NEWS ....................................................................... 391

NUMBER 3

THE RELATIONSHIPS AND EVOLUTION OF THE DENDROICA CORONATA COMPLEX. John P. Hubbard ........................................... 393

THE BREEDING BIOLOGY OF LEACH'S PETREL, OCEANOUDOMA LEUCORHOA. Henry M. Wilbur .................................................. 433

SELECTIVE FEEDING BY JUVENILE DIVING DUCKS IN SUMMER. James C. Bartonek and Joseph J. Hickey ................................. 443

[v]
SOME ASPECTS OF TEMPERATURE RELATIONS IN SMALL OWLS. J. David Ligon .......................... 458
SALT AND WATER BALANCE IN SEASIDE AND SHARP-TAILED SPARROWS. Thomas L. Poulson ........................................... 473
FEMALE TERRITORIALITY IN A TROPICAL HUMMINGBIRD. Larry L. Wolf ......................... 490
HABITAT RELATIONS OF THE PARULIDAE DURING SPRING MIGRATION. James F. Parnell ............................................. 505
PURPLE MARTIN POPULATION CHANGES OVER FIFTEEN YEARS. Harold F. Mayfield .......... 522
RESPONSES TO HIGH TEMPERATURE IN NESTLING DOUBLE-CRESTED AND PELAGIC CORMORANTS. Robert C. Lasiewski and Gregory K. Snyder ........................................... 529
AN EXPERIMENTAL STUDY OF CLUTCH SIZE OF THE AMERICAN COOT. Leigh H. Fredrickson .......... 541

GENERAL NOTES

Ross' Goose in North Carolina: first Atlantic seaboard occurrence. P. A. Buckley .......................... 551
Chestnut-sided Warbler breeds in Colorado. Sam Gadd ......................................................... 552
Pinealectomy in Harris' Sparrow. Richard S. Donham and Fred E. Wilson ............................. 553
Brandt Cormorant killed by fish. G. Victor Morejohn ......................................................... 555
The Indian House Crow attacks a five-striped squirrel. S. N. Sen Gupta ............................. 556
Aggressive foraging behavior in House Sparrows. Richard F. Johnston ............................ 558
A string-pulling Tufted Titmouse. J. C. Dickinson, Jr. ....................................................... 559
Specific gravity of White Pelican eggs. Roger M. Evans ................................................... 560
Bald Eagle swimming in ocean with prey. R. Wayne Campbell ..................................... 561
Leg spurs on female wild Turkeys. Lovett E. Williams, Jr. and David H. Austin ...... 561
The breeding status of the Black-necked Stilt in Canada. W. Earl Godfrey .................. 562
Differential survival among nestling Redwinged Blackbirds after a storm. Helen Hays ................................................................. 563
The owls of the central Brooks Range, Alaska. John M. Campbell ................................ 565
The Blue-backed Tanager (Cyanicterus cyanicterus), a genus new to Venezuela, with notes on its plumages. Kenneth C. Parkes ........................................ 568
Change in facial coloration in a bushtit. Barbara Clark McKnight .......................... 570
Unpneumatized skull condition in adult Scaly-fronted Weavers, *Sporopipes frontalis*. Robert B. Payne ........................................................................................................ 570

REVIEWs. Edited by John William Hardy .......................................................... 571

PERIODICAL LITERATURE. Edited by Glen E. Woolfenden .......................... 583

NUMBER 4

AN ORNITHOLOGICAL COMEDY OF ERRORS: *Catharus occidentalis* and *C. frantzii*. Allan R. Phillips .......................................................................................... 605

IN MEMORIAM: James Alexander Munro. James L. Baillie .......................... 624

VOCAL BEHAVIOR OF ADULT CALIFORNIA QUAIL. H. Warrington Williams .................................................................................................................. 631

FIELD STUDIES OF WILSON’S PHALAROPE. J. E. Johns ................................ 660

PREFLIGHT AND FLIGHT BEHAVIOR OF CANADA GEESE. Dennis G. Raveling .................................................................................................................. 671

COMMUNAL ROOSTS OF WINTERING ROUGH-LEGGED HAWKS (*Buteo lagopus*). Gary D. Schnell ............................................................................................ 682

THE MASKED DUCK IN THE UNITED STATES. Paul A. Johnsgard and Dirk Hagemeyer ........................................................................................................... 691

A TISSUE CULTURE TECHNIQUE FOR THE STUDY OF AVIAN CHROMOSOMES. Vojislav Jovanović and Leonard Atkins ........................................................................ 696

SUMMER BIRDS OF THE PACK ICE IN THE WEDDELL SEA, ANTARCTICA. David R. Cline, Donald B. Siniß, and Albert W. Erickson ........................................ 701

ADDITIONAL RESPONSES OF THE POOR-WILL TO LOW TEMPERATURES. George T. Austin and W. Glen Bradley ............................................................................ 717

NOTES ON THE POSSIBLE MIGRATION AND THE NESTING OF THE BLACK VULTURE IN CENTRAL AMERICA. Alexander F. Skutch ........................................... 726

SEXUAL DIMORPHISM OF LARGE GULLS (*Larus spp.*). Agnar Ingolfsson .............................................................................................................................. 732

ANNUAL REPORT, COMMITTEE ON CONSERVATION .................................. 738

GENERAL NOTES

Traill’s Flycatchers of the “fitz-bew” songform wintering in Panama. Leon J. Gorski ....................................................................................................................... 745

Birds new to North America and the Pribilof Islands, Alaska. Max C. Thompson and Robert L. DeLong ........................................................................................... 747

First Vermilion Flycatcher specimen from Missouri. David A. Easterla and Richard A. Anderson ......................................................................................................... 750
Notes on the Long-billed Curlew. Richard L. Timken .......................... 750
Giant Cowbird solicits preening from man. Robert B. Payne ............... 751
Mallard hatching from an egg cracked by freezing. Raymond J. Greenwood 752
Sage Thrasher and other unusual birds in north-central Florida. David W. Johnston ........................................................................ 754
Commensal feeding in grebes. Dennis R. Paulson .................................. 759
Ochre-striped Antpitta in Colombia. Jon C. Barlow and James A. Dick ... 759
Bilateral gynandry in a Cardinal and a Rufous-sided Towhee. Amelia R. Laskey ................................................................. 760
Age-specific mortality of American Goldfinch nestlings. Larry C. Holcomb 760
Hatchability, clutch position, and hatching sequence in Mallards. Harold H. Prince, P. B. Siegel, and George W. Cornwell .................... 762
Starlings bred in captivity. Robert L. Miller ........................................... 763
Goslings descend from aerial nest, attacked by Bald Eagle. Maurice G. Hornocker .................................................................................. 764
Note on bill color of the Ruddy Duck, Oxyura jamaicensis rubida. Helen Hays and Helen M. Habermann ........................................ 765
Turkey Vultures land on vessel in fog. William R. Mote ......................... 766
Black-throated Gray Warbler (Dendroica nigrescens) at Madison, Wisconsin. A. W. Schorger .................................................................. 767
First specimen of the Lark Bunting from Alabama. Merriam L. Miles ...... 767
REVIEWS. Edited by John William Hardy ........................................... 768
PERIODICAL LITERATURE. Edited by Glen E. Woolfenden ............... 779
NOTES AND NEWS ............................................................................... 804
CORRESPONDENCE ......................................................................... 806
INDEX TO VOLUME 86. Compiled by Willetta Lueshen ....................... 807
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 W. HARDY (Reviews) and GLEN E. WOOLFENDEN
(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.

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 one inch margins all around. Tables (which should be unruled) and 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.). Designate top of each illustration and identify (on the back with soft pencil) by author's name, title, and figure number.

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 1965. Avoid footnotes. If more than 5 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 papers, indicate the pertinent pages, e.g. (Lack, 1947: 96–97). Citations in text should be parenthetical, e.g. (Lack, Darwin's finches, Cambridge, England, Cambridge Univ. Press, 1947: 96–97) or (Auk, 79: 208–233, 1962). Verify all citations from original sources unless impossible, in which case so indicate. For abbreviations in a terminal list of references, authors should use forms stipulated by the Style Manual for Biological Journals (Washington, D. C., Amer. Inst. Biol. Sci., 1964). In other matters of form The Auk frequently relies on the dicta of 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 1968) 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 (1957) 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 per cent 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.